*Supplemental Remedial Investigation Report*

# Eagle Zinc Site

## WA No. 102-RICO-B5Y7/Contract No. EP-S5-06-01

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CH2MHILL®

# Executive Summary

CH2M HILL prepared this Supplemental Remedial Investigation (SRI) report for the Eagle Zinc Superfund Site located in Hillsboro, Illinois. The site was used for smelting and for manufacturing sulfuric acid, zinc oxide, and leaded zinc oxide.

This report presents the results of the SRI, which supplements the results of the remedial investigation conducted in 2005. The SRI has been prepared in accordance with the U.S. Environmental Protection Agency (USEPA) Statement of Work and Work Assignment No. 102-RICO-B5Y7-Rev. 1 under Contract No. EP-S5-06-01.

The SRI was completed in accordance with USEPA and Illinois Environmental Protection Agency (IEPA) approved site-specific plans (CH2M HILL 2010). The primary goal of the SRI was to obtain data necessary to fill in the following data gaps:

- Evaluate the level of constituents of concern in groundwater screened beneath the residue
- Evaluate the leachability of the residue that exists between the residue piles
- Evaluate the levels of metals seen in residue between the residue piles
- Evaluate the presence of constituents of concern in soil beneath the residue
- Update the human health risk assessment
- Conduct an ecological risk screening evaluation based on the latest ecological screening levels

SRI activities conducted in 2010 and 2011 included monitoring well installation, aquifer testing, and sample collections of residue, onsite and offsite surface soil, onsite and offsite subsurface soil, surface water and sediment, and groundwater. Post-sampling activities included a survey of newly installed monitoring wells and data points, management of investigation-derived waste, and data validation.

Residue samples were collected from the central and southwestern portions of the site to evaluate the potential for metals in the residue to leach into the groundwater and to evaluate metal concentrations in residue in support of the risk assessments. Residue samples were analyzed for synthetic precipitation leaching procedure (SPLP) site-specific metals (arsenic, cadmium, copper, lead, manganese, and zinc). Select residue samples were analyzed for site-specific total metals.

Onsite surface soil samples were collected to further delineate the northeast portion of the site. Two of the surface soil sample locations (SS-12 and SS-13) proposed in the site-specific plans were not collected due to the presence of residue at the surface. Offsite surface soil samples were collected from along the offsite drainage ditch near the northwest corner of the site to evaluate the potential for site-specific metals to be present in soil northwest of the site and to assess potential risks to human and ecological receptors. Surface soil samples were submitted for analysis of site-specific total metals and sieve lead.

Onsite subsurface soil samples were collected from locations colocated with the aforementioned residue samples. Samples were taken from a depth of 1 to 2 feet below the residue and native soil interface to characterize subsurface geochemistry and identify potential contamination. Subsurface soil samples were not collected from RS-13 due to the presence of an impermeable object beneath the residue. Subsurface soil samples were collected from the onsite triangular property across from Industrial Park Drive and offsite locations near the residential housing common area adjacent to the northwest corner of the site to evaluate if the triangular area and offsite locations have been impacted by site operations, to delineate the extent of contamination, if any, and to assess potential risks to human receptors. Subsurface samples were analyzed for site-specific total metals.

Surface water and sediment samples, some colocated with historical surface water and sediment sampling locations, were collected from onsite and offsite drainage ditches, ephemeral and perennial streams, and ponds to assess potential effects site contamination would have on human and ecological receptors and to determine if current conditions in the ponds and waterways differed from those described in previous investigation reports. Surface water samples were analyzed for total and dissolved site-specific metals. Sediment samples were

analyzed for total site-specific metals, total organic carbon, acid volatile sulfides/simultaneously extracted metals, and grain size analysis.

Groundwater samples were collected from existing and newly installed monitoring wells for analysis of site-specific total and dissolved metals. The monitoring wells were sampled to delineate the vertical and lateral extent of groundwater contamination and to evaluate the concentrations of site-specific metals in groundwater in support of the risk assessments.

## Nature and Extent of Contamination

### Residue

Total cadmium, total copper, total manganese, and total zinc concentrations in the residue and residue piles were observed below their respective industrial soil regional screening levels (RSLs). Despite the absence of concentrations of cadmium, copper, and zinc above screening criteria observed in residue and residue piles, toxicity characteristic leaching procedure (TCLP; cadmium only), and SPLP analytical data indicate there is potential for these metals in residue to migrate to groundwater and surface water at concentrations exceeding screening criteria.

Total arsenic and total lead concentrations were observed above their respective industrial soil RSLs and background values in 52 percent of residue and residue pile samples for arsenic and in 40 percent of the residue and residue pile samples for lead. However, TCLP and SPLP analytical results indicate there is a low potential for arsenic in residue piles and residue to migrate to groundwater at concentrations exceeding screening criteria.

SPLP metal concentrations were observed above the federal maximum contaminant levels that identify potential migration pathways to groundwater according to the following frequencies:

- Cadmium: 19 percent of residue and residue pile samples
- Lead: 28 percent of residue and residue pile samples
- Manganese: 6 percent of residue samples
- Zinc: 9 percent of residue samples

SPLP cadmium, lead, manganese, and lead concentrations above screening criteria suggest there is a potential for metals in residue and residue piles to leach to groundwater at concentrations exceeding screening levels in groundwater.

SPLP metal concentrations were observed above the most stringent screening criteria that identify potential migration pathways to surface water according to the following frequencies:

- Cadmium: 47 percent of residue and residue pile samples
- Copper: 34 percent of residue samples
- Lead: 32 percent of residue and residue pile samples
- Zinc: 100 percent of residue samples

SPLP cadmium, copper, lead, and zinc concentrations above screening criteria suggest there is a potential for metals in residue and residue piles to leach to surface water at concentrations exceeding screening criteria in surface water.

### Onsite Soil

Total arsenic concentrations exceeded the industrial soil RSL in each onsite surface soil sample; however, only 5 of 18 samples were observed above the Illinois background value in soil. Only one sample greatly exceeded background (21 milligrams per kilogram [mg/kg] at A1-3-S1); however, this sample likely was a mixture of soil and residue, indicating total arsenic in onsite surface soil is likely naturally occurring and not site-related in nearly all samples. Total cadmium, total copper, total lead, total manganese, and total zinc concentrations did not exceed their respective industrial soil RSLs in onsite surface soil. Total arsenic, total cadmium, total copper, total lead, total manganese, and total zinc are not considered chemicals of potential concern (COPCs) in onsite surface soil.

Total arsenic was observed in subsurface soil beneath the residue at concentrations above its industrial soil RSL and Illinois background value in only 10 percent of onsite subsurface samples. Total arsenic concentrations are likely naturally occurring and not site-related.

Total cadmium, total copper, total lead, total manganese, and total zinc were not observed at concentrations above their respective industrial soil RSLs beneath the residue and within the southeastern triangular area. Subsurface soil beneath residue does not appear to be impacted by concentrations of site-specific total metals in residue and residue piles.

Total arsenic, total cadmium, total copper, total lead, total manganese, and total zinc are not considered COPCs in onsite subsurface soil.

### Onsite Soil—Southeastern Triangular Area

Total arsenic concentrations were observed above the industrial soil RSL and IEPA background value in only 1 of 3 surface soil samples within the southeastern triangular area, and at a concentration only slightly above the Illinois background value. Total arsenic is not considered a COPC in the southeastern triangular area.

Total cadmium, total copper, total lead, total manganese, and total zinc concentrations did not exceed their respective industrial soil RSLs in surface soil in the southeastern triangular area and, therefore, are not considered impacted by site operations. Total cadmium, total copper, total lead, and total zinc are not considered COPCs in the southeastern triangular area.

Total arsenic was observed in subsurface soil within the southeastern triangular area above its residential soil RSL and Illinois background value (slightly above) in 1 out of 6 samples. Total arsenic in subsurface is likely naturally occurring and not site-related. Total arsenic is not considered a COPC for subsurface soil within the southeastern triangular area.

Total cadmium, total copper, total lead, total manganese, and total zinc concentrations were observed below their industrial RSLs within the southeastern triangular area.

Subsurface soil within the southeastern triangular area does not appear to be impacted by site operations. Total cadmium, total copper, total lead, total manganese, and total zinc are not considered COPCs in subsurface soil within the southeastern triangular area.

### Offsite Soil—Residential Area

A limited number of arsenic concentrations in surface soil were observed above the IEPA soil background value of 11.3 mg/kg (4 out of 9 samples), and at concentrations only slightly above the background value, indicating the occurrence of arsenic in offsite surface soil may be naturally occurring. There was no indication of surface or subsurface disturbance within the offsite residential housing areas, as shown in soil boring logs from locations SB-01 through SB-06—based on this, and the absence of low-level concentrations of arsenic in other site media (soil, groundwater, and surface water), total arsenic concentrations in offsite surface soil are not considered impacted by site operations. Total arsenic is not considered a COPC in offsite surface soil.

Total manganese was observed above its residential soil RSL in 1 out of 9 surface soil samples. There was no indication of surface or subsurface disturbance within the offsite residential housing areas, as shown in soil boring logs from locations SB-01 through SB-06. Based on the low frequency of elevated manganese in offsite surface soil, the absence of elevated concentrations of or low-level concentrations of manganese in other site media including onsite residue and onsite soil, and SPLP manganese analytical data indicating a low leaching potential, the total manganese concentration above screening criteria in offsite surface soil is not considered impacted by site operations. Total manganese is not considered a COPC in offsite surface soil.

Total cadmium, total copper, total lead, and total zinc concentrations did not exceed their respective residential soil RSLs in surface soil and, therefore, are not considered impacted by site operations. Total cadmium, total copper, total lead, and total zinc are not considered COPCs in offsite surface soil.

Total arsenic was observed in subsurface soil within the residential housing area at concentrations above its residential soil RSL; however, concentrations were below the IEPA background value for arsenic in offsite subsurface soil. Total arsenic in subsurface is likely naturally occurring and not site-related. Total cadmium, total copper, total lead, total manganese, and total zinc were not observed at concentrations above their respective residential soil RSLs within the residential housing area. Offsite subsurface soil within the residential housing area does not appear to be impacted by site operations.

Total arsenic, total cadmium, total copper, total lead, total manganese, and total zinc were not observed above their residential RSLs and are not considered COPCs in offsite subsurface soil.

### Surface Water

Overall, from 2002 to 2010, arsenic, lead, and manganese concentrations in surface water increased.

Total and dissolved cadmium and zinc concentrations above screening criteria were observed in onsite and offsite surface water and are likely associated with site operations. Total and dissolved cadmium and zinc are considered COPCs in onsite and offsite surface water.

Total lead and manganese above screening criteria were observed in onsite surface water at low frequencies. Total lead concentrations above screening criteria were observed in 2 of 18 surface water samples, while no concentrations of dissolved lead were observed above screening criteria. It is likely that the total lead concentration above screening criteria in the two surface water samples is associated with suspended fines in the turbid, southern retention pond and underground culvert and is not representative of water quality that may be in the drainageways downstream. Total and dissolved manganese above screening criteria were observed in 1 of 18 onsite surface water samples at concentrations only slightly above its screening criteria. The onsite location is located on the northeast drainageway at the eastern property boundary. The offsite location downstream also has manganese above screening criteria. Total and dissolved manganese in surface water are likely attributed to site operations and specifically likely caused by manganese concentrations in groundwater. Total and dissolved manganese are considered COPCs in onsite surface water.

Total lead and manganese above screening criteria were observed in offsite surface water at low frequencies. Total lead concentrations above screening criteria were observed in 1 of 8 surface water samples, while no concentrations of dissolved lead were observed above screening criteria. It is likely that the total lead concentration above screening criteria in the one surface water sample is associated with suspended fines in the turbid, intermittent drainage ditch that flows east to west along the site's southern property line. Total and dissolved manganese concentrations above screening criteria were observed in 1 out of 8 (1 out of 6 for dissolved manganese) offsite surface water samples at concentrations only slightly above its screening criteria. Manganese is considered a COPC in offsite surface water. However, no overall trend was observed in cadmium, copper, and zinc concentrations in surface water.

### Sediment

Overall, from 2002 to 2010, cadmium, copper, and zinc concentrations in sediment decreased while lead and manganese concentrations in sediment increased. No overall trend was observed for arsenic concentrations in sediment between 2002 and 2010.

Total arsenic, cadmium, copper, lead, manganese, and zinc were observed above their respective ecological risk screening levels in onsite and offsite sediment samples collected during the remedial investigation and SRI. Total arsenic, cadmium, copper, lead, manganese, and zinc are considered COPCs in onsite and offsite sediment.

### Groundwater

In general, dissolved and total metals results are similar to 2010 results, indicating low-flow sampling was successful at minimizing suspended solids in samples and indicating colloidal transport of metals is not occurring at this site.

Monitoring wells with screen sand packs placed in residue (MW-4, MW-6, MW-7, MW-8, MW-9, and MW-11) that were resampled in 2010 generally declined significantly in total metals concentrations (decreased 50 to

90 percent). The most probable explanation is greater care was taken in low-flow groundwater sampling to avoid entrainment of residue suspended solids in the groundwater samples. Based on this, total metals sample results from 2003 may not be representative of groundwater. Even though the 2010 metal results are much lower than the 2003 results, total metals results from 2010 are particularly elevated in the wells, with several metals consistently exceeding groundwater and surface water screening levels. Results from the wells, as well as other older monitoring wells with screens in close proximity to residue, are representative of infiltration residing in residue perched above the original ground surface. While the results do not represent groundwater at the site, they are important relative to evaluating transport pathways to groundwater and surface water.

Total and dissolved arsenic, copper, lead, and manganese concentrations above screening criteria were not observed in shallow groundwater in 2010. Total and dissolved arsenic, copper, lead, and manganese in groundwater are not considered COPCs.

Total and dissolved cadmium and zinc were observed above screening criteria in perched water below residue or within the visible residue boundary in 2010.

Total and dissolved cadmium and zinc are considered COPCs.

## Human Health Risk Assessment

The noncancer hazard index (HI) estimate for future industrial workers exceeds the threshold value. For soil and residue (0 to 2 feet), antimony, zinc, and lead were identified as COCs. However, the cumulative excess lifetime cancer risk (ELCR) was within the threshold value.

The noncancer HI estimates for future construction workers exceed threshold values. For soil and residue (0 to 10 feet), antimony, cobalt, nickel, zinc, and lead were identified as chemicals of concern. However, the cumulative ELCR was within the threshold value.

## Ecological Risk Screening

The following conclusions were made about the potential for ecological risk based on an evaluation of the newly acquired SRI data:

- There is a potential for adverse effects to aquatic life in both the eastern and western drainages based on the presence of metals in surface water and sediment. However, the majority of SRI samples had concentrations lower than those previously detected.
- There is a potential for adverse effects to terrestrial life from the presence of metals in surface soil.

Unlike for surface water and sediment, metals concentrations in SRI soil samples and the corresponding level of risk exceeded that indicated during previous sample events at many locations, with the greatest exceedances occurring in samples taken from the residue pile areas.

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# Acronyms and Abbreviations

| | |
|---|---|
| amsl | above mean sea level |
| ATSDR | Agency for Toxic Substances and Diseases Registry |
| bgs | below ground surface |
| BTEX | Benzene, toluene, ethyl benzene, and xylene |
| CERCLA | Comprehensive Environmental Response Compensation Liability Act |
| CLP | Contract Laboratory Program |
| COC | chemical of concern |
| COPC | chemical of potential concern |
| DQO | data quality objective |
| ELCR | excess lifetime cancer risk |
| ENVIRON | ENVIRON International Corporation |
| ESI | Expanded Site Inspection |
| ESL | ecological screening level |
| °F | degrees Fahrenheit |
| FS | Feasibility Study |
| HHRA | human health risk assessment |
| HI | hazard index |
| HRS | Hazard Ranking System |
| IDW | investigation-derived waste |
| IEPA | Illinois Environmental Protection Agency |
| LUST | leaking underground storage tank |
| MCL | maximum contaminant level |
| mg/kg | milligram per kilogram |
| mg/L | milligram per liter |
| MS | matrix spike |
| MSD | matrix spike duplicate |
| NPDES | National Pollutant Discharge Elimination System |
| NPL | National Priorities List |
| NRCS | Natural Resources Conservation Service |
| OU1 | Operable Unit 1 |
| PA | preliminary assessment |
| PAOC | potential area of concern |
| PCOC | potential chemical of concern |
| RCRA | Resource Conservation and Recovery Act |
| RI | remedial investigation |
| RSL | regional screening level |
| SLERA | screening-level ecological risk assessment |
| SOP | Standard Operation Procedure |
| SOW | Statement of Work |
| SPLP | synthetic precipitation leaching procedure |
| SRI | Supplemental Remedial Investigation |
| SWPPP | stormwater pollution prevention plan |
| TAL | target analyte list |
| TCLP | toxic characteristic leaching procedure |
| USDA | U.S. Department of Agriculture |
| USEPA | U.S. Environmental Protection Agency |
| UST | underground storage tank |

| | |
|---|---|
| VOC | volatile organic compound |
| XRF | X-Ray fluorescence |

SECTION 1

# Introduction

This Supplemental Remedial Investigation (SRI) Report has been prepared to supplement the results of the remedial investigation (RI) conducted by ENVIRON International Corporation (ENVIRON 2005a) and the RI addendum (ENVIRON 2006a). The data collected during the RI was used to complete a Tier 1 human health risk assessment (HHRA; ENVIRON 2005a and 2005b) and a screening level ecological risk assessment (SLERA; ENVIRON 2005a) for the site.

The U.S. Environmental Protection Agency (USEPA) initiated an SRI to address data gaps determined by USEPA and the Illinois EPA (IEPA) based on their review of the RI and RI addendum. USEPA Region 5 tasked CH2M HILL with conducting the SRI, under Remedial Action Contract 2, Contract No. EPS5-06-01, USEPA Work Assignment No. 102-RICO-B5Y7.

Section 1 provides a brief review of the site's background, a summary of previous site investigations, and a concise breakdown of the supplemental investigation's primary objective.

## 1.1 Background

Section 1.1 provides a description of the site and a brief summary of the site's operation history and regulatory history. Figure 1-1 identifies the site's location, Figure 1-2 illustrates the site's prominent features, and Figure 1-3 presents a chronological overview of historical site activities. Additional background information about the site, including a complete breakdown of the regulatory history of the site, is available in the Expanded Site Inspection (ESI) Report (IEPA 1996).

### 1.1.1 Site Description

The site is located in a mixed industrial/commercial/residential area of the Township of Hillsboro, Illinois, in Montgomery County (Figure 1-1). The area that encompasses the site is zoned as commercial/industrial. The site is bordered on the east by Industrial Park Drive and by the Litchfield Bituminous Corporation, on the north by Smith Road, Hayes Abrasives, and by the City of Hillsboro Water Treatment Plant, on the west by East Brailley Road and Street, and by residential housing, and on the south by Fuller Brothers Ready Mix Concrete facility, Vogel Lumber yard, and by the University of Illinois Extension office. The site covers approximately 132 acres, with about 30 of the acres covered by buildings and various structures. Within the site there are approximately 23 buildings/structures that were previously used for facility operations. The buildings and structures are included as Operable Unit 1 (OU1) and are planned for demolition. The site also contains several railroad spurs, residual material, two stormwater retention ponds, one larger pond in the southwestern portion of the site, one small pond in the southeastern portion of the site, and several roads, all of which were used for facility operations (Figure 1-2). Active industrial operations at the site ceased in 2003.

### 1.1.2 Operational History

From 1912 to 2001, the site was used for smelting and for manufacturing sulfuric acid, zinc oxide, and leaded zinc oxide. Residuals from plant operations were placed in residue piles that have been categorized based on the processes that generated them (ENVIRON 2004). Details regarding site ownership and operations are included in the site-specific plans (CH2M HILL 2010).

The site originated as a zinc smelter facility under the name Lanyon Zinc Company in 1912. Lanyon Zinc Company produced various smelting products including zinc and sulfuric acid. The facility was then purchased by Eagle-Picher Industries in 1919. Eagle-Picher Industries operated and produced zinc and sulfuric acid at the facility until about 1935. During the early 1920s Eagle-Picher began manufacturing zinc oxide and lead zinc oxide. Manufacturing of lead zinc oxide continued until around 1958, and the production of zinc oxide continued until around 1980 when the facility was purchased by the Sherwin-Williams Company. In 1984, the facility was sold by

the Sherwin-Williams Company to Eagle Zinc Company, a division of T. L. Diamond & Company. Eagle Zinc continued the production of zinc oxide until 2003 when the facility ceased industrial operations. A site history timeline is provided in Figure 1-3.

During industrial operations, large amounts of ore and smelter waste were stored onsite, according to historical documents. The leaded zinc oxide that was made at the site was produced using the American process, which combined zinc ore concentrates with high levels of impurities. Waste materials generated from the process included slag, rotary kiln residue, muffle dross, metallic zinc particles, and refractory bricks. Significant portions of the site are currently covered with smelter waste and other materials associated with historical smelting operations. An estimated 43,500 cubic yards of residue waste currently reside onsite in 15 residue piles (CH2M HILL 2008). The volume of residue spread across the site and not in specific piles is estimated to be 210,000 cubic yards based on historical borings and investigations conducted during this SRI.

### 1.1.3 Regulatory History

The following information regarding the regulatory history of the site has been primarily summarized from the 2005 RI report (ENVIRON 2005a), and secondary sources are indentified at the conclusion of the summations.

The zinc smelting facility was initially listed on the Comprehensive Environmental Response Compensation and Liability Information System by Sherwin-Williams in June 1981, as a discovery action. Sherwin-Williams filed USEPA form 8900-1, Notification of Hazardous Waste Site, in accordance with Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which indicated that slag/residual material had been disposed of onsite. Results of residual materials from the IEPA sampling event indicated that the waste materials were not hazardous waste and that the site was not subject to Resource Conservation and Recovery Act (RCRA) permitting.

In addition to the CERCLA activities described in the preceding paragraph, IEPA also collected several sets of surface water samples from the southwest stormwater discharge and had the samples analyzed for metals. Detected concentrations above applicable state surface water quality standards for zinc, iron, lead, and copper in the surface water runoff (on one or more occasions) resulted in a notice of violation from IEPA. The notice of violation reportedly prompted Sherwin-Williams Company to remove approximately 18,000 tons of residue materials from 10 acres of the site.

The removal of a 500-gallon gasoline underground storage tank (UST) by Eagle Zinc in April 1998 resulted in the submission of a leaking UST (LUST) incident report to IEPA. To address the LUST incident, site classification and assessment activities were performed. Neither the soil samples nor any of the groundwater samples collected from the monitoring wells during the investigation contained detectable concentrations of benzene, toluene, ethyl benzene, and xylene (BTEX) compounds. Based on the sample results and discussions with IEPA, the LUST incident was classified as low priority, and groundwater in the former tank area was monitored periodically for 3 years. Since there were no detections of contaminants above applicable state groundwater standards, IEPA issued a No Further Remediation letter to Eagle Zinc for the former LUST in April 2004.

In May 1998, Eagle Zinc Company entered into an Interim Consent Order with the Illinois Attorney General and IEPA. Pursuant to the interim consent order, a site monitoring well installation and groundwater sampling program was conducted, a residual piles and underlying soils sampling program was initiated, and a stormwater pollution prevention plan (SWPPP) was prepared for submittal to IEPA. The site sampling programs resulted in submission of the March 1999 reports entitled *Interim Report of Residue Sampling and Analysis* and *Monitoring Well Installations and Groundwater Sampling Interim Report* (Goodwin and Broms, Inc. 1999a and b) to IEPA.

In preparation of the SWPPP, Eagle Zinc determined that the site was subject to the National Pollutant Discharge Elimination System (NPDES) stormwater permitting requirements as per section 40 of the *Code of Federal Regulations* 122.26 (b)(14)(ii). An NPDES Notice of Intent letter was prepared by Eagle Zinc Company and submitted to IEPA. In June 2000, IEPA issued NPDES Permit No. IL0074519 for the facility. The NPDES permit required monthly monitoring of NPDES Outfall 002 and submission of an annual inspection report to IEPA.

A SWPPP was finalized for the site in December 2000. Following closure of the facility in early 2003, IEPA issued a public notice of the termination of the facility's NPDES stormwater permit in May 2003.

Based on the 1999 Interim Groundwater and Residue Sampling Reports, USEPA issued an Administrative Order on Consent with a Statement of Work (SOW) to Eagle Zinc for an RI/feasibility study (FS) for the site in December 2001. In response to the Administrative Order on Consent and SOW, T. L. Diamond Corporation contracted ENVIRON to conduct an RI/FS for the site. ENVIRON completed an investigation of the site in 2005 and submitted the following reports:

- RI report to USEPA in January 2005
- RI addendum in February 2006
- FS in May 2006

In March 2007, IEPA used the data collected from previous site investigations to complete the Hazard Ranking System (HRS) record for the site to determine if the site should be placed on the National Priorities List (NPL). The site's overall HRS score of 50.00 placed the site above the established cutoff of 28.50, making the site eligible to be included on the NPL. Based on the overall score, IEPA recommended that the site be included on the NPL, and the site was officially placed on the list in September 2007 (IEPA 2007).

## 1.2 Previous Investigations

Section 1.2 briefly identifies the scope, findings, and conclusions of previous investigations conducted at the site. A comprehensive explanation of each of the following investigations is provided in the final investigation report for each investigation. Previous investigations include an environmental risk assessment conducted in 1982, a preliminary assessment (PA) conducted in 1984, an ESI conducted in 1993, a LUST investigation conducted in 1998, a groundwater and residue investigation conducted in 1998, an RI conducted in 2003, and a supplemental field investigation conducted in 2008.

### 1.2.1 1982—Environmental Risk Assessment

In 1982, Risk Science International conducted an environmental risk assessment of the site for Sherwin-Williams. The environmental risk assessment was designed to present the data results of the soil samples collected from sample locations on the property in October 1980. The environmental risk assessment report was completed in 1982 and concluded that the soil samples collected during the investigation did not contain any detectable concentrations of metals significantly above background soil samples collected in the Hillsboro area, and that "much of the lead, cadmium, copper, and zinc, although high in concentrations in the dross, kiln residues, and ore spoils, appears to be relatively inert and fixed in these materials." Because an accurate sample location map for the aforementioned soil samples collected during the investigation is not available, the conclusions made by Risk Science International are discussed herein for informational purposes only.

### 1.2.2 1984—Preliminary Site Assessment

Pursuant to CERCLA requirements, a PA was conducted by IEPA in 1984. The site investigation culminated in the submission of a PA report to USEPA Region 5. The PA report concluded that residual material samples taken by IEPA in the early 1980s were not hazardous waste and that the site was not subject to RCRA.

### 1.2.3 1993—IEPA Expanded Site Inspection

In 1993, IEPA conducted an ESI. The ESI was designed to provide sufficient documentation to support the HRS record for the site under the current CERCLA HRS. Field activities associated with the site inspection included the collection of 28 samples from site sediment, residue, and soil samples from both on- and offsite locations. Background soil samples were also collected in the nearby town of Butler.

The ESI report was completed in 1996. The following assessments were made based on laboratory data and field observations:

- An estimated 10 acres of residue piles were observed on the property during the inspection of the site. No evidence was found to indicate that a synthetic liner had been placed under the residue piles.
- One residue sample was analyzed for inorganic constituents, and the sample revealed elevated concentrations of heavy metals.
- One soil sample was collected and analyzed for inorganic constituents, and the sample revealed elevated concentrations of heavy metals, similar to those found in the residue piles.
- The extent of contaminated soil was delineated by analysis of soil samples collected from residential properties surrounding the facility. Heavy metals found in elevated concentrations included cadmium, copper, and zinc.
- The Illinois Department of Health stated in a letter to IEPA that the soil data collected by IEPA at offsite residences indicated no apparent health concern.

### 1.2.4 1998—IEPA LUST Investigation

In 1998, Goodwin and Broms, Inc., and Philip Services Corporation conducted site assessment activities to address the LUST for T. L. Diamond & Company, Inc. Field activities associated with the site assessment included screening soil samples from soil borings, collecting soil samples for laboratory analysis of BTEX, collecting soil samples for particle size analysis, installing four monitoring wells, sampling five monitoring wells for BTEX compounds, completing slug tests to estimate hydraulic conductivity, and completing a well search.

The LUST investigation was completed in 1998. The following assessment was made based on the observations made from the laboratory data and field observations:

- Neither the soil samples nor any of the groundwater samples collected from the monitoring wells contained detectable concentrations of BTEX compounds. Based on the results and discussions with IEPA, the LUST incident was classified as low priority and groundwater in the former tank area was monitored periodically for 3 years. As there were no detections of contaminants above applicable groundwater standards, IEPA issued a No Further Remediation letter for the former LUST on August 31, 2004.

### 1.2.5 1999—Site Groundwater Sampling Investigation

In November and December 1998, Goodwin & Broms, Inc., installed and sampled nine monitoring wells on the site for T. L. Diamond & Company, Inc. The monitoring wells were installed pursuant to IEPA's Interim Consent Order and sampled for volatile organic compounds (VOCs) and total and dissolved inorganic constituents. IEPA also collected split groundwater samples for laboratory analysis.

The groundwater investigation report was completed in 2005. The following assessments were made based on the observations made from the laboratory data:

- Sample results indicated that G-104 exceed the Class I groundwater standard for total iron and total sulfate.
- Sample results indicated that total iron exceeded the Class I groundwater standard in monitoring wells G-103, G-104, G-107, G-108, and G-109; total sulfate exceeded the Class I groundwater standard in monitoring wells G-103, G-104, G-106, and G-107; total lead exceeded the Class I groundwater standard in monitoring well G-107; and that dissolved sulfate exceeded the Class I groundwater standard in monitoring well G-103 and G-104.

### 1.2.6 2001 to 2005—Remedial Investigation

Between 2001 and 2005, ENVIRON conducted an RI and RI addendum (including an HHRA and screening level ecological risk assessment [SLERA]) of the site for T. L. Diamond & Company, Inc. The RI and RI addendum were

conducted to investigate the site's physical characteristics, identify sources of contamination, determine nature and extent of contamination at the site, and evaluate potential risks to human health and the environment. Field investigation activities included the advancement of soil borings, installation of monitoring wells, and the collection of residue from onsite residue stockpiles, onsite and offsite surface and subsurface soil, surface water, sediment, and groundwater samples. The samples were analyzed for one or more of the following: VOCs, semivolatile compounds, polychlorinated biphenyls, total and dissolved inorganic constituents, toxic characteristic leaching procedure (TCLP), and/or synthetic precipitation leaching procedure (SPLP). In addition, air modeling and soil deposition calculations were conducted for potential airborne emissions from the residue stockpiles. The RI and RI addendum were completed in 2005.

#### 1.2.6.1 Remedial Investigation

Comparison of the RI data to conservative screening criteria resulted in the identification of potential chemicals of concern (PCOCs) and potential areas of concern (PAOCs) for residue, soil, surface water, sediment, and groundwater. Specifically, three residue stockpiles or groupings of stockpiles were identified as PAOCs based on the occurrence of TCLP lead at concentrations above the RCRA hazardous waste threshold. Soil PAOCs were identified as isolated onsite areas where arsenic, cadmium, and zinc were observed above applicable screening criteria. Sediment PAOCs were identified in limited portions of the Eastern Drainageway and Western Drainageways where metal concentrations (arsenic, antimony, cadmium, lead, and zinc) and the VOC vinyl chloride were observed above applicable screening criteria. Surface water PAOCs were identified as portions of the Eastern and Western Drainageways where cadmium, iron, zinc, sulfate, and VOCs cis-1,2-dichlorethene and trichloroethene were observed above applicable screening criteria. The groundwater PAOC was identified as the limited portion of the southwestern area of the site and a small adjacent offsite area where select metals and sulfate were observed above applicable screening criteria.

A Tier 1 HHRA was conducted for the PCOCs identified during the RI. The results of the assessment indicated that cumulative Tier 1 hazard indices (HI) were below the target HI of 1, indicating little, if any, potential for adverse noncancer health effects associated with the site, with the exception of lead in sediments. Because of a limited area of affected sediment (only two samples exceeded the screening level) and the comparison to residential screening levels (which are based on daily contact with soil rather than occasional contact with sediment), the Tier 1 HHRA concluded that the elevated lead concentrations in sediment at two locations cannot be interpreted as indicating risk but may warrant further evaluation.

Tier 1 cancer risks greater than the target level of $10^{-6}$ were identified for the onsite commercial/industrial workers, due entirely to potential exposure to arsenic in surface soil, and for the offsite resident due to potential exposure to trichloroethylene in potable water from Lake Hillsboro. The representative concentration of arsenic was below the Illinois background level and arsenic was not used as a raw material and was not a product of site operations. The detection-level value used as the representative concentration of trichloroethylene in Lake Hillsboro was obtained from a sampling location close to the site, and as such does not represent conditions in Lake Hillsboro. Further, the water is seldom used for potable purposes and surface water samples collected from the reservoir by IEPA near the potable water intake in 2001 contained no constituent concentrations above federal maximum contaminant levels (MCLs). Thus, the slight exceedances of the lower bound of USEPA's target cancer risk range are not interpreted as suggestive of an unacceptable risk to human health.

A screening-level ecological risk assessment (SLERA) assessed the risks to wildlife that may be exposed to site-related constituents in the surface water, sediment, and soil at and near the site (but not direct exposure to the residue piles). The wildlife assessed in the SLERA were aquatic wildlife, fish-eating wildlife (piscivores), and terrestrial wildlife. The outcome of the SLERA was that no significant risk was predicted for some of the medium/wildlife combinations, while others needed further evaluation. Consistent with USEPA guidance, the medium/wildlife combinations that needed further evaluation were carried forward into the SLERA Addendum. The SLERA Addendum portion of the evaluation assessed the potential risks that were not "screened out" in the SLERA, but evaluated them in a less conservative but still protective manner. Unlike a standard baseline risk assessment, site specific data were not used in the SLERA Addendum. Hypothetical site data were constructed

using models and served as input to the SLERA Addendum. The conclusion of the SLERA Addendum was that there may be small, localized areas on- and offsite at which adverse impacts to some wildlife may occur. However, the locations are localized to small areas and often in areas with otherwise poor habitat. Therefore, the adverse impacts are likely negligible (if they are occurring at all). ENVIRON further concluded that less-than-adequate physical conditions (that is, poor habitat quality) at and in the vicinity of the site restrict ecological function associated with the site far more than potential exposures to site-related constituents. Improvements to the physical condition and habitat of the site could result in unacceptable ecological risks that require further evaluation.

#### 1.2.6.2 Remedial Investigation Addendum

A screening-level modeling effort was conducted to determine whether airborne emissions from the residue stockpiles could, under worst-case assumptions, result in unacceptable human exposure and risk. The results of the analysis concluded that under current conditions, the residue stockpiles pose no significant cancer risk or noncarcinogenic hazard to the receptor populations considered in the HHRA. Concerning potential ecological risks associated with the residue piles, ENVIRON concluded that the ecological risks were negligible and, therefore, there was no need for any further action on the basis of ecological risk. Furthermore, the SPLP data from the residue stockpiles indicated that the residue stockpiles did not represent a significant continuing source of metals to groundwater.

### 1.2.7 2008—XRF Sampling of Buildings and Confirmation Sampling

In May 2008, IEPA conducted an independent sampling event of the site to determine if there was any contamination within and adjacent to the site buildings. The sampling event was designed to expand upon the original RI sampling event conducted by ENVIRON in 2005. In addition to the sampling event, IEPA officials also evaluated the site's buildings and related structures to determine potential avenues for reuse, recycling, and/or demolition of the site's infrastructure.

Field investigation activities associated with the sampling event included the collection of 65 residue material samples for X-Ray fluorescence (XRF) analysis and 10 residue material samples for laboratory analysis. The XRF samples were collected from multiple locations on the eastern one-third of the site and analyzed for total inorganic constituents. In addition to the XRF analysis of the waste materials, 10 additional waste material samples were collected for total inorganic constituents and TCLP analysis.

The following conclusions were made for the waste material and site building based on IEPA's analysis of laboratory data and field observations noted during the sampling event:

- XRF analysis and laboratory analysis indicated that several residue material samples contain total lead and other inorganic constituents that exceed regulatory limits.
- A strong correlation between XRF analysis and laboratory analysis for lead did not exist because extremely high zinc concentrations in several samples masked actual lead concentration levels. Laboratory results determined that total lead concentrations were two to five times greater than the concentrations identified using XRF analysis.
- Nine of 10 TCLP residue samples exceeded the TCLP limit for lead, indicating that the waste material would be categorized as hazardous waste once excavated.
- A potential risk exists for humans (trespassers or workers) who might come into contact with the waste materials.
- A significant number of the site's buildings are over 100 years old and are at various stages of disrepair. The structures therefore pose a structural risk.

### 1.2.8 2010—Hazardous Materials Survey

A hazardous materials survey was completed by Environmental Design International in August 2010, under subcontract to CH2M HILL, in support of the remedial design and demolition plan for OU1 (Environmental Design International 2010). The survey included inspections and sampling to identify asbestos-containing material, lead-based paint, and residue remaining within building structures in order to determine building components that may need to be handled as hazardous waste. Building components were found to contain asbestos-containing material in concrete and brick, wood doors and frames, and plaster surfaces and various metal and productions components. Residual product and brick throughout the buildings was found to contain lead and cadmium levels above the TCLP limit. Asbestos-containing material was identified in roofing material, window and door caulks and glazings, pipe insulations, floor tiles, mastics, and transite.

## 1.3 Supplemental Remedial Investigation Objective

The SRI was completed in accordance with USEPA- and IEPA-approved site-specific plans (CH2M HILL 2010). The primary goal of the SRI was to obtain data necessary to fill in the following data gaps:

- Evaluate the level of constituents of concern in groundwater screened beneath the residue
- Evaluate the leachability of the residue that exists between the residue piles
- Evaluate the levels of metals seen in residue between the residue piles
- Evaluate the presence of constituents of concern in soil beneath the residue
- Update the HHRA
- Conduct an ecological risk screening evaluation based on the latest ecological screening levels

Only a limited amount of detailed data necessary to address the data gaps and uncertainties identified in the conceptual site model was collected during the SRI. To limit the amount of data collected during the supplemental investigation, CH2M HILL developed a target analyte list (TAL) for sample analysis. The TAL was developed using data collected from previous investigations and consisted of the site-specific metals—arsenic, cadmium, copper, lead, manganese, and zinc (CH2M HILL 2010).

## 1.4 Report Overview

Section 2 of this report provides a detailed description of the data collection activities conducted during the SRI. It includes the following: a breakdown of the data quality objectives (DQOs); an explanation of presampling activities; a description of field activities and field procedures followed during the collection of residue, soil, surface water, sediment, and groundwater samples; survey information; a summary of management of investigative-derived waste (IDW); and a description of data validation activities. Section 3 discusses the physical characteristics of the site and the surrounding investigation area using site-specific and regional data. It includes a brief description of the topography and surface water features, soils, geology, hydrogeology, meteorology, demography and land use, and ecological conditions associated with the site and surrounding investigation area. Section 4 discusses the nature and extent of contaminants based on the results obtained from the data collected during field investigation activities associated with the SRI. It identifies the contaminants and discusses the distribution of the contaminants in the vicinity of the site. Section 5 discusses the contaminant's fate and their ability to be transported between environmental media. It identifies the physical and chemical nature of the contaminants, the fate and transport of contaminants, potential migration routes that contaminant may take, and potential contaminant exposure pathways. Section 6 presents the revised HHRA. Section 7 presents the updated ecological risk screening evaluation. Section 8 provides a summary of the report and the conclusions of the SRI. Section 9 list the references cited in this report.

SECTION 2

# Data Acquisition

Section 2 describes the objectives and procedures for the SRI field investigation activities. It also reviews the SRI's DQOs, identifies pre-investigation activities, describes the field investigation activities performed at the site, summarizes the management of the IDW, and reviews data validation activities.

## 2.1 Data Quality Objectives

The DQOs helped ensure that data collected during the field investigation were of sufficient and adequate quality for their intended use. The DQOs were developed by CH2M HILL using USEPA's seven-step process. The DQOs created for the field investigation activities are summarized below. For a complete breakdown of the development of the DQOs please refer to the site-specific plans for the site (CH2M HILL 2010).

The goal of the SRI was to supplement the data collected from previous investigations to further characterize the nature and extent of site contamination and to support an informed risk management decision regarding remedial action for the site. To successfully complete the goals, the following DQOs were identified:

- Determine if site-specific metals are present in groundwater beneath the residue.
- Determine if groundwater flowing offsite is contaminated with site-specific metals.
- Determine the extent of residue across the site.
- Evaluate the nature and extent of site-related metals in residue in between the residue piles to determine the leaching potential of the residue.
- Further evaluate nature and extent of surface and subsurface soil contamination both on- and offsite.
- Verify current levels of site-specific metals in sediment and surface water contamination both on- and offsite.

## 2.2 Pre-investigation Activities

Pre-investigation activities were performed between August and October 2010 in preparation of the sampling activities associated with the SRI. The pre-investigation activities included the following:

- Identifying previous sample locations and evaluating constituent concentrations in excess of respective screening levels to gain historical perspective and determine new sampling locations.
- Preparing and mailing access agreements to property owners to permit CH2M HILL as USEPA's representatives onto private properties to collect media samples and to install new site monitoring wells.
- Coordinating site access with property owners by obtaining a signed access agreement and to inform the owner and resident of the upcoming field sampling event.
- Marking sample locations and proposed monitoring well locations for utility clearance.
- Coordinating utility clearance using a third-party subcontractor, Blood Hound, Inc.

## 2.3 Field Investigation Activities

Section 2.3 describes the field investigation activities associated with residue, surface soil, subsurface soil, sediment, surface water, and groundwater sampling at onsite and offsite locations. Samples, depending upon requested analysis, were submitted to a USEPA Contract Laboratory Program (CLP) or a USEPA-approved non-CLP laboratory for laboratory analysis. Non-CLP analyses were submitted to CT Laboratories (of Baraboo, Wisconsin).

CT Laboratories was contracted for TCLP/SPLP analysis of site-specific metals (arsenic, cadmium, copper, lead, manganese, and zinc), pH, and 250-micron sieve test for lead.

CLP laboratories performed routine analyses under the CLP SOW. The CLP laboratories used were Shealy (total and dissolved metals for groundwater) and TestAmerica (formerly Severn Trent) for metals analysis of groundwater, sediment, soil, and surface water.

### 2.3.1 Residue Sampling

Thirty-two residue samples (RS-01 through RS-32) were collected in November 2010 from the central and southwestern portions of the site during the SRI (Figure 2-1). Sample location RS-32 was sampled after two of the proposed surface soil samples (SS-12 and SS-13) were not able to be collected due to the presence of residue at the surface. Residue samples were collected to evaluate the potential for metals in the residue to leach into the groundwater and to evaluate metal concentrations in residue in support of the risk assessments (Table 2-1). Residue samples were collected using a direct-push technology drill rig in accordance with Standard Operating Procedures (SOPs) No. 03 and No. 09 presented in the site-specific plans (CH2M HILL 2010).

Nineteen of the residue samples (RS-01, RS-03, RS-05, RS-08, RS-09, RS-11 through RS-14, RS-17 through RS-19, RS-15, and RS-27 through RS-32) were taken from a depth of 0 to 1 foot below ground surface (bgs) and submitted for pH analysis. Due to variations in residue thickness across the site, 13 residue samples (RS-02, RS-04, RS-06, RS-07, RS-10, RS-15, RS-16, RS-20 through RS-24, and RS-26) were collected from 0 to a depth of less than 1 foot bgs. Based on results of the pH analysis (all values greater than 5), residue samples were planned to be analyzed for SPLP; however, due to a miscommunication with the laboratory, residue samples were not analyzed for SPLP within the proper holding time. In order to complete the objective, 32 residue samples were recollected from the same locations (offset approximately 1 foot) and submitted for SPLP analysis in August 2011. Per the site-specific plans, 10 of the original residue samples (RS-01, RS-02, RS-04, RS09, RS-12, RS-16, RS-22, RS-25, RS-29, and RS-30) were submitted for TAL site-specific metals analysis (Table 2-2).

### 2.3.2 Surface Soil Sampling

A total of 11 onsite and offsite surface soil samples were collected during the SRI. Eight onsite surface soil samples (SS-04 through SS-11) were collected to further delineate the northeast portion of the site (Table 2-1; Figure 2-1). Two of the surface soil sample locations (SS-12 and SS-13) proposed in the site-specific plans were not collected due to the presence of residue at the surface. Three offsite surface soil samples (SS-01 through SS-03) were collected from along the offsite drainage ditch near the northwest corner of the site to evaluate the potential for site-specific metals to be present in soil northwest of the site and to assess potential risks to human and ecological receptors (Table 2-1; Figure 2-1). Surface soil samples were collected from a depth of 0 to 2 foot bgs using a stainless-steel hand auger in accordance with SOP No. 09 in the site-specific plans (CH2M HILL 2010) and were submitted for TAL metals analysis and sieve analysis for lead.

### 2.3.3 Subsurface Soil Sampling

Subsurface soil samples were collected from a total of 32 onsite and 9 offsite locations during the SRI. Subsurface soil samples were collected from 32 onsite locations (RS-01 through RS-12 and RS-14 through RS-32) colocated with the aforementioned residue sample locations. Subsurface soil samples were not collected from RS-13 due to the presence of an impermeable object beneath the residue. Subsurface soil samples were taken from a depth of 1 to 2 feet below the residue and native soil interface to characterize subsurface geochemistry and identify potential contamination (Table 2-1).

Subsurface soil samples were collected from three offsite locations (SB-07 through SB-09) located in the triangular property across from Industrial Park Drive and from six offsite locations (SB-01 through SB-06) near the County Housing's common area adjacent to the northwest corner of the site. Subsurface soil samples from offsite locations were collected to evaluate if the offsite locations have been impacted by site operations, delineate the extent of contamination, if any, in the triangular property across from Industrial Park Drive and the northwest portion of the

site, respectively, and to assess potential risks to human receptors (Table 2-1; Figure 2-1). Samples were taken from depths of 0 to 2, 3 to 5, and 7 to 9 feet bgs (for the purpose of risk assessment characterization the subsurface soil samples collected from a depth of 0 to 2 feet bgs were considered surface soil samples for this report).

Subsurface soil samples were collected using a direct-push technology drill rig in accordance with SOP No. 03 (CH2M HILL 2010) and were submitted for TAL metals analysis and sieve analysis for lead. In addition, subsurface samples from three locations (RS-03, RS-08, and RS-32) were submitted for TCLP metals analysis (Table 2-2).

Soil borings were logged in accordance with SOP No. 04 (CH2M HILL 2010). The soil boring logs describe the means and methods of drilling, identify waste material (if present), identify subsurface soil sample collection depths, and provide a detailed description of the lithology of the borehole (Appendix A).

### 2.3.4 Surface Water Sampling

Twenty-one surface water samples (SD-WD-06 through SD-WD-10, SD-ED-16 through SD-ED-18, SD-ED-24 through SD-ED-30, SD-ED-13, SD-WD-20, and SD-WD-21) were collected during the SRI (Figure 2-2). Surface water sample locations, colocated with historical surface water sampling locations, were collected from onsite and offsite drainage ditches, ephemeral and perennial streams, and ponds to assess potential effects site contamination would have on human and ecological receptors and to determine if current conditions in the ponds and waterways differed from those describe in previous investigation reports (Table 2-1). Surface water samples were collected using a peristaltic pump and plastic tubing in accordance with SOP No. 11 (CH2M HILL 2010). Samples were collected from a depth of 0.25 to 0.5 foot below the water surface for total (unfiltered) and dissolved (filtered) TAL metals analysis (Table 2-2). Surface water samples analyzed for dissolved TAL metals were filtered using a peristaltic pump and plastic tubing with a 0.45-micron filter cartridge. Water quality parameters (pH, temperature, turbidity, dissolved oxygen, and specific conductivity) were also recorded at the time of sample collection (Appendix B).

Depending upon the analysis requested, surface water samples were submitted to a USEPA CLP laboratory or a USEPA-approved non-CLP laboratory for laboratory analysis.

### 2.3.5 Sediment Sampling

Seventeen sediment samples (SD-WD-06 through SD-WD-10, SD-ED-16 through SD-ED-18, SD-ED-24 through SD-ED-30, SD-ED-13, SD-WD-20, and SD-WD-21) were collected during the SRI. Sediment samples were not collected from four proposed locations (SD-WD-18, SD-WD-19, SD-WD-22, and SD-WD23) due to the presence of residue, at least 1 foot thick, beneath the water surface. Sediment samples were collected using either a stainless-steel hand auger or a Ponar sampler in accordance with SOP No. 11 (CH2M HILL 2010). Samples were collected from a depth of 0 to 0.5 foot bgs TAL metals, total organic carbon, acid volatile sulfides/simultaneously extracted metals, and grain size analysis (Table 2-2).

### 2.3.6 Monitoring Well Installation

A total of 10 new monitoring wells were installed during the field investigation (Figure 2-3). Monitoring wells were installed by the drilling subcontractor, Boart Longyear, using a mini-sonic drill rig, and all wells were constructed of 2-inch-inside-diameter polyvinyl chloride. With one exception, all of the newly installed monitoring wells were installed at their proposed monitoring well locations. One monitoring well was not installed at its proposed location because access to the property was not granted by the property owner. Because access to the proposed monitoring well location was denied by the property owner, an additional monitoring well was installed during field investigation activities along the northern boundary of the site.

The new monitoring wells were installed to assess the aquifer properties in the vicinity of the newly installed monitoring wells to evaluate groundwater flow velocities in deeper sections of the aquifer, and/or to further delineate the lateral and vertical extent of groundwater contamination. The monitoring well screen depths were selected based on lithology of the borehole and the DQOs identified for each monitoring well location. The new

monitoring wells were installed using a Rotosonic (Sonic) drill rig in accordance with SOP No. 05 (CH2M HILL 2010) and applicable state regulations. Well installation materials and quantity of materials used to the constructed each new site monitoring well were recorded (Table 2-3) and a well construction diagram was completed for each new site monitoring well (Appendix A).

Soil borings were logged in accordance with SOP No. 04 (CH2M HILL 2010) for each of the borings completed in support of monitoring well installations. The soil boring logs provide a description of the means and methods of drilling, identify the presence of waste material (if present), and provide a detailed description of the lithology of the borehole (Appendix A).

### 2.3.7 Well Abandonment

One existing monitoring well, MW-3, was abandoned during field investigation activities, and was abandoned in accordance with SOP No. 17 and applicable state regulations. The monitoring well was abandoned during field investigation activities because the monitoring well had gone dry and was no longer useful for its intended purpose. The type and quantity of well abandonment materials used to abandon the monitoring well were recorded and a well abandonment diagram was completed for the monitoring well (Appendix A).

### 2.3.8 Well Development

Twenty-four existing monitoring wells were redeveloped and 10 newly installed monitoring wells were developed during field investigation activities. The monitoring wells were developed so that the groundwater samples collected during the groundwater sampling event would yield quantitative and qualitative analytical results that would properly characterize current groundwater conditions.

When possible, the existing and newly installed monitoring wells were developed in accordance with SOP No. 06. Deviations from the well development SOP occurred when monitoring wells exhibited extremely slow recharge. A total of 19 monitoring wells was developed outside of well development SOP guidelines. Monitoring wells that exhibited extremely slow recharge were purged dry three times and considered developed. Water quality parameters (pH, temperature, turbidity, oxidation reduction potential, dissolved oxygen, and specific conductivity) were recorded during well development (Appendix C).

### 2.3.9 Groundwater Sampling

A total of 34 groundwater samples were collected by CH2M HILL and supporting staff during the SRI. The groundwater samples were submitted to a CLP laboratory for analysis.

Existing and newly installed monitoring wells were sampled during field investigation activities. The monitoring wells were sampled to delineate the vertical and lateral extent of groundwater contamination and to evaluate the concentrations of site-specific metals in groundwater in support of the risk assessments (Table 2-1).

When possible, the pre-existing and newly installed monitoring wells were sampled in accordance with SOP No. 08. Deviations from the groundwater sampling SOP occurred when monitoring wells exhibited extremely slow recharge. A total of 16 monitoring wells were sampled outside of groundwater sampling SOP guidelines. Standard groundwater sampling guidelines requires that the water level within a monitoring well stabilize before sampling in order to ensure that fresh and not stagnant groundwater is sampled from the well. A groundwater sample collected from stagnant well water could produce analytical results that are not representative of actual conditions, collecting a groundwater sample from water that has just entered the well screen ensures that the groundwater sample is representative of actual conditions. Monitoring wells that exhibited extremely slow recharge were purged dry, and samples were collected within 24 hours when water in the well had returned to static level. To ensure that groundwater samples taken from the slowly recharging monitoring wells were not turbid, additional time and care was taken when inserting sampling equipment into the monitoring wells. This scenario is identified in the groundwater sampling SOP and requires project manager and senior technical

consultant approval prior to implementation, and therefore, approval was obtained during the field investigation to use this alternative sampling procedure.

Once groundwater quality parameters in a monitoring well had stabilized or the monitoring well had been purged dry, groundwater samples were collected from each monitoring well and submitted for total (unfiltered) and dissolved (filtered) TAL site-specific metals analysis. The groundwater samples analyzed for dissolved metals were filtered using a peristaltic or down-hole submersible pump and plastic tubing with a 0.45-micron filter cartridge. Water quality parameters (pH, temperature, turbidity, dissolved oxygen, specific conductivity, and oxidation reduction potential) were also recorded at the time of sample collection (Appendix B).

## 2.3.10 Groundwater Measurements

Prior to the initiation of field investigation activities, water levels were collected from pre-existing monitoring wells. The groundwater levels were obtained in accordance with SOP No. 07. The water levels were recorded in order to ascertain the local groundwater flow direction. Groundwater levels were also collected from pre-existing and newly installed site monitoring wells at the conclusion of field investigation activities (Table 2-4).

## 2.3.11 Aquifer Test

An aquifer test (slug test) was conducted on newly installed monitoring wells. The slug tests were performed in order to determine the hydraulic conductivity of the geologic formation in the vicinity of the monitoring well. The newly installed monitoring wells were tested in accordance with SOP No. 16 (CH2M HILL 2010), with the exception of the use of an electronic data logger. Due to technical difficulties with the electronic data logger and/or extremely slow recharge, groundwater-level measurements were manually collected during the slug tests (Appendix D). Data collected from the tests were later analyzed using computer software (AqteSolv) to produce estimated hydraulic conductivity values for each new site monitoring well (Table 2-5).

## 2.3.12 Quality Control Measures

### 2.3.12.1 Sample Collection

To ensure that media samples collected during the field investigation produced quantitative and qualitative analytical results, CH2M HILL collected all media samples in accordance with the site-specific plans and SOPs identified in the site-specific plans (CH2M HILL 2010). CH2M HILL deviated from the established SOPs, only when site-specific conditions would not allow for standard sample collection. When site-specific conditions were encountered and standard sample collection was not possible, field personnel consulted with the project manager and senior technical consultant to determine the most appropriate and applicable method to collect the sample. Deviations from the SOP were noted on the field sample collection sheet and in the field logbooks (Appendix E).

### 2.3.12.2 Quality Control Sample Collection

CH2M HILL also collected quality assurance/quality control samples for all media samples identified in Worksheet No. 20 of the site-specific plans. Quality assurance/quality control samples collected during the field investigation included field duplicates, matrix spikes (MSs) and matrix spike duplicates (MSDs), and equipment rinsate blanks. Field duplicate samples were collected at a rate of 1 for every 10 native samples, MS/MSD samples were collected at a rate of 1 for every 20 native samples, and equipment rinsate blanks samples were collected per media sampling event (Table 2-6).

### 2.3.12.3 Sample Analysis

CH2M HILL submitted surface and subsurface soil, sediment, surface water, and groundwater samples to Shealy Environmental and TestAmerica. CLP protocols were used to ship and document the samples, and FORMS II Lite software was used to create sample labels and traffic reports. Surface and subsurface soil and sediment samples

were analyzed for TAL site-specific metals, and surface water and groundwater samples were analyzed for total (unfiltered) and dissolved (filtered) TAL site-specific metals in accordance with analytical methods identified in Table 2-7.

CH2M HILL also submitted surface and subsurface soil, sediment, and residue samples to CT Laboratories, a USEPA-approved non-CLP analysis laboratory. Although the samples were not processed at a CLP laboratory, standard CLP protocols were used to ship the aforementioned media samples to CT laboratories. Surface and subsurface soil samples were analyzed for TCLP and sieve analysis for lead; sediment samples were analyzed for total organic carbon, acid volatile sulfides/simultaneously extracted metals, and grain size analysis; and residue samples were analyzed for TAL site-specific metals, pH, and SPLP in accordance with the analytical methods identified in Table 2-7.

#### 2.3.12.4 Sample Location Coordinates

After sample collection, CH2M HILL recorded the sample collection position using field-portable global positioning system equipment. The Universal Transverse Mercator coordinates were measured from the center point of each sample collection location and recorded in the field log books (Table 2-8).

#### 2.3.12.5 Sample Documentation

A field sample collection sheet or soil boring log sheet with sample collection data was completed in the field log book for all residue, surface soil, subsurface soil, sediment, surface water, and groundwater sampling locations. Information recorded on the field sample collection sheets and soil boring log sheets included: name of samplers, date and time, sample location, sample identification number, media sampled, equipment used, analysis requested, collection method, and media-specific information (that is, water quality parameters for water samples, description of lithology for soil samples). Field sample collection sheets and soil boring log sheets completed during the field investigation are provided in Appendixes A and B.

## 2.4 Post-sampling Activities

Section 2.4 summarizes the post-sampling activities.

### 2.4.1 Survey

Surveying activities were performed as part of the field investigation activities to establish the horizontal and vertical locations for the newly installed monitoring wells. Surveying activities, methods, and procedures were documented in the surveying report included as Appendix E. Horizontal control was referenced to the Illinois State Plan Coordinate System, North American Datum of 1983, with an accuracy of 0.1 foot. Vertical control was referenced to the North American Vertical Datum of 1988, with an accuracy of 0.01 foot. The Universal Transverse Mercator coordinates and elevations for each new site monitoring well are provided in Table 2-8.

### 2.4.2 Investigation-derived Waste

During the field investigation, CH2M HILL generated both solid and aqueous IDW and miscellaneous trash. Management of the IDW was performed in a manner consistent with the *Guide to Management of Investigation—Derived Wastes, 9345.3-03FS,* dated January 1992.

Excavated soil generated from soil borings and monitoring well installations was placed into 13 Department of Transportation approved, steel 55-gallon drums and situated on pallets in the designated staging area. Water generated from decontaminating sampling equipment, well development, and groundwater sampling was placed into four Department of Transportation approved, steel 55-gallon drums and a 2,500-gallon poly storage tank.

To characterize the waste, one composite soil sample was collected from the 13 IDW drums, and 1 composite water sample was collected from the 4 IDW drums and poly tank. The two composite IDW samples were then

submitted to CT laboratory, a USEPA-approved analytical laboratory, for characterization. Waste profiles relating to IDW generated during the field investigation are provided in Appendix F.

Analytical results from the laboratory indicated that the composite IDW samples did not contain any constituents above the RCRA hazardous waste limits. The IDW, both soil and water, was later removed from the site and properly disposed in accordance with applicable federal and state regulations.

Disposable sampling equipment, personal protective equipment, and miscellaneous trash were disposed of in solid waste containers at the conclusion field investigation activities.

### 2.4.3 Data Validation Activities

All media samples collected by CH2M HILL during field investigation activities were analyzed by a USEPA CLP laboratory or USEPA-approved non-CLP laboratory. The environmental services assistance team, an independent contractor overseen by USEPA, validated the laboratory data generated by the CLP laboratories, and CH2M HILL validated laboratory data generated by CT laboratories. The analytical data was validated in accordance with the review criteria and limits presented in *USEPA's National Functional Guidelines for Inorganic Data Review* to confirm that data quality achieved the project's DQOs and that invalid data was not used for project decisions. Both the laboratory analytical data and the data quality evaluation report are provided in Appendix G.

Environmental services assistance team data validation qualifiers were applied during the data validation process and are described as follows:

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J+ The result is an estimated quantity, but the result may be biased high.

J- The result is an estimated quantity, but the result may be biased low.

R The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UJ The analyte was analyzed for but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Overall, the goal of the evaluation is to demonstrate that a sufficient number of representative samples were collected and that the resulting analytical data can be used to support the decision making process for the site. The following summary highlights the precision, accuracy, representativeness, comparability, completeness findings for the sampling event:

- Precision was generally acceptable with the exception of a few analytes/compounds that were qualified as estimated due to field duplicate, laboratory duplicate, serial dilution, and/or MS/MSD relative percent difference issues. Data users should consider the impact to any result that is qualified as it may contain a bias that could affect the decision making process.
- Accuracy was generally acceptable with the exception of a few analytes/compounds that were estimated because of calibration, interference check samples, MS/MSD, post-digestion spike, and/or surrogate issues. In addition, lead was rejected for project use in several samples due to a low MS and/or MSD recovery. Negative results whose absolute value was greater than the reporting limit were also rejected for project use in several samples. Several analytes/compounds were detected in method blanks, equipment blanks, instrument calibration blanks, and/or continuing calibration blank resulting in data being qualified.
- Representativeness of the data was verified through the sample collection, storage, and preservation procedures and the verification of holding-time compliance. The temperature criterion was exceeded for numerous samples associated with the USEPA-validated data. No samples were qualified by the validator for this

deficiency. The laboratory did not note any problems with the samples' collection, storage, and preservation procedures. All other data were reported from analyses within the USEPA-recommended holding time.

- Comparability of the data was verified using standard analytical procedures and standard units for reporting. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.
- Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. The completeness goal of 90 percent was met for all method/analyte combinations.

SECTION 3

# Physical Characteristics of the Study Area

Section 3 describes the physical characteristics of the site and the surrounding area and includes discussions on the topography, meteorology, surface water hydrology, soils, geology, hydrogeology, demographics and land use, and ecology.

## 3.1 Topography

The site and surrounding area consist of moderately gentle rolling hills and valleys that are predominantly covered by native grasses and northern timber. The topography of the site is fairly variable across the site with an elevation range between 595 and 640 feet above mean sea level (amsl) (Figure 3-1). The highest ground elevation point is in the northwest corner of the site, and the lowest ground elevation point is in the southwest corner. Ground elevation within the site is predominately dependent upon the thickness of the residue material at the surface. Residue thickness varies from 0 to 28 feet within the site. Residue covers a significant portion of the site's surface (Figures 3-2 through 3-5). The topography of the surrounding area is also fairly variable, with ground elevations that range between 560 to 640 feet amsl within a 1-mile radius of the site.

### 3.1.1 Residue Thickness

The onsite area is broken up into four areas for the purpose of evaluation of residue thickness across the site (Figures 3-2 through 3-5). Based on boring logs, residue thickness in the southwestern area of the site (designated as Area 1) varies from 0 to 28 feet with an average of 6.5 feet (Figure 3-2). Residue thickness in the central southernmost portion of the site (designated as Area 2) varies from 0 to 6 feet with an average of 1.6 feet (Figure 3-3). Residue thickness in the central portion of the site (designated as Area 3) varies from 0 to 9 feet with an average of 2.2 feet (Figure 3-4). Residue thickness in the area immediately north of the central portion of the site (designated as Area 4) varies from 0 to 6 feet, with an average of 1.5 feet (Figure 3-5).

## 3.2 Meteorology

Located in south-central Illinois, Hillsboro primarily has a continental climate with pronounced daily and seasonal temperature changes. Summers are relatively warm and moderately humid, with average high temperatures in July and August just below 90 degrees Fahrenheit (°F) and average low temperatures slightly above 60°F during these months. Winters are relatively short and generally cool to cold, with January typically being the coldest month of the year. The average high temperature in January is 36.8°F, and the average low temperature is 19.1°F. The average growing season for the region is 185 days. The last frost before spring usually occurs in mid to late April, and the first frost in fall usually occurs in late September or early October. The prevailing winds are generally from the south but also from the west and northwest direction. The highest average wind speed is around 12 miles per hour between the months of February and March. The lowest average wind speed is around 8 miles per hour between the months of July and August (U.S. Department of Agriculture [USDA] and Natural Resources Conservation Service [NRCS] 2011).

Severe spring storms with strong winds, hail, thunder, and lightning storms occur between the months of April and June, and treacherous winter ice and snow storms develop between the months of November and March. Since 1971, the average annual rainfall for the area has remained relatively constant at 40.21 inches. May is typically the wettest month of the year, with average monthly rainfall of 4.31 inches. Snowfall is moderately frequent for the area, with an average of approximately 19.1 per year. Snowfall primarily occurs between the months of December and March. January has the highest monthly average snowfall of 6.3 inches (USDA and NRCS 2011).

## 3.3 Surface Water Hydrology

Surface water features within the site and within the immediate vicinity of the site consist of one intermittent drainage ditch, two ephemeral streams, two stormwater retention ponds, and two surface water ponds (Figure 1-2). Surface water runoff appears to feed all of the aforementioned surface water features with the exception of the southeastern surface water pond.

The intermittent drainage ditch flows east to west along the site's southern property line. The drainage ditch is approximately 1 to 2 feet wide and fills up with a couple of inches of runoff water only after moderate to heavy rainfall events. The drainage ditch eventually feeds into the City of Hillsboro's gravity-feed State Highway 16 drainage ditch near the southwest corner of the site. The drainage ditch loops around the southern embankment of the surface water pond in the southwest corner of the site and drains into the westward flowing ephemeral stream.

The branches of the westward flowing ephemeral stream originate in the center of the site. Surface water runoff from the surrounding area collects in several drainage swales and flows either south, west, or southwest, depending upon the branch, before converging into one branch and discharging into the manmade southwestern surface water pond. The main branch of the ephemeral stream is at times between 4 to 8 feet wide and can quickly fill up with a couple feet of runoff water during rainfall events. Heavy rainfall events frequently cause surface water to flow over the western bank of the pond at NPDES Outfall 001 and discharges into an unnamed tributary of the Middle Fork Shoal Creek. Middle Fork Shoal Creek eventually flows into Shoal Creek approximately 6 miles southwest of the site.

The branches of the northeastward flowing ephemeral stream originate near the site's eastern property line. Surface water runoff from the surrounding area collects in several drainage swales and flows either north, south, or southeast, depending upon the branch, before converging into one branch along the site's eastern property line. The main branch of the ephemeral stream is at times between 2 to 4 feet wide onsite and can quickly fill up with a couple feet of runoff water during rainfall event. The ephemeral stream eventually turns east and flow offsite underneath Industrial Park Drive before turning again to the northeast and discharging into Lake Hillsboro.

The two manmade stormwater retention ponds are located near the site's eastern boundary line along Industrial Park Drive. The manmade stormwater retention ponds were installed in response to the NPDES permit that was issued and dated June 20, 2000 (IEPA , Bureau of Water 2004 and 2007). Stormwater collects in the retention ponds only after moderate to heavy rainfall events. Only after prolonged periods of heavy rainfall events will surface water flow over the bank of the northern retention pond at NPDES Outfall 002 and discharges into the northeastward flowing ephemeral stream (Figure 1-2).

The southeastern surface water pond is located between two railroad spurs near the site's southern boundary line. The surface water pond appears to receive no surface water runoff and has no inlet or outlet.

## 3.4 Soils

Montgomery County is a part of the Till Plains section of the Central Lowland Province of the Interior Plains Physiographic Region. The Till Plains section of the Central Lowland Province is covered by a mixture of glacial till and glacial outwash deposits that were deposited during the Pleistocene glaciation. Montgomery County is principally covered by glacial till and outwash deposits that were deposited during the Illinoian glacial stage, 130,000 to 300,000 years ago, and wind-blown loess material that was deposited between 4,000 to 60,000 years ago (USDA and NRCS 2011).

Native soils present at the site consist of silt loam and clay loam from the Blair, Atlas, Hickory, Bunkum, Marine, and Cowden soil series. Soils that form the soil series originate from the aforementioned wind-blown loess deposits. Soils in the soil series are typically light brown, dark brown, or gray in color, very deep, somewhat poorly drained, slightly permeable, and found on slopes that range from 0 to 20 percent depending upon the soil series (USDA and NRCS 2011). Soil boring logs indicated that the native soils present across the site are composed of 5- to 10-foot-thick silts and clay units that are either light orange, light to medium brown, or light to dark gray in color, firm to stiff, predominantly dry at depth, and found on relatively flat ground (Appendix A).

## 3.5 Geology

Thickness of the unconsolidated overburden underneath the site has not been determined; however, the thickness of glacial till in Montgomery County has been determined to range between 50 to 100 feet thick. The physical characteristics of the glacial till present beneath the site are consistent with the Vandalia Member of the Glasford Formation. The Vandalia Member is composed of relatively sandy, compact glacial till that is gray in color where unoxidized and contains numerous lenticular beds of silt, sand, and gravel. The Vandalia Till averages 43 percent sand, 38 percent silt, and 19 percent clay (Illinois State Geologic Survey 1969). Analysis of the soil boring logs associated with the newly installed deeper monitoring well indicate the presence of the Vandalia Till at depths ranging from 5 feet bgs to about 22 feet bgs. The compact glacial till is gray or grayish-brown in color, dense, relatively impermeable, and composed of an erratic assortment of clay, silt, sand, and gravel lenses (Appendix A).

Lithologic descriptions were taken from soil boring logs from the SRI investigation and used to construct a geologic cross section to determine if any geologic trends were present. Figure 3-6 identifies the geologic cross section line A-A' (Figure 3-7). Analysis of the soil boring logs and the geologic cross section indicates that the loess deposits are primarily composed of a mixture of silt and clay that ranges in thickness between 0 to 20 feet. The geologic cross section indicates that the loess deposits cover the entire site, with the exception of the southwest corner. The geologic cross section indicates that below the loess deposit lies relatively compact glacial till composed of varying percentages of clay, silt, sand, and gravel. Thin, isolated loose sand lenses were encountered at depths as shallow as 12 feet bgs and as deep as 28 feet bgs, ranging in thickness up to 3 feet. Sand lenses in glacial till are typically not continuous, and there is no evidence that the sandy layers within the till extend across more than one or two monitoring well locations.

The base glacial till is undefined, due to the fact that no soil borings have been advanced to the depths necessary to define its total thickness.

Beneath the loess and glacial till resides native bedrock composed of Pennsylvanian-age Bond Formation. The unit ranges between 100 and 300 feet in thickness and is primary composed of limestone with some beds of shale and sandstone (Illinois State Geologic Survey 2011).

## 3.6 Hydrogeology

Groundwater flows predominantly in water-bearing sand and gravel lenses within the unconsolidated overburden. Depth to groundwater across the investigation area is relatively shallow, typically between 2 to 6 feet bgs (Table 2-4). Analysis of groundwater levels taken from site monitoring wells indicates that the groundwater table is relatively stable and does not significantly fluctuate; however, due to seasonal variations in precipitation, minor fluctuations in the groundwater table do occur throughout the year, normally 1 to 3 feet. The groundwater table within investigation area is typically at its highest elevations in early spring, between 629 and 595 feet amsl and at its lowest elevation in late fall, between 628 and 593 feet amsl.

Groundwater levels taken from the site monitoring wells during the field investigation were used to construct two potentiometric surface maps (Figures 3-8 and 3-9). Analysis of the topographic map, geologic cross section, and potentiometric surface maps indicates that shallow groundwater flow is influenced by surface topography and that the groundwater flow directions are consistent throughout the seasons and over the years (potentiometric maps generated from the 2010 investigation correlate with potentiometric maps generated from the 2003 investigation). In general, groundwater flows away from the center of the site with groundwater flowing towards the southwest in the southwestern portion of the site, towards the southeast in the southeastern portion of the site, towards the east and southeast in the eastern and northeastern portions of the site, and towards the north in the northern portion of the site.

The hydraulic conductivity values of the groundwater-bearing zones were determined by performing aquifer (slug) tests on the newly installed site monitoring wells. Data from the 10 slug tests is included as Appendix D. The hydraulic conductivity values for the site monitoring wells tested ranged from 0.002 foot per day to 1.416 feet per day (Table 2-5). The wide range in hydraulic conductivity values is likely attributed to the wide range of grain size material in

which the monitoring well screens were installed. Typically, monitoring well screens that were set in finer grain-sized material yielded lower hydraulic conductivity values, while monitoring well screens set in coarser grain-sized material yielded higher conductivity values. The geometric mean for the 10 wells tested is $3 \times 10^{-5}$ centimeters per second. The higher-permeability measurements from the three wells greater than $1 \times 10^{-4}$ cm/sec likely represent thin (less than 3 feet), localized sand or silt lenses that are not laterally continuous. The hydraulic conductivity values reported are within the range of values typical reported for loess and glacial till deposits. Based on a review of the requirements of 35 IAC Part 620 Sections 620.210 through 620.240, site groundwater is considered a Class II general resource. IEPA concurred that shallow groundwater at the site is classified as Class II in May 2012 (IEPA 2012). This letter is also included in Appendix D.

## 3.7 Demography and Land Use

The site is currently owned by the Eagle Zinc Company. The site encompasses 132 acres and is currently zoned as commercial. Approximately 80 percent (central and southern portion) of the site's property was used for historical manufacturing operations. The remaining 20 percent (northern portion) is open pasture ground that was reportedly never used for manufacturing operations. The site is bordered on the east by Industrial Park Drive and by the Litchfield Bituminous Corporation, on the north by Smith Road, Hayes Abrasives, and by the City of Hillsboro Water Treatment Plant, on the west by East Brailley Road and Street, and by residential housing, and on the south by Fuller Brothers Ready Mix Concrete facility, Vogel Lumber yard, and by the University of Illinois Extension office.

The site resides just within the eastern city limits of Hillsboro, Illinois, in Montgomery County, approximately 10 miles west of Litchfield, Illinois, and Interstate Highway 55. According to the 2010 Census, Montgomery County had a population of 30,104. Hillsboro had a population of 4,020 with a median age of residents of 38.36 years. Hillsboro has a total area of approximately 5.3 square miles, predominantly occupied by a mixture of residential, commercial, and agricultural properties. The population density is about 1,120 people per square mile.

Water supplies for the city of Hillsboro are derived from Lake Hillsboro, which is located approximately 0.75 mile to the northeast of the investigation area, and Lake Glenn Shoals, which is located 1.75 miles to the northwest of the investigation area. Lake Hillsboro and Lake Glenn Shoals are both manmade reservoirs that drain into Middle Fork Shoal Creek approximately 1 to 2 miles north of the site. Hillsboro's water treatment plant has a capacity of 2.5 million gallons per day. Water is treated with coagulants for sedimentation removal, chlorine for disinfection, ammonia to control disinfection by products, and fluoride for human hygiene. Once treated, the potable water is stored in an 80,000 gallon underground storage area before being pumped to residents or to storage water towers (Hillsboro 2011).

Hillsboro's Water Commissioner has previously indicated that all residents in the area are of the investigation area are supplied by city water. Illinois Department of Natural Resources records indicate that no community water supply wells are located within a half-mile radius of the site boundaries; however, Illinois State Water Survey indicates that several domestic wells are within a 1-mile radius of the site. Older domestic water wells are presumed to be used for non-potable outdoor water purposes (that is, watering lawns; ENVIRON 2005a).

## 3.8 Ecology

Prairie, upland hardwood forest, forest-prairie, and flood-plain are all types of vegetation that are commonly found in Montgomery County. Within the site, areas are moderately to densely vegetated, sparsely vegetated, or barren of vegetation. Vegetation onsite consists of native prairie grasses and northern hardwood trees such as oak, hickory, walnut, ash, maple, cottonwood, and maple.

Species of wildlife that are common to Montgomery County that would likely inhabit the site include the American robin (*Turdus migratorius*), northern cardinal (*Cardinalis cardinalis*), blue jay (*Cyanocitta cristata*), mourning dove (*Zenaida macroura*), horned lark (*Eremophila alpestris*), barn swallow (*Hirundo rustica*), red-tailed hawk (*Buteo jamaicensis*), eastern cottontail (*Sylvilagus floridanus*), box turtle (*Terrapene sp.),* common garter snake (*Thamnophis sirtalis*), black rat snake (*Elaphe obsoleta*), fox squirrel (*Sciurus niger*), gray squirrel (*Sciurus carolinensis*)*,* red fox

(*Vulpes fulva*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), wild turkey (*Meleagris gallopavo*), white-tailed deer (*Odocoileus virginianus*), and coyote (*Canis latrans*). The species are common and are typically found in the areas that interact with the surrounding vegetation (USDA and NRCS 2001).

SECTION 4

# Nature and Extent of Contamination

Section 4 provides a discussion of the smelter-related residues (source areas) at the general facility area, the associated chemical compounds in various media identified at the site during the RI and SRI, and the nature and extent of both the source residues and chemical compounds at the site. The assessment of the samples collected as part of the RI and SRI included sample testing and physical descriptions of the recovered sample media. The SRI locations of completed site sampling locations are shown in Figures 2-1 though 2-3. The analytical data tables summarizing the results of samples collected during the RI and SRI in comparison to applicable screening criteria are found in Tables 4-1 through 4-6. A summary of the results of samples is found in Table 4-7.

Analytical results associated with the RI and SRI were compared to applicable screening criteria or the Illinois background concentration for the purpose of focusing the discussion of nature and extent on contaminants related to the site that may pose risk. Applicable screening criteria are presented within each respective subsection depending on media and onsite or offsite location. Constituents found to exceed these conservative screening criteria are classified as chemicals of potential concern (COPCs). The following subsections discuss COPCs and provide justification for whether a chemical was retained for further evaluation in the HHRA. COPCs retained are further evaluated in the HHRA and ERS to define the chemicals of concern (COCs) for the site. COPCs found below the conservative screening criteria were eliminated from further evaluation.

The data generated during the RI and SRI were used to define the nature and extent of contamination that may be related to historical smelting operations. As noted, based on initial investigations, arsenic, cadmium, copper, lead, manganese, and zinc associated with residue from historical zinc smelting operations were identified as the site-specific chemicals of interest at the site, with the residue representing the primary source material.

## 4.1 Residue

Section 4.1 presents the analytical results from residue samples collected from residue piles in 2002 and 2005 and residue in November/December 2010. Residue samples were analyzed for total site-specific metals (select samples) and SPLP site-specific metals. Residue pile samples were analyzed for total site-specific metals, SPLP site-specific metals (arsenic, cadmium, and lead for select samples), and TCLP site-specific metals (arsenic, cadmium, and lead for select samples). Total metals analytical results were compared to industrial soil regional screening levels (RSLs) and Illinois soil background values. SPLP metals results were compared to federal MCLs to identify potential migration pathways related to drinking water use and to the most stringent value between, Illinois General Use Water Quality Standards, and Illinois Secondary Contact and Indigenous Aquatic Life standards to identify potential migration pathways to surface water. Where federal MCLs were not available, Illinois Class I groundwater standards were used. TCLP metal results were compared to RCRA hazardous criteria. TCLP analysis was limited to arsenic, cadmium, and lead in samples collected from residue piles in 2002. Analytical results from residue pile and residue samples are presented in Table 4-1. Total metal concentrations above screening criteria and Illinois background values and elevated SPLP metal concentrations above screening criteria in residue are presented in Figures 4-1 through 4-3.

### 4.1.1 Site-specific Total Metals

#### 4.1.1.1 Total Arsenic

Total arsenic was detected at concentrations above its industrial soil RSL of 1.6 milligrams per kilogram (mg/kg) and Illinois background value of 11.3 mg/kg in 6 of 10 residue and 7 of 15 residue pile samples. Total arsenic concentrations in residue samples ranged from 6.4 at RS-22 to 28.5 mg/kg at RS-01. Total arsenic concentrations in residue pile samples ranged from 3.1J mg/kg at NP-14 to 200 mg/kg at MP1-21.

#### 4.1.1.2 Total Cadmium

Total cadmium concentrations were observed below its industrial soil RSL of 800 mg/kg in each residue and residue pile sample. Total cadmium concentrations were observed above its Illinois background value of 0.5 mg/kg in each residue and residue pile sample. Total cadmium concentrations in residue samples ranged from 7.2 mg/kg at RS-01 to 167 mg/kg at RS-09. Total cadmium concentrations in residue pile samples ranged from below detection to 50 mg/kg at MP1-21.

#### 4.1.1.3 Total Copper

Total copper concentrations were observed below its industrial soil RSL of 41,000 mg/kg in each residue and residue pile sample. Total copper concentrations were observed above its Illinois background value of 12 mg/kg in each residue and residue pile sample. Total copper concentrations in residue samples ranged from 186 mg/kg at RS-22 to 2,540 mg/kg at RS-05. Total copper concentrations in residue pile samples ranged from 140 mg/kg at NP-14 to 34,000J mg/kg at RR2-11.

#### 4.1.1.4 Total Lead

Total lead concentrations exceeded the industrial soil RSL of 800 mg/kg and Illinois background value for lead in 3 of 10 residue samples ranging from 2,400 mg/kg at RS-05 to 5,030J mg/kg at RS-29 and 7 of 15 residue pile samples ranging from 800 mg/kg at CPH-6 to 31,000 mg/kg at MP1-21.

#### 4.1.1.5 Total Manganese

Total manganese concentrations were observed below its industrial soil RSL of 23,000 mg/kg in each residue and residue pile sample. Total manganese concentrations were observed above its Illinois background value of 630 mg/kg in 2 of 10 residue samples and 6 of 15 residue pile samples. Total manganese concentrations in residue samples ranged from 75.4 mg/kg at RS-09 to 19,100 mg/kg at RS-12. Total manganese concentrations in residue pile samples ranged from 65 mg/kg at NP-14 to 8,300J mg/kg at MP1-21.

#### 4.1.1.6 Total Zinc

Total zinc concentrations were observed below its industrial soil RSL of 310,000 mg/kg in each residue and residue pile sample. An Illinois background value for soil is not available for zinc. Total zinc concentrations in residue samples ranged from 32,700 mg/kg at RS-30 to 296,000 mg/kg at RS-16. Total zinc concentrations in residue pile samples ranged from 7,700 mg/kg at RR1-3 to 210,000 mg/kg at RR1-1.

#### 4.1.1.7 Summary

Total cadmium, total copper, total manganese, and total zinc concentrations in the residue and residue piles were observed below their respective industrial soil RSL. Total arsenic and total lead concentrations were observed above their respective industrial soil RSLs and background values in 52 percent of residue and reside pile samples for arsenic and in 40 percent of the residue and residue pile samples for lead.

### 4.1.2 SPLP and TCLP Metals

#### 4.1.2.1 Arsenic

SPLP arsenic concentrations were not detected in each residue sample, except at RS-28. A SPLP arsenic concentration of 0.0076J milligram per liter (mg/L) was detected at RS-28; however, the concentration is below the federal MCL that identifies potential migration pathways to groundwater and the most stringent screening criteria that identify potential migration pathways to surface water.

TCLP arsenic concentrations were observed below the RCRA hazardous criteria in each residue pile sample in 2002 indicating low potential to leaching, which is consistent with SPLP arsenic results from 2010 for residue pile samples.

#### 4.1.2.2 Cadmium

SPLP cadmium concentrations were detected above the federal MCL that identifies potential migration pathways to groundwater in 5 out of 32 residue and 4 out of 15 residue pile samples. SPLP cadmium concentrations were detected above the most stringent screening criteria that identify potential migration pathways to surface water in 17 out of 32 residue and 5 out of 15 residue pile samples. Detected SPLP cadmium concentrations ranged from 0.00046 mg/L at RS-24 to 0.19 mg/L at RS-21.

TCLP cadmium concentrations were observed below the RCRA hazardous criteria in each residue pile sample indicating low potential for leaching. However, as noted, SPLP cadmium results indicated some potential for leaching from residue piles. SPLP cadmium results are likely more representative of the site conditions since residue pH values are mostly greater than 5.

#### 4.1.2.3 Copper

SPLP copper concentrations were detected below the federal MCL that identifies potential migration pathways to groundwater in each residue sample. Residue pile samples were not analyzed for SPLP copper. SPLP copper concentrations were detected above its most stringent screening criteria that identify potential migration pathways to surface water in 11 out of 32 residue samples. Detected SPLP copper concentrations ranged from 0.0028J mg/L at RS-06 to 0.13 mg/L at RS-08.

#### 4.1.2.4 Lead

SPLP lead concentrations were detected above the federal MCL that identifies potential migration pathways to groundwater in 12 out of 32 residue and 1 of 15 residue pile samples. SPLP lead concentrations were detected above the most stringent screening criteria that identify potential migration pathways to surface water in 14 out of 32 residue samples and 1 of 15 residue pile samples. Detected SPLP lead concentrations ranged from 0.0018J mg/L to 0.2 mg/L at RS-26.

TCLP lead concentrations were observed above the RCRA hazardous criteria of 5 mg/L in 3 of 15 residue pile samples indicating lead in the three residue piles is prone to leaching. TCLP lead concentrations ranged from below detection to 83 mg/L at MP1-21. TCLP results indicate a higher frequency of leaching from residue piles than indicated by SPLP data. SPLP results are likely more representative of the site conditions since residue pH values are mostly greater than 5.

#### 4.1.2.5 Manganese

SPLP manganese concentrations were detected above the federal MCL that identifies potential migration pathways to groundwater in 2 out of 32 residue samples. Residue pile samples collected in 2002 were not analyzed for SPLP manganese. SPLP manganese concentrations were detected below the most stringent screening criteria that identify potential migration pathways to surface water in each residue sample. Residue pile samples were not analyzed for SPLP manganese. Detected concentrations ranged from 0.0018 mg/L at RS-07 to 0.16 mg/L at RS-26.

#### 4.1.2.6 Zinc

SPLP zinc concentrations were detected above the federal MCL that identifies potential migration pathways to groundwater in 3 out of 32 residue samples. SPLP zinc concentrations were detected above the most stringent screening criteria that identify potential migration pathways to surface water in 32 out of 32 residue samples. Residue pile samples were not analyzed for SPLP zinc. SPLP zinc concentrations ranged from 0.095 mg/L at RS-14 to 14 mg/L at RS-26.

### 4.1.3 Residue Summary

With the exception of SPLP arsenic and copper, SPLP metal concentrations were observed above the federal MCL that identifies potential migration pathways to groundwater according to the following frequencies:

- Cadmium: 19 percent of residue and residue pile samples
- Lead: 28 percent of residue and residue pile samples
- Manganese: 6 percent of residue samples
- Zinc: 9 percent of residue samples

SPLP metal concentrations above screening criteria suggest there is a potential for metals in residue and residue piles to leach to groundwater at concentrations exceeding SLs in groundwater.

With the exception of SPLP arsenic and manganese, SPLP metal concentrations were observed above the most stringent screening criteria that identify potential migration pathways to surface water according to the following frequencies:

- Cadmium: 47 percent of residue and residue pile samples
- Copper: 34 percent of residue samples
- Lead: 32 percent of residue and residue pile samples
- Zinc: 100 percent of residue samples

SPLP metal concentrations above screening criteria suggest there is a potential for metals in residue and residue piles to leach to surface water at concentrations exceeding screening criteria in surface water.

## 4.2 Onsite Surface Soil

Section 4.2 presents analytical results from onsite surface soil samples collected from within the property boundary including the general facility area in 2005 (site-specific metals presented only) and November/December 2010. As noted, onsite soil samples collected from 0 to 2 feet bgs in November/December 2010 were considered surface soil. Onsite total metals analytical results were compared to industrial soil RSL and Illinois soil background values. Analytical results are presented in Table 4-2. Elevated total metals in onsite surface soil are presented in Figure 4-4.

### 4.2.1 General Facility Area

#### 4.2.1.1 Arsenic

Total arsenic concentrations were observed above its industrial soil RSL and Illinois background value in 5 of 18 surface soil sample collected in 2005 and November/December 2010, with exception to rejected arsenic analytical data at SS04. In addition, two of the five elevated concentrations in surface soil samples (A1-3-S1 and A1-26-S1) were likely a mixture of soil and residue. Total arsenic concentrations ranged from 2.3 mg/kg in A2-13-S1 to 21 mg/kg in A1-3-S1.

#### 4.2.1.2 Cadmium

Total cadmium concentrations were not observed above the industrial soil RSL of 800 mg/kg in each surface soil sample collected in 2005 and November/December 2010. Total cadmium concentrations were observed above the Illinois background value in 18 of 18 surface soil samples. Total cadmium concentrations ranged from 1 mg/kg at SS07 to 9.2 mg/kg in SS11.

#### 4.2.1.3 Copper

Total copper concentrations were not observed above the industrial soil RSL of 41,000 mg/kg in each surface soil sample collected in 2005 and November/December 2010. Total copper concentrations were observed above the

Illinois background value in 15 of 18 surface soil samples. Total copper concentrations ranged from 7.7J mg/kg at A2-3-S1 to 607J mg/kg in SS11.

#### 4.2.1.4 Lead

Total lead concentrations were not observed above the industrial soil RSL of 800 mg/kg in each surface soil sample collected in 2005 and November/December 2010, with exception of the total lead concentration of 1,100 mg/kg at A1-3-S1. As noted, A1-3-S1 is likely a mixture of soil and residue. Total lead concentrations were observed above the Illinois background value in 13 of 18 surface soil samples; however, 4 of the 5 total lead concentrations below the Illinois background value were rejected during data validation.

#### 4.2.1.5 Manganese

Total manganese concentrations were not observed above the industrial soil RSL of 23,000 mg/kg in each surface soil sample collected in 2005 and November/December 2010. Total manganese concentrations were observed above the Illinois background value in 3 of 18 surface soil samples. Total manganese concentrations ranged from 68.3 mg/kg at SS09 to 4,800 mg/kg in A1-26-S1.

#### 4.2.1.6 Zinc

Total zinc concentrations were not observed above the industrial soil RSL of 310,000 mg/kg in each surface soil sample collected in 2005 and November/December 2010. An Illinois background value for zinc is not available. Total zinc concentrations ranged from 93J mg/kg at A1-3-S1-2 to 26,400J mg/kg in SS11.

### 4.2.2 Onsite Surface Soil Summary

Total arsenic concentrations exceeded the industrial soil RSL in each onsite surface soil; however, only 5 of 18 samples were observed above the Illinois background value in soil. Only one sample greatly exceeded background (21 mg/kg at A1-3-S1); however, the sample likely was a mixture of soil and residue, indicating total arsenic in onsite surface soil is likely naturally occurring and not site-related in nearly all samples. Total cadmium, total copper, total lead, total manganese, and total zinc concentrations did not exceed their respective industrial soil RSLs in onsite surface soil. Total arsenic, total cadmium, total copper, total lead, total manganese, and total zinc are not considered COPCs in onsite surface soil.

## 4.3 Onsite Subsurface Soil

This section presents analytical results from onsite subsurface soil samples collected during the RI in 2002 (site-specific metals only) and SRI in November/December 2010. Onsite subsurface soil samples were collected beneath onsite residue in November/December 2010, with the exception of sample locations A3-20, A4-22, NA8, NA9, WS-8, and WA-9, which were located outside the limits of visual residue on the ground surface. Onsite total metals analytical results were compared to industrial soil RSLs and Illinois background values for soil. Analytical results are presented in Table 4-2. Elevated total metals in onsite subsurface soil are presented in Figure 4-4.

### 4.3.1 Subsurface Soil below Residue

#### 4.3.1.1 Total Arsenic

Total arsenic concentrations were observed above the industrial soil RSL and Illinois background value in 5 of 48 subsurface soil samples, ranging from 12 mg/kg from 6.4 to 7.4 feet bgs at RSB-32 to 15.9J mg/kg from 6.8 to 7.8 feet bgs at RSB-16.

#### 4.3.1.2 Total Cadmium

Total cadmium concentrations were not observed above the industrial soil RSL of 800 mg/kg in subsurface soil samples. Total cadmium concentrations were observed above the Illinois background value in 45 of 48 subsurface soil samples. Total cadmium concentrations ranged from below detection to 197 mg/kg at RSB-30 from 3.3 to 4.3 feet bgs.

#### 4.3.1.3 Total Copper

Total copper concentrations were not observed above the industrial soil RSL of 41,000 mg/kg in subsurface soil samples. Total copper concentrations were observed above the Illinois background value in 36 of 48 subsurface soil samples. Total copper concentrations ranged from 6.6J mg/kg at RSB-28 from 3 to 5 feet bgs to 35 mg/kg at A2-15 from 2 to 3 feet bgs.

#### 4.3.1.4 Total Lead

Total lead concentrations were not observed above the industrial soil RSL of 800 mg/kg in subsurface soil samples. Total lead concentrations were observed above the Illinois background value in 7 of 48 subsurface soil samples collected beneath residue. Total lead concentrations ranged from 7.4 mg/kg at A2-24 from 2 to 3 feet bgs to 89.6 mg/kg at RSB-26 from 1.4 to 2.4 feet bgs.

#### 4.3.1.5 Total Manganese

Total manganese concentrations were not observed above the industrial soil RSL of 23,000 mg/kg in subsurface soil samples. Total manganese concentrations were observed above the Illinois background value in 10 of 48 subsurface soil samples collected beneath residue. Total manganese concentrations ranged from 37.1J mg/kg at RSB-18 from 6.6 to 7.6 feet bgs to 2,210J at RSB-16 from 6.8 to 7.8 feet bgs.

#### 4.3.1.6 Total Zinc

Total zinc concentrations were not observed above the industrial soil RSL of 310,000 mg/kg in subsurface soil samples. An Illinois background value is not available for zinc. Total zinc concentrations ranged from 82.1J mg/kg at RSB-21 from 1.7 to 2.7 feet bgs to 11,000 mg/kg at A1-6 from 8 to 9 feet bgs.

### 4.3.2 Onsite Subsurface Soil Summary

Total arsenic was observed in subsurface soil beneath the residue at concentrations above its industrial soil RSL and Illinois background value in only 10 percent of onsite subsurface samples. Total arsenic concentrations are likely naturally occurring and not site-related.

Total cadmium, total copper, total lead, total manganese, and total zinc were not observed at concentrations above their respective industrial soil RSLs beneath the residue and within the southeastern triangular area. Subsurface soil beneath residue does not appear to be impacted by concentrations of site-specific total metals in residue and residue piles.

Total arsenic, total cadmium, total copper, total lead, total manganese, and total zinc are not considered COPCs in onsite subsurface soil.

## 4.4 Offsite Surface Soil

Section 4.4 presents the analytical results from offsite surface soil samples collected from the residential housing area and onsite southeastern triangular area in November/December 2010. The onsite southeastern triangular area is discussed with the offsite surface soil results because it is located within an area of the site where site operations were historically not conducted. As noted, soil samples collected from 0 to 2 feet bgs in November/December 2010 are considered surface soil. Total metal analytical results from the residential housing area were compared to

residential soil RSL and Illinois soil background values. Total metals analytical results from the southeastern triangular area were compared to industrial soil RSLs and Illinois soil background values. Analytical results are presented in Tables 4-2 and 4-3. Elevated total metals in offsite surface soil are presented in Figure 4-5.

## 4.4.1 Residential Housing Area

### 4.4.1.1 Arsenic

Total arsenic concentrations were observed above the residential soil RSL of 0.39 mg/kg in each surface soil samples collected in the drainage area within the residential housing area ranging from 3.5 mg/kg at SS-01 to 17.8 mg/kg at SS-03. Of these concentrations, those observed at SS02 and SS03 (2 out of 3) only slightly exceeded the Illinois soil background value of 11.3 mg/kg for arsenic.

Total arsenic concentrations were observed above the residential soil RSL of 0.39 mg/kg in two surface soil samples collected within the residential housing area, 14.2J mg/kg at SB-01 and 16.3 mg/kg at SB-06. However, the concentrations only slightly exceeded the Illinois soil background value of 11.3 mg/kg for arsenic (2 out of 6).

### 4.4.1.2 Cadmium

Total cadmium concentrations were observed below the residential soil RSL of 70 mg/kg in each surface soil sample collected from the drainage area of the offsite residential housing area and the offsite residential housing area. Total cadmium concentrations were observed above the Illinois background value in 9 of 9 samples collected from the drainage area of and the residential housing area. Total cadmium concentrations ranged from below detection to 1.9 mg/kg at SB03.

### 4.4.1.3 Copper

Total copper concentrations were observed below the residential soil RSL of 3,100 mg/kg in each surface soil sample collected from the drainage area of the offsite residential housing area and the offsite residential housing area. Total copper concentrations were observed above the Illinois background value in 7 of 9 samples collected from the drainage area of and the residential housing area. Total copper concentrations ranged from 9.6J mg/kg at SB05 to 23.1J mg/kg at SB01.

### 4.4.1.4 Lead

Total lead concentrations were observed below the residential soil RSL of 400 mg/kg in each surface soil sample collected from the drainage area of the offsite residential housing area and the offsite residential housing area. Total lead concentrations were observed above the Illinois background value in 4 of 9 samples collected from the drainage area of and the residential housing area. However, 3 of the 9 offsite surface soil results from samples collected from the drainage area of the residential housing area were rejected during validation. Total lead concentrations ranged from 16.8J mg/kg at SB05 to 46J mg/kg at SB06.

### 4.4.1.5 Manganese

Total manganese concentrations were observed below the residential soil RSL of 1,800 mg/kg in each surface soil sample collected from the drainage area within the residential housing area. A total manganese concentration was observed above its residential soil RSL of 1,800 mg/kg in one surface soil sample collected within the residential housing area at SB-02 (2,490J mg/kg). Total manganese concentrations were observed above the Illinois background value in 8 of 9 samples collected from the drainage area of and residential housing area.

### 4.4.1.6 Zinc

Total zinc concentrations were not observed above the residential soil RSL of 23,000 mg/kg in each surface soil sample collected from the drainage area within the residential housing area and the offsite residential housing

area. An Illinois background value is not available for zinc. Total zinc concentrations ranged from 164J mg/kg at SB02 to 565J mg/kg at SB03.

#### 4.4.1.7 Summary

A limited number of arsenic concentrations in surface soil were observed above the Illinois soil background value of 11.3 mg/kg (4 out of 9 samples), and at concentrations only slightly above the background value, indicating the occurrence of arsenic in offsite surface soil may be naturally occurring. There was no indication of surface or subsurface disturbance within the offsite residential housing areas, as shown in soil boring logs from locations SB-01 through SB-06. Based on this, and the absence or low-level concentrations of arsenic in other site media (soil, groundwater, and surface water), total arsenic concentrations in offsite surface soil are not considered impacted by site operations. Total arsenic is not considered a COPC in offsite surface soil.

Total manganese was observed above its residential soil RSL in 1 out of 9 surface soil samples. There was no indication of surface or subsurface disturbance within the offsite residential housing areas, as shown in soil boring logs from locations SB-01 through SB-06. Based on the low frequency of elevated manganese in offsite surface soil, the absence of elevated concentrations of or low-level concentrations of manganese in other site media including onsite residue and onsite soil, and SPLP manganese analytical data indicating a low leaching potential, the elevated total manganese concentration in offsite surface soil is not considered impacted by site operations. Total manganese is not considered a COPC in offsite surface soil.

Total cadmium, total copper, total lead, and total zinc concentrations did not exceed their respective residential soil RSLs in surface soil, and therefore, are not considered impacted by site operations. Total cadmium, total copper, total lead, and total zinc are not considered COPCs in offsite surface soil.

### 4.4.2 Southeastern Triangular Area

#### 4.4.2.1 Arsenic

Total arsenic concentrations were observed above the industrial soil RSL and Illinois background value in 1 of 3 surface soil samples within the southeastern triangular area. Total arsenic concentrations ranged from 6.4 mg/kg in SB08 to 14.5 mg/kg in SB09.

#### 4.4.2.2 Cadmium

Total cadmium concentrations were not observed above the industrial soil RSL of 800 mg/kg in each surface soil sample from SB07 through SB09 within the southeastern triangular area. Total cadmium concentrations were observed above the Illinois background value in 3 of 3 surface soil samples within the southeastern triangular area. Total cadmium concentrations ranged from 0.89J mg/kg at SB07 to 1.1J mg/kg at SB09.

#### 4.4.2.3 Copper

Total copper concentrations were not observed above the industrial soil RSL of 41,000 mg/kg in each surface soil sample from SB07 through SB09 within the southeastern triangular area. Total copper concentrations were observed above the Illinois background value in 2 of 3 surface soil samples within the southeastern triangular area. Total copper concentrations ranged from 9.9J mg/kg at SB08 to 24.3J mg/kg at SB09.

#### 4.4.2.4 Lead

Total lead concentrations were not observed above the industrial soil RSL of 800 mg/kg in each surface soil sample from SB07 through SB09 within the southeastern triangular area. Total lead concentrations were observed above the Illinois background value in 1 of 3 surface soil samples within the southeastern triangular area. Total lead concentrations ranged from 12.5J mg/kg at SB07 to 28.1J mg/kg at SB08.

#### 4.4.2.5 Manganese

Total manganese concentrations were not observed above the industrial soil RSL of 23,000 mg/kg in each surface soil sample from SB-07 through SB-09 within the southeastern triangular area. Total manganese concentrations were observed above the Illinois background value in 2 of 3 surface soil samples within the southeastern triangular area. Total manganese concentrations ranged from 625J in SB-09 to 1,340J mg/kg in SB-08.

#### 4.4.2.6 Zinc

Total zinc concentrations were not observed above the industrial soil RSL of 310,000 mg/kg in each surface soil sample from SB-07 through SB-09 within the southeastern triangular area. An Illinois background value is not available for zinc. Total zinc concentrations ranged from 665 mg/kg at SB09 to 793 mg/kg at SB07.

#### 4.4.2.7 Summary

Total arsenic concentrations were observed above the industrial soil RSL and Illinois background value in only 1 of 3 surface soil samples within the southeastern triangular area, and at a concentration only slightly above the Illinois background value. For this reason, total arsenic is not considered a COPC in the southeastern triangular area.

Total cadmium, total copper, total lead, total manganese, and total zinc concentrations did not exceed their respective industrial soil RSLs in surface soil in the southeastern triangular area, and therefore, are not considered impacted by site operations. Total cadmium, total copper, total lead, and total zinc are not considered COPCs in the southeastern triangular area.

## 4.5 Offsite Subsurface Soil

Section 4.5 presents analytical results from offsite subsurface soil samples collected from the residential housing area in November/December 2010 (locations SB-01 through SB-06 from 3 to 5 and 7 to 9 feet bgs) and the onsite southeastern triangular area in November/December 2010. The onsite southeastern triangular area is discussed with the offsite subsurface soil results because it is located within an area of the site where site operations were historically not conducted. Total metal analytical results from the offsite residential housing area were compared to residential soil RSLs and Illinois background values for soil. Total metals analytical results from the onsite southeastern triangular area were compared to industrial soil RSLs and Illinois soil background values. Analytical results are presented in Tables 4-2 and 4-3. Elevated total metals in offsite subsurface soil are presented in Figure 4-5.

### 4.5.1 Residential Housing Area

#### 4.5.1.1 Arsenic

Total arsenic concentrations were observed above the residential soil RSL of 0.39 mg/kg in each offsite subsurface soil sample within the residential house area. However, total arsenic concentrations were below the Illinois background value for arsenic of 11.3 mg/kg. Total arsenic concentrations ranged from 3.9 mg/kg in SB-01 from 3 to 5 feet bgs to 9.7 in SB-05 at 3 to 5 feet bgs.

#### 4.5.1.2 Cadmium

Total cadmium concentrations were not observed above the residential soil RSL of 70 mg/kg and Illinois background value in each offsite subsurface soil sample collected within the residential housing area.

#### 4.5.1.3 Copper

Total copper concentrations were not observed above the residential soil RSL of 3,100 mg/kg in each offsite subsurface soil sample collected within the residential housing area. Total copper concentrations were observed above the Illinois background value in 6 of 12 subsurface soil samples collected from the residential housing area.

#### 4.5.1.4 Lead

Total lead concentrations were not observed above the residential soil RSL of 400 mg/kg in each offsite subsurface soil sample collected within the residential housing area. Total lead concentrations were observed above the Illinois background value in 1 of 12 subsurface soil samples collected from the residential housing area.

#### 4.5.1.5 Manganese

Total manganese concentrations were not observed above the residential soil RSL of 1,800 mg/kg in each offsite subsurface soil sample collected within the residential housing area. Total manganese concentrations were observed above the Illinois background value in 4 of 12 subsurface soil samples collected from the residential housing area.

#### 4.5.1.6 Zinc

Total zinc concentrations were not observed above the residential soil RSL of 23,000 mg/kg in each offsite subsurface soil sample collected within the residential housing area. An Illinois background value is not available for zinc.

#### 4.5.1.7 Summary

Total arsenic was observed in subsurface soil within the residential housing area at concentrations above the residential soil RSL; however, concentrations were below the Illinois background value for arsenic in offsite subsurface soil. Total arsenic in subsurface is likely naturally occurring and not site-related. Total cadmium, total copper, total lead, total manganese, and total zinc were not observed at concentrations above their respective residential soil RSLs within the residential housing area. Offsite subsurface soil within the residential housing area does not appear to be impacted by site operations.

Total arsenic, total cadmium, total copper, total lead, total manganese, and total zinc were not observed above their residential RSLs are not considered COPCs in offsite subsurface soil.

### 4.5.2 Southeastern Triangular Area

#### 4.5.2.1 Arsenic

Total arsenic concentrations were observed above the industrial soil RSL of 1.6 mg/kg in each subsurface soil sample from the triangular area in the southeastern corner of the site. Total arsenic concentrations range from 1.9J in SB-09 from 3 to 5 feet bgs to 18.2 mg/kg in SB-07 from 7 to 9 feet bgs. However, only 1 out of 6 total arsenic concentrations, 18.2 mg/kg from SB-07 from 7 to 9 feet bgs, was observed above its Illinois soil background value of 11.3 mg/kg.

#### 4.5.2.2 Cadmium

Total cadmium concentrations were not observed above the industrial soil RSL of 800 mg/kg and Illinois background value of 0.5 mg/kg in subsurface soil samples SB-07 through SB-09 collected from 3 to 5 feet bgs and 7 to 9 feet bgs within the southeastern triangular area.

#### 4.5.2.3 Copper

Total copper concentrations were not observed above the industrial soil RSL of 41,000 mg/kg in subsurface soil samples SB-07 through SB-09 collected from 3 to 5 feet bgs and 7 to 9 feet bgs within the southeastern triangular area. One total copper concentration, 13.3J mg/kg at SB-09, slightly exceeded its Illinois background value of 12 mg/kg.

#### 4.5.2.4 Lead

Total lead concentrations were not observed above its industrial soil RSL of 800 mg/kg and Illinois background value of 20.9 mg/kg in subsurface soil samples SB-07 through SB-09 collected from 3 to 5 feet bgs and 7 to 9 feet bgs within the southeastern triangular area.

#### 4.5.2.5 Manganese

Total manganese concentrations were not observed above the industrial soil RSL of 23,000 mg/kg or Illinois soil background value of 630 mg/kg in each subsurface soil sample from SB-07 through SB-09 collected from 3 to 5 feet bgs and 7 to 9 feet bgs within the southeastern triangular area.

#### 4.5.2.6 Zinc

Total zinc concentrations were not observed above the industrial soil RSL of 310,000 mg/kg in subsurface soil samples SB-07 through SB-09 collected from 3 to 5 feet bgs and 7 to 9 feet bgs within the southeastern triangular area. An Illinois background value for zinc in soil is not available.

#### 4.5.2.7 Summary

Total arsenic was observed in subsurface soil within the southeastern triangular area above its industrial soil RSL and Illinois background value (slightly above) in 1 out of 6 samples. Total arsenic in subsurface is likely naturally occurring and not site-related. Total arsenic is not considered a COPC for subsurface soil within the southeastern triangular area. Total cadmium, total copper, total lead, total manganese, and total zinc concentrations were observed below their industrial RSLs.

Subsurface soil within the southeastern triangular area does not appear to be impacted by site operations. Total cadmium, total copper, total lead, total manganese, and total zinc are not considered COPCs in subsurface soil within the southeastern triangular area.

## 4.6 Surface Water

Section 4.6 presents analytical results from surface water samples collected during the RI in 2003 (site-specific metals only) and SRI in November/December 2010. Select surface water samples collected during the RI were resampled to confirm analytical results. Onsite and offsite surface water samples collected during the RI include onsite locations SW-WD-9 (resampled in 2010), SW-ED-13 (resampled in 2010), SW-WD-PN, SW-WD-PS, and offsite locations SW-ED-6 through SW-WD-8 (each resampled in 2010), SW-WD-10 (resampled in 2010), SW-WD-11 through SW-WD-12, SW-ED-11, and SW-ED-16 (resampled in 2010). Onsite and offsite surface water samples collected during the SRI include onsite locations SD-WD-09, SD-WD-17 through SD-WD-23, SD-ED-24 through SD-ED-30 and offsite locations SD-WD-06 through SD-WD-08, SD-WD-10, and SD-ED-16. Metals observed above screening criteria in surface water in 2003 were the same as metals that were observed above screening criteria in the resampled and colocated samples in 2010 with the following exceptions:

- Total manganese was observed above screening criteria in SD-ED-13 and SD-ED-16 in 2010 but not in 2003
- Total cadmium was observed above screening criteria in SD-ED-16 in 2010 but not in 2003
- Lead was observed above screening criteria in SD-WD-10 in 2010 but not in 2003

Overall, arsenic, lead, and manganese concentrations increased from 2003 to 2010. However, no overall trend was observed in cadmium, copper, and zinc concentrations. For those metals observed above screening criteria in

surface water in both 2003 and 2010, differences in concentrations ranged from a decrease of 85 percent to an increase of 1,691 percent. The discussion presented in Section 4.6 includes only the resample results; however, results from 2003 and 2010 are presented in Table 4-4.

Surface water analytical results were compared to the most stringent value of Illinois Regulations Subpart B General Use Water Quality Standard, Illinois Regulations Subpart D Secondary Contact and Indigenous Aquatic Lift, and National Recommended Water Quality Criteria (freshwater). Analytical results from the RI and SRI are presented in Table 4-4. Total and dissolved metal concentrations in onsite and offsite surface water are presented in Figures 4-6 and 4-7.

## 4.6.1 Onsite Surface Water

### 4.6.1.1 Total and Dissolved Arsenic

Total and dissolved arsenic were not detected in onsite surface water samples. Two onsite surface water samples collected during the RI, SW-WD-PN and SW-WD-PS, were reported as below detection; however, the detection limit was above the most stringent screening criteria.

### 4.6.1.2 Total and Dissolved Cadmium

Total and dissolved cadmium concentrations were observed above their screening criteria of 0.00025 mg/L in 14 of 18 onsite surface water samples. Concentrations above screening criteria were observed in the onsite surface water drainage to Hillsboro Lake (SD-ED-13), inlet to and southern retention pond (SD-ED-26 and SD-ED-27), northern retention pond (SD-ED-28), inlet to and the former cooling water pond (SD-WD-09, SD-WD-17 through SD-WD-21, SW-WD-PN, and SW-WD-PS), and underground culvert (SD-WD-22 and SD-WD-23). Total and dissolved cadmium were not detected in the surface water samples collected from the southeastern surface water pond SD-ED-24 and SD-ED-25). Total and dissolved cadmium concentrations ranged from below detection to 0.117 mg/L and 0.112 mg/kg, respectively, in a surface water sample collected from the underground culvert (SD-WD-22). Several onsite surface water samples collected during the RI were reported as below detection; however, the detection limit was above the most stringent screening criteria.

Cadmium at concentrations above screening criteria in surface water is likely caused by cadmium concentrations in perched water (as noted in subsequent groundwater section).

### 4.6.1.3 Total and Dissolved Copper

Total and dissolved copper were not detected above the screening criteria of 0.0134 mg/L in onsite surface water samples.

### 4.6.1.4 Total and Dissolved Lead

Total lead concentrations were observed above the screening criteria of 0.0195 mg/L in 2 of 18 surface water samples located at the inlet of the southern retention pond (SD-ED-26) and underground culvert (SD-WD-23). Total lead concentrations ranged from 0.0263 mg/L (SW-WD-26) to 0.027 mg/L (SD-WD-23). Dissolved lead was not observed above its screening criteria of 0.0195 mg/L in onsite surface water samples.

### 4.6.1.5 Total and Dissolved Manganese

Total and dissolved manganese were observed above the screening criteria of 1.0 mg/L in 1 of 18 onsite surface water samples, SD-ED-13, located onsite in the main branch of the ephemeral stream that drains to Hillsboro Lake. However, manganese and dissolved manganese were observed only slightly above the screening criteria with concentrations of 1.1 mg/L (total) and 1.09 mg/L (dissolved) at SD-ED-13 and 1.13 mg/L (total). Manganese concentrations at levels above screening criteria in surface water in the eastern drainageway are likely caused by manganese concentrations in perched water (as noted in subsequent groundwater section).

#### 4.6.1.6 Total and Dissolved Zinc

Total and dissolved zinc were detected above the screening criteria of 0.0254 mg/L in each onsite surface water sample. Total zinc concentrations ranged from 0.179 at the southeastern surface water pond (SD-ED-25) to 16 mg/L at the former cooling water pond (WS-WD-PN) in 2003. Dissolved zinc concentrations ranged from 0.155 to 7.8 mg/L at the former cooling water pond (SD-WD-09) in 2010.

Zinc concentrations above screening criteria in surface water are likely caused by zinc concentrations in perched water (as noted in subsequent groundwater section).

#### 4.6.1.7 Summary

Overall, arsenic, lead, and manganese concentrations in surface water increased from 2002 to 2010. However, no overall trend was observed in cadmium, copper, and zinc concentrations in surface water.

Total and dissolved arsenic and copper concentrations were not observed above their respective screening criteria in onsite surface water.

Total lead and manganese concentrations above screening criteria were observed above their respective screening criteria in onsite surface water at low frequencies. Total lead concentrations above screening criteria were observed in 2 of 18 surface water samples, while no concentrations of dissolved lead were observed above screening criteria. It is likely that the total lead concentration above screening criteria in the two surface water samples is associated with suspended fines in the turbid, southern retention pond, and underground culvert and is not representative of actual water quality. Total and dissolved manganese concentrations observed above screening criteria were observed in 1 of 18 onsite surface water samples at concentrations only slightly above its screening criteria. Manganese in surface water is likely attributed to site operations and specifically likely caused by manganese concentrations in groundwater (as noted in subsequent groundwater section).

Total and dissolved cadmium and zinc concentrations were observed above their screening criteria in each surface water sample, with exception of total and dissolved cadmium in the southern surface water pond. Onsite concentrations of total and dissolved cadmium and zinc above screening criteria in surface water are likely attributed to site operations. Cadmium and zinc in surface water are likely attributed to site operations and specifically likely caused by cadmium and zinc concentrations in groundwater (as noted in subsequent groundwater section).

Total and dissolved arsenic, copper, and lead are not considered COPCs in onsite surface water. Total and dissolved cadmium and zinc are considered COPCs in onsite surface water.

### 4.6.2 Offsite Surface Water

#### 4.6.2.1 Total Arsenic

Total and dissolved arsenic were not detected in offsite surface water samples.

#### 4.6.2.2 Total Cadmium

Total cadmium concentrations were observed above its screening criteria of 0.00025 mg/L in 6 out of 8 offsite surface water samples. Total cadmium concentrations were observed above screening criteria in the main branch of the ephemeral stream that drains to Hillsboro Lake (SD-ED-16), intermittent drainage ditch that flows east to west along the site's southern property line (SD-WD-08 and SD-WD-10), outlet to the former cooling water pond (SD-WD-07), and western drainageway further downstream of the former cooling water pond (SD-WD-06). Dissolved cadmium concentrations were observed above screening criteria in the same six offsite surface water samples. Total cadmium concentrations ranged from below detection at SW-ED-11 to 0.0529 mg/L at SD-WD-10. Dissolved cadmium concentrations ranged from 0.0016J mg/L at SD-ED-16 to 0.0519 mg/L at SD-WD-10.

#### 4.6.2.3 Copper

Total and dissolved copper were not observed above the screening criteria of 0.0134 mg/L in offsite surface water samples.

#### 4.6.2.4 Lead

A total lead concentration was observed above the screening criteria of 0.0195 mg/L in 1 out of 8 offsite surface water samples. The total lead concentration above screening criteria was observed at 0.0401 mg/L in the intermittent drainage ditch that flows east to west along the site's southern property line (SD-WD-10). Dissolved lead concentrations were not observed above the screening criteria in offsite surface water samples.

#### 4.6.2.5 Manganese

Total and dissolved manganese were observed above the screening criteria of 1.0 mg/L in 1 of 8 offsite surface water samples (1 out of 6 offsite surface water samples for dissolved manganese), SD-ED-16, located offsite in the main branch of the ephemeral stream that drains to Hillsboro Lake. However, manganese and dissolved manganese were observed only slightly above the screening criteria with concentrations of 1.13 mg/L (total) and 1.09 mg/L (dissolved).

Total manganese concentrations observed in Lake Hillsboro near the surface water intake location for the water supply treatment plant ranged from 0.067 mg/L to 0.164 mg/L between April 2004 and October 2007 (IEPA Bureau of Water). As noted, Glen Shoals, located north of Lake Hillsboro, is the primary source of drinking water for the City of Hillsboro, Montgomery County. Lake Hillsboro is used as a backup source of drinking water.

#### 4.6.2.6 Zinc

Total and dissolved zinc concentrations were observed above the screening criteria of 0.0254 mg/L in each offsite surface water sample, with exception to SW-WD-11. Total zinc concentrations above screening criteria ranged from 0.71 mg/L (SW-WD-12) to 8.66 mg/L (SD-WD-10). Dissolved zinc concentrations above screening criteria ranged from 3.05 mg/L (SD-ED-16) to 8.14 mg/L (SD-WD-10).

#### 4.6.2.7 Summary

Total and dissolved arsenic and copper concentrations were not observed above their respective screening criteria in offsite surface water.

Total lead and manganese concentrations above screening criteria were observed above their respective screening criteria in offsite surface water at low frequencies. Total lead concentrations above screening criteria were observed in 1 of 8 surface water samples, while no concentrations of dissolved lead were observed above screening criteria. It is likely that the total lead concentration in the one surface water sample is associated with suspended fines in the turbid, intermittent drainage ditch that flows east to west along the site's southern property line and is not representative of actual water quality. Total and dissolved manganese above screening criteria were observed in 1 out of 8 (1 out of 6 for dissolved manganese) offsite surface water samples at concentrations only slightly above its screening criteria

Total and dissolved cadmium and zinc concentrations were observed above their screening criteria in surface water samples. Offsite concentrations of total and dissolved cadmium and zinc above screening criteria in surface water are likely associated with site operations.

Total and dissolved arsenic, copper, and lead, are not considered COPCs in onsite surface water. Total and dissolved cadmium, manganese, and zinc are considered COPCs in offsite surface water. Cadmium, manganese, and zinc in surface water are likely caused by cadmium, manganese, and zinc concentrations in groundwater (as noted in the subsequent groundwater section).

# 4.7 Sediment

This section presents analytical results from onsite and offsite sediment samples collected during the RI in 2003 (site-specific metals only) and SRI in November/December 2010. Five of the sediment samples collected during the RI in 2003 were resampled during the SRI in November/December 2010. Onsite and offsite sediment samples collected during the RI include onsite locations SD-ED-12, SD-ED-13 (resampled in 2010), and SD-WD-9 (resampled in 2010) and offsite locations SD-WD-1 through SD-WD-5, SD-WD-6 through SD-WD-8 (each resampled in 2010), SD-WD-10 (resampled in 2010), SD-ED-11, and SD-ED-14 through SD-ED-16 (resampled in 2010). Onsite and offsite sediment samples collected during the SRI include onsite locations SD-WD-09, SD-WD-17 through SD-WD-23, SD-ED-13, SD-ED-24 through SD-ED-30 and offsite locations SD-WD-06 through SD-WD-08, SD-WD-10, and SD-ED-16.

Generally, metals above screening criteria observed in sediment collected in 2002 were similar to the metals above screening criteria observed in samples collected in 2010, with a few exceptions:

- Total arsenic and copper were observed above screening criteria in SD-WD-07 in 2002 but not in 2010.
- Total arsenic, copper, and manganese were observed above screening criteria in SD-WD-8 in 2010 but not in 2002.
- Total arsenic was observed above screening criteria in SD-WD-10 in 2002 but not in 2010.
- Total arsenic was observed above screening criteria in SD-ED-13 in 2010 but not in 2002.
- Total cadmium, copper, and lead were observed above screening criteria in SD-ED-16 in 2002 but not in 2010. Total manganese was observed above screening criteria in SD-ED-16 in 2010 but not in 2002.

Overall, cadmium, copper, and zinc concentrations in sediment decreased while lead and manganese concentrations in sediment increased from 2002 to 2010. No overall trend was observed for arsenic concentrations in sediment between 2002 and 2010. Changes in concentrations in sediment ranged from decreasing by 100 percent to increasing by 428 percent.

Sediment analytical results were compared to ecological screening levels (ESLs). Analytical results from the RI and SRI are presented in Table 4-5. Total metal concentrations in onsite and offsite sediment are presented in Figures 4-6 and 4-7.

## 4.7.1 Onsite Sediment

### 4.7.1.1 Total Arsenic

Total arsenic concentrations were observed above the ESL of 9.79 mg/kg in 5 of 14 onsite sediment samples. Total arsenic concentrations above screening criteria were associated with samples collected from the surface water drainage to Hillsboro Lake in 2010 (SD-ED-13), the inlet to northern and southern retention pond (SD-ED-26 and SD-ED-30), and the former cooling water pond (SD-WD-17 and SD-WD-20).

### 4.7.1.2 Total Cadmium

Total cadmium concentrations were observed above the ecological screening level of 0.99 mg/kg in 12 of 14 onsite sediment samples. Total cadmium concentrations above screening criteria were associated with samples collected from the surface water drainage to Hillsboro Lake (SD-ED-13), the southeastern surface water pond (SD-ED-24 and SD-ED-25), the inlet to and northern and southern retention ponds (SD-ED-26 through SD-ED-28 and SD-ED-30), the inlet to and former cooling water pond (SD-WD-17, SD-WD-20, and SD-WD-21), and the main branch of the northeastward flowing ephemeral stream (SD-ED-12).

### 4.7.1.3 Total Copper

Total copper concentrations were observed above the ESL of 31.6 mg/kg in 9 of 14 onsite sediment samples. Total copper concentrations above screening criteria were associated with samples collected from the surface water drainage to Hillsboro Lake (SD-ED-13), the southeastern surface water pond (SD-ED-24), the inlet to southern

retention pond (SD-ED-26), the southern and northern retention ponds (SD-ED-27 and SD-ED-28), and the inlet to and former cooling water pond (SD-WD-17, SD-WD-20, and SD-WD-21).

#### 4.7.1.4 Total Lead

Total lead concentrations were observed above the ESL of 35.8 mg/kg in 11 of 14 onsite sediment samples. Total lead concentrations above screening criteria were associated with samples collected from the surface water drainage to Hillsboro Lake (SD-ED-13), the inlet to and southern and northern retention ponds (SD-ED-26 through SD-ED-28 and SD-ED-30), the southeastern surface water pond (SD-ED-24 and SD-ED-25), and the inlet to the former cooling water pond (SD-WD-17, SD-WD-20, and SD-WD-21).

#### 4.7.1.5 Total Manganese

Total manganese concentrations were observed above the ESL of 460 mg/kg in 3 of 14 onsite sediment samples. Total manganese concentrations above screening criteria were associated with samples collected from inlet to the southern and northern retention ponds (SD-ED-26 and SD-ED-30) and the former cooling water pond (SD-WD-17).

#### 4.7.1.6 Total Zinc

Total zinc concentrations were observed above the ESL of 121 mg/kg in each onsite sediment sample. Total zinc concentrations above screening criteria were associated with samples collected from the surface water drainage to Hillsboro Lake (SD-ED-13), the southeastern surface water pond (SD-ED-24 and SD-ED-25), the inlet to southern and northern retention ponds (SD-ED-26 through SD-ED-30), the inlet to the former cooling water pond (SW-WD-17 through SW-WD-21), and the main branch of the northeastward flowing ephemeral stream (SD-ED-12).

#### 4.7.1.7 Summary

Total arsenic, cadmium, copper, lead, manganese, and zinc were observed above their respective ESLs in onsite sediment samples collected during the RI and SRI. Total arsenic, cadmium, copper, lead, manganese, and zinc are considered COPCs in onsite sediment.

### 4.7.2 Offsite Sediment

#### 4.7.2.1 Total Arsenic

Total arsenic concentrations were observed above the ESL of 9.79 mg/kg in 3 of 20 offsite sediment samples. The total arsenic concentrations above screening criteria were associated with samples collected from the intermittent drainage ditch that flows east to west along the site's southern property line (SD-WD-08 and SD-WD-10) and western drainageway downstream of the former cooling water pond (SD-WD-07). However, the total arsenic concentration downstream of the former cooling water pond (SD-WD-07) was observed in 2002 but not again in 2010.

#### 4.7.2.2 Total Cadmium

Total cadmium concentrations were observed above its ESL of 0.99 mg/kg in 15 of 20 offsite sediment samples. Total cadmium concentrations above screening criteria were associated with samples collected from the western drainageway (SD-WD-01, SD-WD-02, SW-WD-06, and SW-WD-07) and the intermittent drainage ditch that flows east to west along the site's southern property line SD-WD-08 and SD-WD-10), and eastern drainageway (SD-ED-14 through SD-ED-16). However, the total cadmium concentration above screening criteria observed at SD-ED-16 in 2002 was not above screening criteria in 2010.

#### 4.7.2.3 Total Copper

Total copper concentrations were observed above its ESL of 31.6 mg/kg in 8 of 20 offsite sediment samples. Total copper concentrations above screening criteria were associated with samples collected from the eastern

drainageway upstream of Hillsboro Lake (SD-ED-16), western drainageway downstream of former cooling water pond (SD-WD-6 and SD-WD-7), and the intermittent drainage ditch that flows east to west along the site's southern property line (SD-WD-8 and SD-WD-10). However, the total copper concentrations above screening criteria observed at SD-ED-16 and SD-WD- 07 in 2002 were not above screening criteria in 2010.

#### 4.7.2.4 Total Lead

Total lead concentrations were observed above the ecological screening level of 35.8 mg/kg in 11 of 20 offsite sediment samples. Total lead concentrations above screening criteria were associated with samples collected from the western drainageway (SD-WD-2, SD-WD-6, and SD-WD-7), eastern drainageway (SD-ED-14 and SD-ED-16), and the intermittent drainage ditch that flows east to west along the site's southern property line (SD-WD-08 and SD-WD-10). However, the total lead concentration above screening criteria observed at SD-ED-16 in 2002 was not above screening criteria in 2010.

#### 4.7.2.5 Total Manganese

Total manganese concentrations were observed above the ecological screening level of 460 mg/kg in 5 of 13 offsite sediment samples. Total manganese concentrations above screening criteria were associated with samples collected from the western drainageway (SD-WD-05), intermittent drainage ditch that flows east to west along the site's southern property line (SD-WD-08), and eastern drainageway upstream of Hillsboro Lake (SD-ED-14 through SD-ED-16).

#### 4.7.2.6 Total Zinc

Total zinc concentrations were observed above the ESL of 121 mg/kg in each offsite sediment sample. Total zinc concentrations above screening criteria were associated with samples collected from the western drainageway (SD-WD-1 through SD-WD-07), intermittent drainage ditch that flows east to west along the site's southern property line (SD-WD-08 and SD-WD-10), and eastern drainageway upstream of Hillsboro Lake (SD-ED-11 and SD-ED-14 through SD-ED-16).

#### 4.7.2.7 Summary

Total arsenic, cadmium, copper, lead, manganese, and zinc were observed above their respective ESLs in offsite sediment samples collected during the RI and SRI. Total arsenic, cadmium, copper, lead, manganese, and zinc are considered COPCs in offsite sediment.

Overall, cadmium, copper, and zinc concentrations in sediment decreased while lead and manganese concentrations in sediment increased from 2002 to 2010. No overall trend was observed for arsenic concentrations in sediment between 2002 and 2010.

## 4.8 Groundwater

Groundwater samples were collected from 23 existing (in 2002 and 2010) and 10 newly installed monitoring wells (in 2010) and analyzed for total and dissolved site-specific metals. IEPA provided concurrence on a groundwater classification of Class II for the shallow groundwater at the site (IEPA 2012 [Appendix D]), per 35 IAC Part 620 Sections 620.210 through 620.240. Analytical results for total and dissolved metals were compared against the Class II groundwater standards for the state of Illinois. The screening criteria for groundwater presented in Table 4-6 provide an evaluation of the potential risks associated with metals in groundwater for Class II General Resource Groundwater.

Monitoring wells with screen sand packs placed in residue (MW-4, MW-6, MW-7, MW-8, MW-9, and MW-11) that were resampled in 2010 generally declined significantly in total metals concentrations (decreased 50 to 90 percent). The most probable explanation is greater care was taken in low-flow groundwater sampling to avoid entrainment of residue suspended solids in the groundwater samples. Based on this, total metals sample results from 2003 may not be representative of groundwater and will not be discussed further under the subsequent subsections on individual metals. Even though the 2010 metal results are much lower than the 2003 results, total

metals results from 2010 are particularly elevated in these wells, with several metals consistently exceeding groundwater and surface water screening levels. Results from the wells, as well as other older monitoring wells with screens in close proximity to residue, are representative of infiltration residing in residue perched above the original ground surface. While the results do not represent groundwater at the site, they are important relative to evaluating transport pathways to groundwater and surface water. The new supplemental RI wells were installed to evaluate whether groundwater has been affected by infiltration through the residue.

### 4.8.1 Arsenic

Total and dissolved arsenic concentrations were not observed above the Class II standard of 0.2 mg/L in 2010. Arsenic is not considered a COPC in groundwater.

### 4.8.2 Cadmium

Total cadmium concentrations were observed above the Class II standard of 0.05 mg/L in groundwater samples collected from shallow monitoring wells G-107, MW-6, and MW-7 in 2010. Dissolved cadmium concentrations were observed above the Class II standard of 0.05 mg/L for cadmium in groundwater samples collected in 2010 from the same shallow monitoring wells that exhibited total cadmium concentrations above screening criteria, with the exception of G-107, which exhibited concentrations below screening criteria in 2010.

Cadmium concentrations observed above screening criteria in shallow monitoring wells MW-6 and MW-7 are monitoring perched water within the residue present at the monitoring well location according to the following monitoring well construction logs (Table 2-3):

- MW-6: Screened interval from 5 to 15 feet bgs, sand pack interval from 4 to 15 feet bgs, and residue present at 0 to 6 feet bgs
- MW-7: Sand pack interval from 4 to 16 feet bgs and residue present at 0 to 4 feet bgs

Cadmium concentrations above screening criteria in monitoring well G-107 are potentially attributed to the fact that the well was improperly constructed or that the well has been compromised. Water purged from G-107 during redevelopment and groundwater sampling was highly turbid and dark brown to black color, indicating perched water within the residue present.

Concentrations of total and dissolved cadmium above screening criteria in groundwater were not observed in the Supplemental RI wells (MW-12 through MW- 21) that monitor groundwater.

Total and dissolved cadmium are considered COPCs in groundwater. Total and dissolved cadmium concentrations are presented in Figure 4-8.

### 4.8.3 Copper

Total and dissolved copper concentrations were not observed above the Class II standard of 0.65 mg/L in 2010. Copper is not considered a COPC in groundwater.

### 4.8.4 Lead

Total and dissolved lead concentrations were not observed above the Class II standard of 0.1 mg/L in 2010. Lead is not considered a COPC in groundwater.

### 4.8.5 Manganese

Total and dissolved manganese concentrations were not observed above the Class II standard of 10 mg/L in 2010. Manganese is not considered a COPC in groundwater.

### 4.8.6 Zinc

Total and dissolved zinc concentrations were above the Class II standard of 10 mg/L for zinc in groundwater samples collected from shallow monitoring wells MW-4 (total only) and MW-7. Total and dissolved zinc concentrations observed above screening criteria in shallow monitoring wells MW-4 and MW-7 are monitoring perched water within the residue present at that location according to the monitoring well construction details and presence of residue (Table 2-3).

Total and dissolved zinc concentrations were not observed above Class II standards in the supplemental RI wells (MW-12 through MW- 21) that monitor groundwater.

Total and dissolved zinc concentrations are presented in Figure 4-9.

### 4.8.7 Summary

In general, dissolved and total metals results are similar in 2010 results indicating low-flow sampling was successful at minimizing suspended solids in samples and indicating colloidal transport of metals is not occurring at the site.

Monitoring wells with screen sand packs placed in residue (MW-4, MW-6, MW-7, MW-8, MW-9, and MW-11) that were resampled in 2010 generally declined significantly in total metals concentrations (decreased 50 to 90 percent). The most probable explanation is greater care was taken in low-flow groundwater sampling to avoid entrainment of residue suspended solids in the groundwater samples. Based on this, total metals sample results from 2003 may not be representative of groundwater. Even though the 2010 metal results are much lower than the 2003 results, total metals results from 2010 are particularly elevated in these wells, with several metals consistently exceeding groundwater and surface water screening levels. Results from the wells, as well as other older monitoring wells with screens in close proximity to residue, are representative of infiltration residing in residue perched above the original ground surface. While the results do not represent groundwater at the site, they are important relative to evaluating transport pathways to groundwater and surface water.

Total and dissolved arsenic, copper, lead, and manganese concentrations above screening criteria were not observed in shallow groundwater in 2010. Total and dissolved arsenic, copper, lead, and manganese in groundwater are not considered COPCs.

Total and dissolved cadmium, and zinc were observed above screening criteria in perched water below residue or within the visible residue boundary in 2010. Total and dissolved cadmium and zinc are considered COPCs.

SECTION 5

# Contaminant Fate and Transport

Residue present on the general facility area in stockpiles and distributed on the ground surface has been identified as the primary source material at the site based on the relationship between the concentrations of arsenic, cadmium, copper, lead, manganese, and zinc found in residue and the COPCs detected in surface water, sediments, and groundwater at the site. COPCs were not identified in onsite or offsite soil. The RI was designed to complete delineation of the nature and extent of COPCs in the general facility source areas and to evaluate the fate and transport of these COPCs from source areas to the various media.

Section 5 describes the chemical properties of the COPCs at the site that affect contaminant fate, the fate of COPCs in relevant media, the transport mechanisms and migrations pathways for the contaminants, and the ultimate fate of any COPC that migrates from the site.

## 5.1 Physical and Chemical Nature of Contaminants

Chemical properties of the primary COPCs are discussed in this section. An understanding of the properties is necessary for the evaluation of the potential transport mechanisms of the COPCs and their persistence in the environment. The chemical properties of the primary COPCs are discussed in the following subsections by COPC.

### 5.1.1 Arsenic

Arsenic is a naturally occurring element widely distributed in the environment. Arsenic occurs naturally in soils at background concentrations ranging from 1 to 40 mg/kg across the United States (Agency for Toxic Substances and Diseases Registry [ATSDR] 2007). The USGS reports the concentration range of naturally occurring arsenic in soils and other surficial materials is <0.1 to 97 mg/kg (Schacklette and Boerngen 1984). The Illinois background value for arsenic is 11.3 mg/kg.

The oxidation state of arsenic in soils is dependent primarily upon pH and redox potential. Arsenate and arsenite exist as oxyanions in oxidizing conditions, with arsenate predominating in oxidizing conditions and arsenite predominant in slightly reducing soils such as occurs in temporarily flooding conditions. Arsenites possess greater toxicity and soil mobility than arsenates. Metallic arsenic, such as those associated with smelter residues, arsine, and methylated forms are stable under reducing conditions (ATSDR 2007).

Mobility of arsenic is increased under conditions of lower clay content, reducing conditions, and high pH. The fact that the source material has been shown to be slightly acidic to neutral (pH 5 to 8) and the underlying soils being slightly acidic to neutral (pH 4 to 8), along with the subsurface geology, which is composed of 20 feet of low-permeability mixture of silt and clay (permeability ranging between 5E-04 to 6E-07 centimeters per second), limits mobility of arsenic at the site. The low frequency of arsenic detections over its Illinois background value in soils and lack of arsenic concentrations above screening criteria in surface water show that the metal has not mobilized significantly from the facility area.

Mobility can also be influenced by source (that is, natural vs. anthropogenic). Arsenic can occur naturally in surface waters from natural weathering of soils and rocks, although concentrations are generally low, ranging from 1 to 10 micrograms per liter (ATSDR 2007). Processes controlling arsenic transformation included oxidation-reduction, ligand exchange, precipitation, and biotransformation. The transformations are influenced predominantly by redox potential, pH, metallic and total sulfide concentrations, and iron concentrations, salinity, temperature, and biotic composition (ATSDR 2007).

### 5.1.2 Cadmium, Copper, Lead, and Zinc

Cadmium, copper, lead, and zinc are discussed together because they have several features in common that affect their behavior in the environment. The four metals are natural elements in the earth's crust. The dominant

species of the four metals in solution is a divalent cation (free or complexed) (Drever 1997). Under reducing conditions (anaerobic), in the presence of sulfur, the four metals form relatively insoluble sulfides. Based on RI observations and field measurements, oxidizing conditions are expected in the shallow groundwater. Measured dissolved oxygen levels in the water column were moderate, indicative of aerobic conditions.

In the absence of sulfur, copper is insoluble as the native metal. The remaining metals behave as they do in oxidizing environments in that they are relatively soluble at low pH and insoluble as carbonates/oxides/hydroxides at high pH. Copper, along with zinc and cadmium form anionic species at high pH; however, it is rare for pH values in nature to be sufficiently high enough for such species to form.

All members of this group are potentially affected by adsorption on iron and manganese oxyhydroxides and cadmium is also potentially affected by adsorption on calcite. Based on soil and groundwater sample results, concentrations of both iron and manganese are available in the environmental media at the site. Adsorption of these metals is pH-dependent. Lead adsorbs at the lowest pH (>3 to 5), followed by copper (>4.5 to 6), zinc (>5 to <7), and then cadmium (>5.5 to 7.5) (Drever 1997). The pH of the slag and onsite soils are low enough to absorb cadmium, copper, and zinc but at or above the levels for the complete adsorption of lead. Therefore, lead would be expected to be the more mobile of the metals, since the range of pH levels found in residue sometimes fall above the optimal adsorption pH range for lead, limiting the adsorption of this metal. Once in groundwater, the higher pH of groundwater relative to the residue source material will help limit lateral or vertical migration of dissolved COPCs found in the groundwater.

The expected behavior of these metals in the environment can be summarized as follows: under oxidizing conditions and at low pH, they are all soluble and mobile. As pH rises, their concentrations tend to decrease, first because of adsorption (particularly lead and copper) and then because of the limited solubility of carbonates and oxides/hydroxides.

## 5.2 Fate and Transport of Contaminants

### 5.2.1 Source Areas

The stockpiled residue and residue present in a naturally crusted, congealed form is the source materials at the site. The congealed form is less prone to leaching than the stockpiled residue based on SPLP lead and cadmium results and is consolidated on a larger part of the general facility area (Figures 3-2 through 3-5). Any natural crusting of the residue surface binds the erodible material thereby reducing the erosion potential. Therefore, any air erosion of the residue would be expected to be limited. The distribution of the stockpiled residue has resulted in COPCs being redistributed across the general facility area. The delineation of the stockpiled and redistributed residue is shown in Figures 3-2 through 3-5 and 4-1 through 4-3.

The COPCs in source materials are all naturally occurring metals that are expected to persist over the long term. Under existing conditions, the source materials will remain in place, with a portion of the residue being further eroded from the residue piles and transported as sediments in the ditches draining the general facility area. The presence of the native clay layer will continue to minimize impacts from source COPCs (particularly lead and arsenic) to underlying soils through infiltration.

### 5.2.2 Soils

COPCs associated with source materials (residue piles and residue) are present in the general facility area, but are not present in onsite and offsite soils above applicable screening criteria and naturally occurring levels. Migration of COPCs associated with source materials has been limited by the presence of a relatively impermeable clay layer present across the site, which has effectively minimized migration of COPCs in excess of the applicable screening criteria to the soil horizon underlying the source material.

### 5.2.3 Surface Water

Surface water samples collected from the western drainageway, eastern drainageway, southern and northern retention ponds, southeastern surface water pond, former cooling water pond, underground culvert, and intermittent drainage ditch that flows east to west along the site's southern property line indicate that COPCs (particularly cadmium and zinc) found in surface water are related to being present in a dissolved form, in addition to fines in the water. Dissolved metals are more mobile in the environment and are more available to aquatic life.

During surface water runoff events, absorbed COPCs and suspended fines are transported from the site to onsite surface water features—southern and northern retention ponds, southeastern surface water pond, former cooling water pond, underground culvert, and offsite feature), the intermittent drainage ditch that flows east to west along the site's southern property line, western drainageway to the unnamed tributary of the Middle Fork Shoal Creek, and eastern drainageway to Lake Hillsboro. Within the drainageways, as the flow rate decreases, the suspended fines will settle, and COPCs will be immobilized in the sediments, as discussed in the following subsections.

### 5.2.4 Sediments

Source materials have contributed COPCs to the sediments in onsite surface water features (southern and northern retention ponds, southeastern surface water pond, former cooling water pond, underground culvert, and offsite surface water features), the intermittent drainage ditch that flows east to west along the site's southern property line, western drainageway to the unnamed tributary of the Middle Fork Shoal Creek, and eastern drainageway to Lake Hillsboro, with concentrations of COPCs fluctuating with distance from the general facility area. This indicates that COPCs may be attenuating to the fine-grained soils and mud found in the ephemeral streams, and it is possible that COPCs from other non-site-related activities may be contributing to the quality of sediments.

### 5.2.5 Groundwater

Concentrations of COPCs above screening criteria have been observed in shallow water perched within the residue and in groundwater just outside the residue or site boundary. Concentrations of COPCs were not observed above screening criteria in deep groundwater at the site.

Several monitoring wells located within the lateral extent of residue piles and residue areas were constructed with monitoring well screens, or tops of filter packs, at a depth similar to the depth of the surrounding residue (MW-4, MW-6, MW-7, MW-8, MW-9, and MW-11). Surface water is filtrating through the residue and entering into the monitoring wells.

Once in groundwater, COPCs are being effectively attenuated by intervening silt and clays, which is expected to be the result of both the neutral pH levels found in natural formation groundwater and the subsurface geology, which together have, and will continue to, effectively attenuate the COPCs and limit any lateral or vertical migration of COPCs. The RI results indicate that the shallow groundwater is acting as a sink for COPCs where COPCs have migrated to shallow groundwater with limited migration occurring by advection and dispersion.

### 5.2.6 Air

Though source materials in the general facility area could potentially be transported by air migration, especially under dry and windy conditions, the RI and RI addendum results indicated that the deposition of airborne particles from the site have not impacted offsite areas. Onsite and offsite airborne deposition of particulate matter from residue piles is not considered a significant transport pathway at the site. The conclusion was based on the finding from the RI and RI addendum. RI findings were concluded based on a literature search concerning dust emissions from aggregate piles, prevailing wind direction information, and a series of well-distributed soil samples collected at residential properties in the vicinity of the site by IEPA in 1993. RI addendum findings were

concluded based on emission rate calculations, dispersion modeling, and risk assessment based on deposition calculations.

Any COPC that may be transport by air from the main facility area would be absorbed into the soils surrounding the facility area.

## 5.3 Transport Pathways

Various potential transport pathways could potentially influence the movement of COPCs from the source areas to various media including soil, surface water, sediment, and groundwater. The potential transport pathways included the following:

- Redistribution (of residue)
- Infiltration
- Surface water runoff (overland flow)
- Perched Water Lateral Migration
- Groundwater migration through advection and dispersion
- Air transport (particulates, dust)

Based on the SRI results, infiltration and surface water runoff are the most important transport pathways for metal COPCs at the site.

### 5.3.1 Redistribution

As described in section 3.1.2 residue thickness varies across the site. Although there is no formal documentation describing how the residue has been distributed outside of the particular stockpiled residue piles, the general perspective is that throughout daily operations residue was spread across the site to support traffic ways. Redistribution of residue on the general facility area has allowed COPCs to be distributed to larger portions of the former manufacturing area and in between the stockpiled residue piles, which is considered one of the primary transport mechanisms for COPCs in residue to migrate to other site media.

### 5.3.2 Infiltration

Infiltration of COPCs from source material to underlying soils at the site has been limited by the presence of the an upper silt and clay layer that ranges in thickness up to 20 feet bgs, which underlies both the general facility area where residue piles and residue reside, as indicated by the fact that COPCs in excess of screening criteria were generally not observed underlying the source materials. Some infiltration of COPCs from source materials to perched water has likely occurred in the general facility area. The highest concentrations and most occurrences of COPCs were observed in monitoring wells G-107, MW-1, MW-4, and MW-6 through MW-9, where perched water may enter into monitoring wells through screened or sand pack intervals located within the residue. Perched water may also enter into monitoring well MW-1 as its integrity is likely compromised indicated by a highly turbid and dark brown to black color in the collected groundwater sample. Surface water may be entering into monitoring well location G-107 due to a flush-mounted surface completion.

### 5.3.3 Perched Water Lateral Migration

Perched water within residue likely migrates laterally to the drainageways due to the high permeability of the residue and underlying low permeability clay. COPCs in the perched water that infiltrated the residue will likely migrate horizontally and discharge to the drainageways. Cadmium, lead, manganese, and zinc concentrations above screening criteria in surface water are likely a result of this lateral migration and discharge. This is also supported by the general absence of arsenic and copper concentrations above screening criteria in perched water in residue and surface water at the site.

### 5.3.4 Groundwater Migration through Advection and Dispersion

Lateral migration of COPCs in shallow groundwater through advection and dispersion is limited due to the subsurface geology of silts and clays, and the tendency of the metal COPCs to adsorb at the pH measured in the shallow groundwater.

Vertical migration of COPCs from shallow to deep groundwater through advection and dispersion has not occurred based on the lack of COPCs above applicable screening criteria in deep groundwater at MW-18.

### 5.3.5 Stormwater Runoff

Sediment data collected as part of the RI and SRI documents that COPCs from source areas have been transported by stormwater runoff to site drainages and then by the western drainageway to the unnamed tributary of the Middle Fork Shoal Creek, and eastern drainageway to Lake Hillsboro. The transport mechanism is most important to the smaller-sized particles since increasing the surface area of residue make it more susceptible to erosion and transport by stormwater runoff.

### 5.3.6 Air Transport

The prevailing wind directions for the site are from the south and south-southwest. As a result, any impact to soil would be expected to be greatest in the area immediately north or north-northeast of the areas used for residue storage. Based on the results of the well-distributed soil samples collected at residential properties in the vicinity of the site by IEPA in 1993, there is no pattern to the properties with concentrations of COPCs above screening criteria that would suggest significant air transport of COPCs. Therefore, this demonstrates the lack of significance of this potential transport pathway even in close proximity to potential sources.

SECTION 6

# Human Health Risk Assessment

An update to the HHRA conducted in 2004 by ENVIRON was prepared and provides an updated evaluation of the potential current and future risks to human health posed by detected chemicals at the site based on incorporation of SRI analytical data, in accordance with USEPA guidance for conducting HHRAs. The detailed scope and overall approach for the HHRA follow USEPA *Risk Assessment Guidance for Superfund,* Parts A, D, E, and F (USEPA 2009).

To facilitate risk-based decisions, the operable unit 2 site was divided into one onsite exposure area (Exposure Area 2) and two offsite exposure areas (Exposure Areas 1 [residential housing area] and 3 [triangular-shaped area]). Based on current and reasonably foreseeable future site conditions (commercial/industrial), the following potential current and future human receptors were identified and evaluated in the HHRA:

- **Current Onsite Trespassers**—Adolescent trespassers who may contact onsite residues and surface soil and sediment/surface water in the onsite water bodies in Exposure Area 2.
- **Current/Future Offsite Residents**—Adult and child residents who may contact surface soil in offsite exposure areas (Exposure Areas 1 and 3).
- **Current/Future Offsite Recreational Users**—Adult and child recreational users who may contact offsite sediment and surface water in Exposure Areas 1 and 3. The current/future recreator scenario in the offsite ditch (Exposure Area 3) can be used to conservatively represent potential exposures by future City maintenance workers in the drainage ditch.
- **Future Onsite Industrial Workers**—Industrial workers who may contact onsite residues and surface soil, assuming the site is developed as an industrial facility without site remediation activities in the future (Exposure Area 2). This exposure scenario is also considered a conservative representation of future onsite groundskeepers.
- **Future Onsite Construction Workers**—Construction workers who may contact residues and surface/subsurface soil during future site redevelopment/construction activities in Exposure Area 2.
- **Future Offsite Construction Workers**—Construction workers who may contact surface/subsurface soil during future redevelopment/construction activities in Exposure Areas 1 and 3.

COCs were identified where the potential excess lifetime cancer risk (ELCR) or HI for a receptor group exceeded threshold values (a total ELCR of $1 \times 10^{-4}$ or a target organ-specific HI of 1.0). When a potential ELCR of $1 \times 10^{-4}$ was exceeded for an exposure medium for a receptor group, the COPCs posing an individual ELCR greater than $1 \times 10^{-6}$ in the environmental medium responsible for the unacceptable risks were identified as COCs. When a potential target organ-specific HI exceeded 1.0 for an exposure medium for a receptor group, the COPCs posing a hazard quotient greater than 0.1 for that target organ in the environmental medium responsible for the unacceptable HI were identified as COCs. For lead, if the exposure model (ALM model) predicted more than 5 percent of the exposed population exceeding a blood lead level of 10 micrograms per deciliter, lead was identified as a COC for that potential receptor. Because risk estimates for onsite trespassers and offsite recreational users did not exceed threshold values, no COCs were identified for these receptor groups.

## 6.1 Future Industrial Workers

The noncancer HI estimate for future industrial workers exceeds the threshold value. For soil and residue (0 to 2 feet), antimony, zinc, and lead were identified as COCs. However, the cumulative ELCR was within the threshold value.

## 6.2 Future Construction Workers

The noncancer HI estimates for future construction workers exceed threshold values. For soil and residue (0 to 10 feet), antimony, cobalt, nickel, zinc, and lead were identified as COCs. However, the cumulative ELCR was within the threshold value.

The updated and complete HHRA is presented in Appendix H.

SECTION 7

# Ecological Risk Assessment

A SLERA was conducted for the Eagle Zinc Company Site by ENVIRON in 2004 as part of the RI report to evaluate whether valuable wildlife resources may be adversely impacted by exposure to site-related contaminants. The results of the SLERA indicated that elevated hazard quotients for selected receptors of concern in the nearfield Western and Eastern Drainage Areas are related to locally elevated levels of zinc and cadmium in surface water and sediment. The SLERA also concluded that additional information may be necessary to determine what, if any, further evaluation of offsite surface water and sediment is warranted for protection of valuable ecological resources.

A SLERA addendum was conducted for the Eagle Zinc Company Site by ENVIRON in 2004 as part of the addendum to the RI report. The addendum was conducted to address USEPA concerns related to terrestrial ecological receptors and their potential exposures to constituents in onsite residue piles that may be transported away from the piles. Unlike a standard baseline risk assessment, hypothetical site data had been constructed using models. The modeled data served as inputs to the SLERA addendum. Based on the data and ecological risk information developed, it was concluded that the ecological risks to terrestrial ecological receptors are negligible and, therefore, there is no need for any further action on the basis of ecological risk.

CH2M HILL compared 2010 analytical results for surface water, sediment, soils, and residue data to the concentrations of chemicals detected in potentially site-impacted areas during past sample events to determine if the chemical concentrations detected by the SRI data exceed those found during previous sample events. Within the Eastern Drainage Area, lead and manganese concentrations detected in surface water during the SRI exceeded those detected during historical sample events. However, lead and manganese concentrations exceeded historical maximum detected concentrations in only one and two of eight SRI surface water samples, respectively. Within the Western Drainage Area, copper and lead concentrations detected in surface water during the SRI exceeded those detected during historical sample events in approximately half of the SRI surface water samples. Within the Eastern Drainage Area, copper, manganese, and zinc concentrations detected in sediment during the SRI exceeded those detected during historical sample events. However, the concentrations of the metals exceeded historical maximum detected concentrations in only one to two of the nine SRI sediment samples. Within the Western Drainage Area, concentrations of manganese in sediment exceeded the historical maximum detected concentration in only one of eight SRI sediment samples, indicating only a minimal frequency of exceedance. Some metals with concentrations exceeding ecological screening levels were also detected in SRI surface soil samples at concentrations exceeding those detected during historical sample events. The metals consisted of copper, manganese, and zinc. However, the concentrations of the metals exceeded the historical maximum detected concentrations in only 1 or 2 of the 20 SRI surface soil samples, indicating only a minimal frequency of exceedance.

The COCs identified based on the conclusions of the SLERA and SLERA addendum are presented in Table 7-1.

SECTION 8

# Summary and Conclusions

The SRI Report has been prepared to supplement the results of the RI conducted by ENVIRON (2005a) and RI addendum (ENVIRON 2006a) by addressing data gaps determined by USEPA and IEPA. SRI field activities were conducted to support the following data gaps:

- Evaluate the level of constituents of concern in groundwater screened beneath the residue
- Evaluate the leachability of the residue that exists between the residue piles
- Evaluate the levels of metals seen in residue between the residue piles
- Evaluate the presence of constituents of concern in soil beneath the residue
- Update the HHRA
- Conduct an ecological risk screening evaluation based on the latest ESLs

## 8.1 Extent of Site-specific Contaminants

The following subsections describe results and conclusions related to the extent of site-specific contaminants in the various media.

### 8.1.1 Residue Pile and Residue

Total arsenic and total lead concentrations above screening criteria were observed in residue and residue piles. However, TCLP and SPLP analytical results indicate there is a low potential for arsenic in residue piles and residue to migrate to groundwater and surface water at concentrations exceeding screening criteria. SPLP analytical results for lead suggest there is a potential for concentrations of total lead above screening criteria in residue to leach to groundwater and surface water at concentrations exceeding screening criteria. Despite the absence of concentrations of cadmium, copper, and zinc above screening criteria observed in residue piles and residue, elevated TCLP (cadmium only) and SPLP analytical data indicate there is potential for these metals in residue to migrate to groundwater and surface water at concentrations exceeding screening criteria.

### 8.1.2 Soil

Elevated total arsenic was observed in subsurface soil beneath the residue; however, 8 percent of the samples were only slightly above the Illinois soil background value for arsenic. Due to the few occurrences of arsenic only slightly above the Illinois background value, total arsenic in subsurface beneath the residue is likely naturally occurring. Subsurface soil beneath the residue does not appear to be impacted by metals in the residue and residue piles.

Elevated total arsenic was observed in onsite surface soil as well; however, only a limited number (5 out of 18) of the elevated concentrations were observed above its Illinois background value, indicating total arsenic in onsite surface soil is likely naturally occurring. Onsite surface soil does not appear to be impacted by metals in the residue and residue piles.

Elevated total arsenic was observed in offsite surface and subsurface soil and surface and subsurface soil samples collected within the southeastern triangular area. A limited number of samples were observed only slightly above the Illinois soil background value for arsenic and there was no indication of surface or subsurface disturbance within the offsite residential housing and onsite triangular areas (as presented in soil boring logs), indicating total arsenic in offsite surface and subsurface soil is likely naturally occurring.

Elevated total manganese was observed in offsite surface soil. However, based on the low frequency of elevated manganese, absence of elevated concentrations or low-level concentrations of manganese in other site media

including onsite residue and onsite soil, and SPLP analytical data indicating a low leaching potential for manganese, elevated total manganese in offsite surface soil is not considered site-related.

### 8.1.3 Surface Water

Overall, arsenic, lead, and manganese concentrations in surface water increased from 2002 to 2010.

Total and dissolved cadmium and zinc concentrations above screening criteria were observed in onsite and offsite surface water and are likely associated with site operations. Total and dissolved cadmium and zinc are considered COPCs in onsite and offsite surface water.

Total lead and manganese above screening criteria were observed in onsite surface water at low frequencies. Total lead concentrations above screening criteria were observed in 2 of 18 surface water samples, while no concentrations of dissolved lead was observed above screening criteria. It is likely that the total lead concentration above screening criteria in the two surface water samples is associated with suspended fines in the turbid, southern retention pond and underground culvert and is not representative of water quality that may be in the drainageways downstream. Total and dissolved manganese above screening criteria were observed in 1 of 18 onsite surface water samples at concentrations only slightly above its screening criteria. The onsite location is located on the northeast drainage way at the eastern property boundary. The offsite location downstream also has manganese above screening criteria. Total and dissolved manganese in surface water are likely attributed to site operations and specifically likely caused by manganese concentrations in groundwater. Total and dissolved manganese are considered COPCs in onsite surface water.

Total lead and manganese above screening criteria were observed in offsite surface water at low frequencies. Total lead concentrations above screening criteria were observed in 1 of 8 surface water samples, while no concentrations of dissolved lead was observed above screening criteria. It is likely that the total lead concentration above screening criteria in the one surface water sample is associated with suspended fines in the turbid, intermittent drainage ditch that flows east to west along the site's southern property line. Total and dissolved manganese concentrations above screening criteria were observed in 1 out of 8 (1 out of 6 for dissolved manganese) offsite surface water samples at concentrations only slightly above its screening criteria. Manganese is considered a COPC in offsite surface water. However, no overall trend was observed in cadmium, copper, and zinc concentrations in surface water.

### 8.1.4 Sediment

Overall, cadmium, copper, and zinc concentrations in sediment decreased while lead and manganese concentrations in sediment increased from 2002 to 2010. No overall trend was observed for arsenic concentrations in sediment between 2002 and 2010.

Total arsenic, cadmium, copper, lead, manganese, and zinc above screening criteria were observed above their respective ecological risk screening levels in onsite and offsite sediment. Total arsenic, cadmium, copper, lead, manganese, and zinc in onsite and offsite sediment are considered site-related and COPCs.

### 8.1.5 Groundwater

In general dissolved and total metals results are similar in 2010 results indicating low-flow sampling was successful at minimizing suspended solids in samples and indicating colloidal transport of metals is not occurring at the site.

Monitoring wells with screen sand packs placed in residue (MW-4, MW-6, MW-7, MW-8, MW-9, and MW-11) that were resampled in 2010 generally declined significantly in total metals concentrations (decreased 50 to 90 percent). The most probable explanation is greater care was taken in low-flow groundwater sampling to avoid entrainment of residue suspended solids in the groundwater samples, based on which, total metals sample results from 2003 may not be representative of groundwater. Even though the 2010 metal results are much lower than

the 2003 results, total metals results from 2010 are particularly elevated in these wells, with cadmium and zinc consistently exceeding groundwater and surface water screening levels. Results from the wells, as well as other older monitoring wells with screens in close proximity to residue, are representative of infiltration residing in residue perched above the original ground surface. While the results do not represent groundwater at the site, they are important relative to evaluating transport pathways to groundwater and surface water.

Total and dissolved arsenic, copper, lead, and manganese concentrations above screening criteria were not observed in shallow groundwater in 2010. Total and dissolved arsenic, copper, lead, and manganese in groundwater are not considered COPCs.

Total and dissolved cadmium and zinc were observed above screening criteria in perched water below residue or within the visible residue boundary in 2010.

The occurrence of arsenic (with exception to one shallow groundwater location), cadmium, lead, and zinc may be attributed to the monitoring perched water within the residue present, flush-mounted monitoring well with surface completion potentially impacted by residue and surface water, and a potentially compromised monitoring well. Total and dissolved cadmium and zinc are considered COPCs.

## 8.2 Human Health Risk Assessment

The HHRA, an update to the HHRA conducted in 2004 by ENVIRON, provides an updated evaluation of the potential current and future risks to human health posed by detected chemicals at the site based on incorporation of recent analytical data, in accordance with USEPA guidance for conducting HHRAs.

To facilitate risk-based decisions, the operable unit 2 site was divided into one onsite exposure area (Exposure Area 2) and two offsite exposure areas (Exposure Areas 1 [residential housing area] and 3 [triangular-shaped area]). Based on current and reasonably foreseeable future site conditions (commercial/industrial), the following potential current and future human receptors were identified and evaluated in the HHRA:

- **Current Onsite Trespassers**—Adolescent trespassers who may contact onsite residues and surface soil and sediment/surface water in the onsite water bodies in Exposure Area 2.
- **Current/Future Offsite Residents**—Adult and child residents who may contact surface soil in offsite exposure areas (Exposure Areas 1 and 3).
- **Current/Future Offsite Recreational Users**—Adult and child recreational users who may contact offsite sediment and surface water in Exposure Areas 1 and 3. The current/future recreator scenario in the offsite ditch (Exposure Area 3) can be used to conservatively represent potential exposures by future City maintenance workers in the drainage ditch.
- **Future Onsite Industrial Workers**—Industrial workers who may contact onsite residues and surface soil, assuming the site is developed as an industrial facility without site remediation activities in the future (Exposure Area 2). The exposure scenario is also considered a conservative representation of future onsite groundskeepers.
- **Future Onsite Construction Workers**—Construction workers who may contact residues and surface/subsurface soil during future site redevelopment/construction activities in Exposure Area 2.
- **Future Offsite Construction Workers**—Construction workers who may contact surface/subsurface soil during future redevelopment/construction activities in Exposure Areas 1 and 3.

COCs were identified where the potential ELCR or HI for a receptor group exceeded threshold values (a total ELCR of $1 \times 10^{-4}$ or a target organ-specific HI of 1.0). When a potential ELCR of $1 \times 10^{-4}$ was exceeded for an exposure medium for a receptor group, the COPCs posing an individual ELCR greater than $1 \times 10^{-6}$ in the environmental medium responsible for the unacceptable risks were identified as COCs. When a potential target organ-specific HI exceeded 1.0 for an exposure medium for a receptor group, the COPCs posing a hazard quotient greater than 0.1 for that target organ in the environmental medium responsible for the unacceptable HI were identified as COCs.

For lead, if the exposure model (ALM model) predicted more than 5 percent of the exposed population exceeding a blood lead level of 10 micrograms per deciliter, lead was identified as a COC for that potential receptor. Because risk estimates for onsite trespassers and offsite recreational users did not exceed threshold values, no COCs were identified for these receptor groups.

### 8.2.1 Future Industrial Workers

The noncancer HI estimates for future industrial workers exceed the threshold values. For soil and residue (0 to 2 feet), antimony, zinc, and lead were identified as COCs. However, the cumulative ELCR was within the threshold value.

### 8.2.2 Future Construction Workers

The noncancer HI estimates for future construction workers exceed threshold values. For soil and residue (0 to 10 feet), antimony, cobalt, nickel, zinc, and lead were identified as COCs. However, the cumulative ELCR was within the threshold value.

## 8.3 Ecological Risk Screening Evaluation

CH2M HILL compared 2010 analytical results for surface water, sediment, soils, and residue data to the concentrations of chemicals detected in potentially site-impacted areas during past sample events to determine if the chemical concentrations detected by the SRI data exceed those found during previous sample events. Within the Eastern Drainage Area, lead and manganese concentrations detected in surface water during the SRI exceeded those detected during historical sample events. However, lead and manganese concentrations exceeded historical maximum detected concentrations in only one and two of eight SRI surface water samples, respectively. Within the Western Drainage Area, copper and lead concentrations detected in surface water during the SRI exceeded those detected during historical sample events in approximately half of the SRI surface water samples. Within the Eastern Drainage Area, copper, manganese, and zinc concentrations detected in sediment during the SRI exceeded those detected during historical sample events. However, the concentrations of the metals exceeded historical maximum detected concentrations in only one to two of the nine SRI sediment samples. Within the Western Drainage Area, concentrations of manganese in sediment exceeded the historical maximum detected concentration in only one of eight SRI sediment samples, indicating only a minimal frequency of exceedance. Some metals with concentrations exceeding ecological screening levels were also detected in SRI surface soil samples at concentrations exceeding those detected during historical sample events. The metals consisted of copper, manganese, and zinc. However, the concentrations of the metals exceeded the historical maximum detected concentrations in only 1 or 2 of the 20 SRI surface soil samples, indicating only a minimal frequency of exceedance. Since the data from the previous SLERA is comparable to the data collected in 2010, the SLERA was not revised as part of the SRI.

SECTION 9

# References


Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicology Profile for Arsenic, Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

CH2M HILL.2008. *Feasibility Study Supplement, Eagle Zinc Company, Hillsboro, Illinois.* April.

CH2M HILL. 2010. *Final Site-Specific Plans, Eagle Zinc OU2 Site, Supplemental Remedial Investigation.* November.

Drever, J. I. 1997. *The Geochemistry of Natural Waters*. Prentice Hall, 2nd ed.

Environmental Design International. 2010. *Hazardous Material Survey Report, Eagle Zinc Site OU1.* October.

ENVIRON. 2004. *Environmental Risk Screening Evaluation, Eagle Zinc Company Site, Hillsboro, Illinois*. August.

ENVIRON. 2005a. *Remedial Investigation Report, Eagle Zinc Company Site, Hillsboro, Illinois*. November.

ENVIRON. 2005b. *Human Health Risk Assessment, Remedial Investigation/Feasibility Study, Eagle Zinc Company Site, Hillsboro, Illinois*. March.

ENVIRON. 2006a. *Addendum to the Remedial Investigation Report. Remedial Investigation/Feasibility Study, Eagle Zinc Company Site, Hillsboro, Illinois*. February.

Goodwin and Broms, Inc. 1999a. *Interim Report of Residue Sampling and Analysis.* March.

Goodwin and Broms, Inc. 1999b. *Monitoring Well Installations and Groundwater Sampling Interim Report).* March.

Hillsboro. 2011. http://www.hillsboroillinois.net/water.html.

Illinois Environmental Protection Agency (IEPA). 1996. *CERLCA Expanded Site Inspection Report, Eagle Zinc Company, ILD 980606941*. January 17.

Illinois Environmental Protection Agency (IEPA), Bureau of Water. 2004 and 2007. *Analytical report for Lake Hillsboro*.

Illinois Environmental Protection Agency (IEPA) Bureau of Land. 2012. Letter to USEPA May 2012. *Concurrence on Class II Groundwater Classification.*

Illinois State Geological Survey. 1969. *Glacial Geology of the Vandalia, Illinois, Region.* Alan M Jacobs and Jerry A. Lineback. Illinois State Geological Survey. Circular 442.

Illinois State Geological Survey. 2011. http://www.isgs.uiuc.edu/maps-data-pub/coal-maps/pennstratigraphy.shtml.

Schacklette, H. T. and Boerngen, J. G. 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States. U.S. Geological Survey Professional Paper. 1,270 pp. Washington, DC: US Government Printing Office.

U.S. Department of Agriculture (USDA) and Natural Resources Conservation Service (NRCS). 2001. *Catalpa speciosa*. http://plants.usda.gov/cgi_bin/plant_profile.cgi?symbol=casp8.

U.S. Department of Agriculture (USDA) and Natural Resources Conservation Service (NRCS). 2011. *Soil Survey of Montgomery County, Illinois.*

U.S. Environmental Protection Agency (USEPA). 1988. *Remedial Investigation/Feasibility Study Guidance Document.*

U.S. Environmental Protection Agency (USEPA). 1992. *9345.3-03FS. Guide to Management of Investigation-Derived Wastes*. January.

U.S. Environmental Protection Agency (USEPA). 2009. *Risk Assessment Guidance for Superfund,* Parts A, D, E, and F. January.

# Tables

**TABLE 2-1**
Sampling Location Rationale
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Media | Boring/Well/Sample ID | Location | Rationale |
|---|---|---|---|
| Residue | RS-01 - RS-32 | See Figure 2-1 | Evaluate the potential for constituents in the residue to leach into the groundwater. Evaluate metal concentrations in residue in support of the risk assessments. |
| Subsurface Soil | RS-01 - RS-32 | See Figure 2-1[a] | Characterize the subsurface geochemistry and identify potential contamination. |
| Subsurface Soil | SB-01 - SB-06 | See Figure 2-1 | Determine if the triangular property had been impacted by site operations. |
| Subsurface Soil | SB-07 - SB-09 | See Figure 2-1 | Delineate the extent of contamination in the northwest portion of the site, assess potential risks to human receptors, and determine whether area needs to be included as part of the overall remedy. |
| Surface Soil | SS-01 - SS-11 | See Figure 2-1 | Delineate extent of contamination. |
| Sediment | SD-WD-06 through SD-WD-10, SD-ED-16 through SD-ED-18, SD-ED-24 through SD-ED-30, SD-ED-13, SD-WD-20, SD-WD-21 | See Figure 2-2 | Assess potential effects of contamination on human receptors. Determine if the current conditions in the ponds and waterways differ from those described in previous investigation reports. |
| Surface Water | SD-WD-06 through SD-WD-10, SD-ED-16 through SD-ED-18, SD-ED-24 through SD-ED-30, SD-ED-13, SD-WD-20, SD-WD-21 | See Figure 2-2 | Assess potential effects of contamination on human receptors. Determine if the current conditions in the ponds and waterways differ from those described in previous investigation reports. |
| Groundwater | MW-1, MW-2, MW-4 through MW-11, P-01 through P-06, G-101 through G-107, G-109 | See Figure 2-3 | Delineate extent of groundwater contamination, verify accuracy of historical data, verify current well conditions and assess changes, and evaluate concentrations of metals in groundwater in support of the risk assessments. |
| Groundwater | MW-12 through MW-21 | See Figure 2-3 | Assess vertical gradients and vertical extent of groundwater contamination. Assess geochemical conditions in monitoring well boreholes. |

[a] Originally this was RSB, but those are not shown on the figure.

**TABLE 2-2**
Sample Analytical Summary
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample ID | Date Sampled | Depth Interval (ft bgs) | Analysis | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TAL Metals | pH | TCLP | SPLP | Sieve for Lead | TOC | AVS/SEM | Grain Size | TAL Metals Unfiltered | TAL Metals Filtered |
| **Residue** | | | | | | | | | | | | |
| EZ-RS01-1 | 11/30/2010 | 0 - 1 | 1 | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS02-1 | 11/30/2010 | 0 - 0.8 | 1 | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS03-1 | 11/30/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS04-1 | 12/1/2010 | 0 - 0.4 | 1 | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS05-1 | 12/1/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS06-1 | 12/1/2010 | 0 - 0.4 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS07-1 | 12/1/2010 | 0 - 0.6 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS08-1 | 12/1/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS09-1 | 12/1/2010 | 0 - 1 | 1 | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS10-1 | 12/1/2010 | 0 - 0.8 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS11-1 | 12/1/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS12-1 | 12/1/2010 | 0 - 1 | 1 | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS13-1 | 12/1/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS14-1 | 12/1/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS15-1 | 12/1/2010 | 0 - 0.4 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS16-1 | 12/2/2010 | 0 - 2 | 1 | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS17-1 | 12/2/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS18-1 | 12/2/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS19-1 | 12/2/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS20-1 | 12/2/2010 | 0 - 0.4 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS21-1 | 12/2/2010 | 0 - 0.7 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS22-1 | 12/2/2010 | 0 - 0.7 | 1 | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS23-1 | 12/2/2010 | 0 - 0.6 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS24-1 | 12/2/2010 | 0 - 2 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS25-1 | 12/2/2010 | 0 - 1 | 1 | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS26-1 | 12/2/2010 | 0 - 0.4 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS27-1 | 12/2/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS28-1 | 12/2/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS29-1 | 12/3/2010 | 0 - 1 | 1 | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS30-1 | 12/3/2010 | 0 - 1 | 1 | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS31-1 | 12/3/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| EZ-RS32-1 | 12/3/2010 | 0 - 1 | - | 1 | - | 1 | - | - | - | - | - | - |
| **Subtotal** | | | **10** | **32** | **0** | **32** | **0** | **0** | **0** | **0** | **0** | **0** |

**TABLE 2-2**
Sample Analytical Summary
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample ID | Date Sampled | Depth Interval (ft bgs) | Analysis | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TAL Metals | pH | TCLP | SPLP | Sieve for Lead | TOC | AVS/SEM | Grain Size | TAL Metals Unfiltered | TAL Metals Filtered |
| **Surface Soil** | | | | | | | | | | | | |
| EZ-SB01-1 | 11/29/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB02-1 | 11/30/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB03-1 | 11/30/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB04-1 | 11/30/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB05-1 | 11/30/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB06-1 | 11/30/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB07-1 | 11/29/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB08-1 | 11/29/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB09-1 | 11/29/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SS01-1 | 11/22/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SS02-1 | 11/22/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SS03-1 | 11/22/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SS04-1 | 11/18/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SS05-1 | 11/18/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SS06-1 | 11/18/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SS07-1 | 11/18/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SS08-1 | 11/18/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SS09-1 | 11/18/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SS10-1 | 11/18/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SS11-1 | 11/18/2010 | 0 - 2 | 1 | - | - | - | 1 | - | - | - | - | - |
| **Subtotal** | | | **20** | **0** | **0** | **0** | **20** | **0** | **0** | **0** | **0** | **0** |
| **Subsurface Soil** | | | | | | | | | | | | |
| EZ-RSB01-2 | 11/30/2010 | 2 - 3 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB02-2 | 11/30/2010 | 1.8 - 2.8 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB03-2 | 11/30/2010 | 2 - 3 | 1 | - | 1 | - | 1 | - | - | - | - | - |
| EZ-RSB04-2 | 12/1/2010 | 1.4 - 2.4 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB05-2 | 12/1/2010 | 4.5 - 5.5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB06-2 | 12/1/2010 | 1.4 - 2.4 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB07-2 | 12/1/2010 | 1.6 - 2.6 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB08-2 | 12/1/2010 | 5 - 6 | 1 | - | 1 | - | 1 | - | - | - | - | - |
| EZ-RSB09-2 | 12/1/2010 | 3.3 - 4.3 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB10-2 | 12/1/2010 | 1.8 - 2.8 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB11-2 | 12/1/2010 | 5 - 6 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB12-2 | 12/1/2010 | 4 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |

**TABLE 2-2**
Sample Analytical Summary
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample ID | Date Sampled | Depth Interval (ft bgs) | Analysis | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TAL Metals | pH | TCLP | SPLP | Sieve for Lead | TOC | AVS/SEM | Grain Size | TAL Metals Unfiltered | TAL Metals Filtered |
| EZ-RSB14-2 | 12/1/2010 | 4.5 -5.5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB15-2 | 12/1/2010 | 1.2 - 2.2 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB16-2 | 12/2/2010 | 6.8 - 7.8 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB17-2 | 12/2/2010 | 2.8 - 3.8 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB18-2 | 12/2/2010 | 6.6 - 7.6 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB19-2 | 12/2/2010 | 2.1 - 3.1 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB21-2 | 12/2/2010 | 1.7 - 2.7 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB22-2 | 12/2/2010 | 1.7 - 2.7 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB23-2 | 12/2/2010 | 1.6 - 2.6 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB24-2 | 12/2/2010 | 3 - 4 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB25-2 | 12/2/2010 | 2.6 - 3.6 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB26-2 | 12/2/2010 | 1.4 - 2.4 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB27-2 | 12/2/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB28-2 | 12/2/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB29-2 | 12/3/2010 | 6.5-7.5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB30-2 | 12/3/2010 | 3.3 - 4.3 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB31-2 | 12/3/2010 | 2.4 - 3.4 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-RSB32-2 | 12/3/2010 | 6.4 - 7.4 | 1 | - | 1 | - | 1 | - | - | - | - | - |
| EZ-SB01-2 | 11/29/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB01-3 | 11/29/2010 | 7 - 9 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB02-2 | 11/30/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB02-3 | 11/30/2010 | 7 - 9 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB03-2 | 11/30/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB03-3 | 11/30/2010 | 7 - 9 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB04-2 | 11/30/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB04-3 | 11/30/2010 | 7 - 9 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB05-2 | 11/30/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB05-3 | 11/30/2010 | 7 - 9 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB06-2 | 11/30/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB06-3 | 11/30/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB07-2 | 11/29/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB07-3 | 11/29/2010 | 7 - 9 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB08-2 | 11/29/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB08-3 | 11/29/2010 | 7 - 9 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB09-2 | 11/29/2010 | 3 - 5 | 1 | - | - | - | 1 | - | - | - | - | - |
| EZ-SB09-3 | 11/29/2010 | 7 - 9 | 1 | - | - | - | 1 | - | - | - | - | - |
| **Subtotal** | | | **48** | **0** | **3** | **0** | **48** | **0** | **0** | **0** | **0** | **0** |

**TABLE 2-2**
Sample Analytical Summary
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample ID | Date Sampled | Depth Interval (ft bgs) | Analysis | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TAL Metals | pH | TCLP | SPLP | Sieve for Lead | TOC | AVS/SEM | Grain Size | TAL Metals Unfiltered | TAL Metals Filtered |
| **Sediment** | | | | | | | | | | | | |
| EZ-SD-ED-13-2 | 12/1/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-ED-16-2 | 12/4/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-ED-24-2 | 12/3/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-ED-25-2 | 12/3/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-ED-26-2 | 12/4/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-ED-27-2 | 12/5/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-ED-28-2 | 12/5/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-ED-29-2 | 12/5/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-ED-30-2 | 12/6/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-WD-06-2 | 12/2/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-WD-07-2 | 12/2/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-WD-08-2 | 12/1/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-WD-09-2 | 12/2/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-WD-10-2 | 12/2/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-WD-17-2 | 12/4/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-WD-20-2 | 12/7/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-WD-21-2 | 12/7/2010 | 0 - 6 | 1 | - | - | - | - | 1 | 1 | 1 | - | - |
| **Subtotal** | | | **17** | **0** | **0** | **0** | **0** | **17** | **17** | **17** | **0** | **0** |
| **Surface Water** | | | | | | | | | | | | |
| EZ-SD-ED-13-1 | 12/1/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-ED-16-1 | 12/4/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-ED-24-1 | 12/3/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-ED-25-1 | 12/3/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-ED-26-1 | 12/4/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-ED-27-1 | 12/5/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-ED-28-1 | 12/5/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-ED-29-1 | 12/5/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-ED-30-1 | 12/6/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-06-1 | 12/2/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-07-1 | 12/2/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-08-1 | 12/1/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-09-1 | 12/2/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-10-1 | 12/2/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-17-1 | 12/4/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-18-1 | 12/7/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-19-1 | 12/7/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |

**TABLE 2-2**
Sample Analytical Summary
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample ID | Date Sampled | Depth Interval (ft bgs) | Analysis | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TAL Metals | pH | TCLP | SPLP | Sieve for Lead | TOC | AVS/SEM | Grain Size | TAL Metals Unfiltered | TAL Metals Filtered |
| EZ-SD-WD-20-1 | 12/7/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-21-1 | 12/7/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-22-1 | 12/3/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-23-1 | 12/3/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| **Subtotal** | | | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **21** | **21** |
| **Groundwater** | | | | | | | | | | | | |
| EZ-G101-GW-1 | 12/16/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-G102-GW-1 | 12/6/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-G103-GW-1 | 12/14/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-G104-GW-1 | 12/15/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-G105-GW-1 | 12/14/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-G106-GW-1 | 12/6/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-G107-GW-1 | 12/16/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-G109-GW-1 | 12/14/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW01-GW-1 | 12/6/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW02-GW-1 | 12/6/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW04-GW-1 | 12/16/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW05-GW-1 | 12/7/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW06-GW-1 | 12/7/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW07-GW-1 | 12/14/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW08-GW-1 | 12/15/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW09-GW-1 | 12/15/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW10-GW-1 | 12/17/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW11-GW-1 | 12/16/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW12-GW-1 | 12/18/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW13-GW-1 | 12/6/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW14-GW-1 | 12/18/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW15-GW-1 | 12/18/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW16-GW-1 | 12/18/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW17-GW-1 | 12/17/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW18-GW-1 | 12/18/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW19-GW-1 | 12/14/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW20-GW-1 | 12/6/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW21-GW-1 | 12/6/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-P01-GW-1 | 12/5/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-P02-GW-1 | 12/5/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-P03-GW-1 | 12/16/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |

**TABLE 2-2**
Sample Analytical Summary
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample ID | Date Sampled | Depth Interval (ft bgs) | Analysis | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TAL Metals | pH | TCLP | SPLP | Sieve for Lead | TOC | AVS/SEM | Grain Size | TAL Metals Unfiltered | TAL Metals Filtered |
| EZ-P04-GW-1 | 12/16/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-P05-GW-1 | 12/6/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| EZ-P06-GW-1 | 12/16/2010 | -- | - | - | - | - | - | - | - | - | 1 | 1 |
| **Subtotal** | | | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **34** | **34** |
| **Totals** | | | **95** | **32** | **3** | **32** | **68** | **17** | **17** | **17** | **55** | **55** |

ft = feet
bgs = below ground surface
TAL = target analyte list
TCLP = toxic characteristic leaching procedure
SPLP = synthetic precipitation leaching procedure
TOC = total organic carbon
AVS/SEM = acid volatile sulfides/simultaneously extracted metals

**TABLE 2-3**
Monitoring Well and Piezometer Construction Summary
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Location | Installation Date | Ground Surface Elevation (ft amsl) | Top of Protective Casing Elevation (ft amsl) | Top of Casing Above Ground Surface (ft) | Well Depth (ft bgs) | Borehole Diameter (inches) | Lithology | Residue (ft bgs) | Screen Length (ft) | Screened Interval (ft bgs) | Sand Pack Interval (ft bgs) | Sand Pack Thickness (ft) | Depth to Seal (ft) | Seal Thickness (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P-01 | 3/10/2003 | NA | 624.86 | NA | 14 | 2 | See RI Report[a] | None | 10 | 4 - 14 | 3 - 14 | 11 | 0.5 | 2.5 |
| P-02 | 3/10/2003 | NA | 628.70 | NA | 14 | 2 | See RI Report[a] | None | 10 | 4 - 14 | 3 - 14 | 11 | 0.5 | 2.5 |
| P-03 | 3/11/2003 | NA | 631.01 | NA | 16 | 2 | See RI Report[a] | None | 10 | 6 - 16 | 4 - 16 | 12 | 0.5 | 3.5 |
| P-04 | 3/11/2003 | NA | 635.07 | NA | 13 | 2 | See RI Report[a] | None | 9 | 4 - 13 | 3 - 13 | 10 | 0.5 | 3.5 |
| P-05 | 3/11/2003 | NA | 633.47 | NA | 15 | 2 | See RI Report[a] | None | 9 | 6 - 15 | 4 - 15 | 11 | 0.5 | 3.5 |
| P-06 | 3/11/2003 | NA | 631.88 | NA | 16 | 2 | See RI Report[a] | 0 - 0.5 | 9 | 7 - 16 | 4 - 16 | 12 | 0.5 | 3.5 |
| MW-1 | 03/12/2003 | NA | 632.50 | NA | 15 | 6 | See RI Report[a] | 0 - 0.7 | 10 | 5 - 15 | 4 - 15 | 11 | 1 | 3 |
| MW-2 | 03/12/2003 | NA | 633.99 | NA | 15 | 6 | See RI Report[a] | 0 - 1.8 | 10 | 5 - 15 | 4 - 15 | 11 | 0 | 4 |
| MW-3 | 03/13/2003 | NA | 634.82 | NA | 16 | 6 | See RI Report[a] | 0 - 2.5 | 10 | 6 - 16 | 4 - 16 | 12 | 0.5 | 3.5 |
| MW-4 | 03/13/2003 | NA | 630.42 | NA | 11 | 6 | See RI Report[a] | 0 - 3 | 10 | 5 - 15 | 3 - 11 | 8 | 0.5 | 2.5 |
| MW-5 | 03/13/2003 | NA | 637.97 | NA | 16 | 6 | See RI Report[a] | 0 - 1 | 10 | 6 - 16 | 4 - 16 | 12 | 0.5 | 3.5 |
| MW-6 | 03/14/2003 | NA | 629.13 | NA | 15 | 6 | See RI Report[a] | 0 - 6 | 10 | 5 - 15 | 4 - 15 | 11 | 0.5 | 3.5 |
| MW-7 | 03/14/2003 | NA | 629.69 | NA | 16 | 6 | See RI Report[a] | 0 - 4 | 10 | 6 - 16 | 4 - 16 | 12 | 0.5 | 3.5 |
| MW-8 | 03/14/2003 | NA | 614.60 | NA | 26 | 6 | See RI Report[a] | 0 - 21 | 10 | 16 - 26 | 4 - 26 | 22 | 1 | 3 |
| MW-9 | 03/14/2003 | NA | 615.10 | NA | 21 | 6 | See RI Report[a] | 0 - 6 | 10 | 11 - 21 | 4 - 21 | 17 | 0.5 | 3.5 |
| MW-10 | 03/15/2003 | NA | 623.90 | NA | 16 | 6 | See RI Report[a] | NA | 10 | 6 - 16 | 4 - 16 | 12 | 0.5 | 3.5 |
| MW-11 | 06/19/2003 | NA | 622.05 | NA | 12 | 6 | See RI Report[a] | 0 - 5 | 10 | 6 - 16 | 4 - 12 | 8 | 0.5 | 3.5 |
| G-101 | NA | NA | 638.91 | NA | 18 | NA | NA | NA | 10 | 5 - 15 | 4.1 - 15.2 | 11.1 | 1.5 | 2 |
| G-102 | NA | NA | 630.40 | NA | 17.5 | NA | NA | NA | 9 | 5 - 14 | 4.2 - 15 | 10.8 | 1.75 | 2 |
| G-103 | NA | NA | 631.34 | NA | 17 | NA | NA | NA | 9 | 5 - 14 | 4 - 15 | 11 | 1.66 | 2 |
| G-104 | NA | NA | 632.34 | NA | 17.5 | NA | NA | NA | 10 | 5 - 15 | 4.6 - 15.3 | 10.7 | 2.16 | 2 |
| G-105 | NA | NA | 627.97 | NA | 18 | NA | NA | NA | 10 | 5 - 15 | 4.6 - 15.1 | 10.5 | 2.21 | 2 |
| G-106 | NA | NA | 629.63 | NA | 18 | NA | NA | 0 - 1.3 | 10 | 5 - 15 | 4.8 - 15.3 | 10.5 | 2.19 | 2 |
| G-107 | NA | NA | 607.70 | NA | 18 | NA | NA | 0 - 1.5 | 9 | 5 - 14 | 4.2 - 14.7 | 10.5 | 1.71 | 2 |
| G-109 | NA | NA | 632.92 | NA | 16.5 | NA | NA | NA | 10 | 4 - 14 | 3.8 - 14.3 | 10.5 | 1.33 | 2 |
| MW-12 | 11/16/2010 | 631.78 | 633.89 | 2.11 | 60 | 8 | Silty Sand, CL, CL/Fat Clay | None | 10 | 30 - 40 | 28 | 13 | 26 | 2 |
| MW-13 | 11/16/2010 | 630.24 | 632.62 | 2.38 | 40 | 8 | Sandy CL, Clayey Sand, Fine Sand Silty Gravel, CL, Fine Sand, CL, Silt, Clayey Sand, Sandy Clay, CL | None | 10 | 6 - 16 | 4 | 13 | 0 | 4 |
| MW-14 | 11/16/2010 | 630.46 | 633.05 | 2.59 | 35 | 8 | Silty Gravel, CL, Silty Sand, CL, Silty Sand, CL | None | 10 | 25 - 35 | 23 | 12 | 21 | 2 |
| MW-15 | 11/17/2010 | 626.83 | 628.85 | 2.02 | 31 | 8 | CL, Silty Gravel, CL, Clayey Sand Silt, Sandy Silt, Silt | None | 10 | 21 - 31 | 19 | 12 | 17 | 2 |
| MW-16 | 11/17/2010 | 625.43 | 628 | 2.57 | 35 | 8 | Silty Gravel, CL, Sandy CL, Silty Sand, Sand, Sandy CL | None | 10 | 25 - 35 | 23 | 12 | 21 | 2 |
| MW-17 | 11/18/2010 | 619.3 | 621.67 | 2.37 | 35 | 8 | Silty Gravel, CL, Clayey Sand, Sandy Silt, Clayey Sand, Silt, Sand | None | 10 | 24.5 - 34.5 | 22.5 | 12.5 | 20.5 | 2 |
| MW-18 | 11/18/2010 | 605.47 | 607.26 | 1.79 | 65 | 8 | Sand, Clayey Sand, CL, CH, Silt Clayey Silt, LS, Silty Sand, CH | None | 10 | 55 - 65 | 53 | 12 | 51 | 2 |
| MW-19 | 11/19/2010 | 623.06 | 625.48 | 2.42 | 15 | 8 | CL, Sand, Silt, Clayey Sand, Sandy Silt, Silty Sand, Sandy Clay | None | 10 | 5 - 15 | 4 | 11 | 0 | 4 |
| MW-20 | 11/19/2010 | 627.25 | 626.98 | -0.27 | 60 | 8 | Silt, CL, CH, Sand, Sandy Silt Clayey Sand, Sandy CL/CH, Silt | None | 10 | 25 - 35 | 23 | 13 | 21 | 2 |
| MW-21 | 11/19/2010 | 627.23 | 627.07 | -0.16 | 20 | 8 | Silt, CL, CH, Sand, Sandy Silt Clayey Sand, Sandy CL/CH, Silt | None | 10 | 10 - 20 | 8 | 12 | 0 | 8 |

amsl = above mean sea level
bgs = below ground surface
ft = feet
CL = Lean Clay
CH = Fat Clay
LS = Limestone
NA - not available
* = sealed from surface because of shallowness of well
[a]Soil boring logs are available in the Remedial Investigation Report, Eagle Zinc Company Site (ENVIRON International Corporation 2005).

**TABLE 2-4**
Groundwater Elevations
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| | | | March 2003 | | June 2003 | | November 2010 | | January 2011 | | August 2011 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monitoring Well ID | Total Depth (ft btoc) | Top of Inside of Casing | Depth to Water (ft btoc) | Groundwater Elevation (ft amsl) | Depth to Water (ft btoc) | Groundwater Elevation (ft amsl) | Depth to Water (ft btoc) | Groundwater Elevation (ft amsl) | Depth to Water (ft btoc) | Groundwater Elevation (ft amsl) | Depth to Water (ft btoc) | Groundwater Elevation (ft amsl) |
| MW-1 | 16.55 | 632.50 | 3.31 | 629.19 | 2.72 | 629.78 | 4.16 | 628.34 | 3.23 | 629.27 | 2.82 | 629.68 |
| MW-2 | 14.71 | 633.99 | 5.48 | 628.51 | 5.77 | 628.22 | 8.55 | 625.44 | 5.72 | 628.27 | 8.17 | 625.82 |
| MW-3 | 18.00 | 634.82 | 10.38 | 624.44 | 10.85 | 623.97 | Abandoned | | Abandoned | | Abandoned | |
| MW-4 | 13.95 | 630.42 | 4.90 | 625.52 | 5.85 | 624.57 | 5.88 | 624.54 | 4.80 | 625.62 | 5.92 | 624.50 |
| MW-5 | 18.77 | 637.97 | 10.08 | 627.89 | 8.65 | 629.32 | 10.97 | 627.00 | 8.17 | 629.80 | 10.19 | 627.78 |
| MW-6 | 18.00 | 629.13 | 6.07 | 623.06 | 6.12 | 623.01 | 5.98 | 623.15 | 5.73 | 623.40 | 5.91 | 623.22 |
| MW-7 | 18.98 | 626.69 | 7.15 | 619.54 | 7.82 | 618.87 | 11.10 | 615.59 | 8.42 | 618.27 | 10.74 | 615.95 |
| MW-8 | 24.88 | 614.60 | 19.03 | 595.57 | 19.91 | 594.69 | 20.89 | 593.71 | 19.50 | 595.10 | 20.43 | 594.17 |
| MW-9 | 23.59 | 615.10 | 13.86 | 601.24 | 13.40 | 601.70 | 11.45 | 603.65 | 10.76 | 604.34 | 11.43 | 603.67 |
| MW-10 | 17.35 | 623.90 | 7.23 | 616.67 | 7.78 | 616.12 | 16.52 | 607.38 | 6.32 | 617.58 | 13.78 | 610.12 |
| MW-11 | 13.96 | 622.05 | --[b] | --[b] | 6.95 | 615.10 | 7.17 | 614.88 | 6.70 | 615.35 | 7.81 | 614.24 |
| MW-12 | | 633.89 | --[c] | --[c] | --[c] | --[c] | --[c] | --[c] | 10.22 | 623.67 | 12.61 | 621.28 |
| MW-13 | | 632.62 | --[c] | --[c] | --[c] | --[c] | --[c] | --[c] | 4.54 | 628.08 | 7.16 | 625.46 |
| MW-14 | | 633.05 | --[c] | --[c] | --[c] | --[c] | --[c] | --[c] | 4.97 | 628.08 | 7.18 | 625.87 |
| MW-15 | | 628.85 | --[c] | --[c] | --[c] | --[c] | --[c] | --[c] | 7.35 | 621.50 | 8.74 | 620.11 |
| MW-16 | | 628.00 | --[c] | --[c] | --[c] | --[c] | --[c] | --[c] | 5.19 | 622.81 | 6.07 | 621.93 |
| MW-17 | | 621.67 | --[c] | --[c] | --[c] | --[c] | --[c] | --[c] | 6.68 | 614.99 | 8.08 | 613.59 |
| MW-18 | | 607.26 | --[c] | --[c] | --[c] | --[c] | --[c] | --[c] | 13.58 | 593.68 | 8.60 | 598.66 |
| MW-19 | | 625.48 | --[c] | --[c] | --[c] | --[c] | --[c] | --[c] | 3.60 | 621.88 | 5.75 | 619.73 |
| MW-20 | | 626.98 | --[c] | --[c] | --[c] | --[c] | --[c] | --[c] | 1.71 | 625.27 | 3.51 | 623.47 |
| MW-21 | | 627.07 | --[c] | --[c] | --[c] | --[c] | --[c] | --[c] | 2.00 | 625.07 | 3.73 | 623.34 |
| P-01 | 16.55 | 624.86 | 6.23 | 618.63 | 6.92 | 617.94 | 7.19 | 617.67 | 6.32 | 618.54 | 7.47 | 617.39 |
| P-02 | 16.02 | 628.70 | 5.54 | 623.16 | 6.85 | 621.85 | 8.26 | 620.44 | 6.11 | 622.59 | 8.60 | 620.10 |
| P-03 | 17.43 | 631.01 | 3.37 | 627.64 | 4.27 | 626.74 | 6.05 | 624.96 | 3.91 | 627.10 | 6.17 | 624.84 |
| P-04 | 16.18 | 635.07 | 9.11 | 625.96 | 8.04 | 627.03 | 12.07 | 623.00 | 8.20 | 626.87 | 11.00 | 624.07 |
| P-05 | 17.07 | 633.47 | 8.38 | 625.09 | 7.88 | 625.59 | 10.09 | 623.38 | 6.28 | 627.19 | 9.96 | 623.51 |
| P-06 | 19.24 | 631.88 | 6.62 | 625.26 | NM | NM | 8.57 | 623.31 | 5.68 | 626.20 | 7.75 | 624.13 |
| G-101 | 17.98 | 638.91 | 11.60 | 627.31 | 9.52 | 629.39 | 12.21 | 626.70 | 9.42 | 629.49 | 11.05 | 627.86 |
| G-102 | 17.67 | 630.40 | 3.73 | 626.67 | 5.51 | 624.89 | 6.51 | 623.89 | 4.31 | 626.09 | 6.64 | 623.76 |
| G-103 | 17.40 | 631.34 | 5.85 | 625.49 | 5.85 | 625.49 | 7.78 | 623.56 | 6.08 | 625.26 | 8.60 | 622.74 |
| G-104 | 17.21 | 632.34 | 8.60 | 623.74 | 8.71 | 623.63 | 11.04 | 621.30 | 9.03 | 623.31 | 10.90 | 621.44 |
| G-105 | 18.12 | 627.97 | 3.82 | 624.15 | 5.13 | 622.84 | 6.43 | 621.54 | 4.26 | 623.71 | 6.81 | 621.16 |
| G-106 | 18.00 | 629.63 | 4.79 | 624.84 | 4.91 | 624.72 | 6.84 | 622.79 | 5.01 | 624.62 | 6.46 | 623.17 |
| G-107 | 17.97 | 607.70 | 4.47 | 603.23 | 5.42 | 602.28 | 5.92 | 601.78 | 4.68 | 603.02 | 6.21 | 601.49 |
| G-108 | -- | -- | Abandoned | | Abandoned | | Abandoned | | Abandoned | | Abandoned | |
| G-109 | 16.70 | 632.92 | 4.82 | 628.10 | 5.04 | 627.88 | 7.81 | 625.11 | 4.15 | 628.77 | 7.30 | 625.62 |
| TW-5 | | 615.95 | --[a] | --[a] | 6.71 | 609.24 | Abandoned | | Abandoned | | Abandoned | |
| TW-6 | | 612.77 | --[a] | --[a] | 21.57 | 591.20 | Abandoned | | Abandoned | | Abandoned | |
| TW-7 | | 582.25 | --[a] | --[a] | 15.36 | 566.89 | Abandoned | | Abandoned | | Abandoned | |

ft = feet
btoc = below top of casing
amsl = above mean sea level
NM = not measured

[a] Temporary wells installed in June 2003
[b] MW-11 installed in June 2003
[c] Monitoring well installed November 2010

**TABLE 2-5**
Slug Test Analysis
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, IL*

| Monitoring Well ID | Top of Casing Elevation (ft amsl) | Ground Elevation (ft amsl) | Casing Height (ft ags) | Water Level (ft btoc) | Water Level (ft bgs) | Depth to Bottom of Screen (ft bgs) | Well Screen (ft) | Dominant Lithology in Screened Interval | Screened interval Saturated? | Confined or Unconfined* | Initial Displacement for Slug Test (ft) | Static Water Column Height (ft) | Hyrdrualic Conductivity (cm/sec) | Illinois Class I or Class II Classfication |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-12 | 633.89 | 631.78 | 2.11 | 10.00 | 7.89 | 40.00 | 10.00 | Clayey sand to sand | Yes | Confined | 2.52 | 32.11 | 6.E-06 | Class II |
| MW-13 | 632.62 | 630.24 | 2.38 | 4.47 | 2.09 | 16.00 | 10.00 | Clay | Yes | Unconfined | 1.75 | 13.91 | 2.E-04 | Class I |
| MW-14 | 633.05 | 630.46 | 2.59 | 4.93 | 2.34 | 35.00 | 10.00 | Clay (1 ft of SM) | Yes | Confined | 2.54 | 32.66 | 1.E-05 | Class II |
| MW-15 | 628.85 | 626.83 | 2.02 | 7.01 | 4.99 | 31.00 | 10.00 | Silt | Yes | Confined | 1.66 | 26.01 | 3.E-05 | Class II |
| MW-16 | 628.00 | 625.43 | 2.57 | 5.51 | 2.94 | 35.00 | 10.00 | Clay (3 ft SM) | Yes | Confined | 2.45 | 32.06 | 8.E-06 | Class II |
| MW-17 | 621.67 | 619.30 | 2.37 | 6.71 | 4.34 | 34.50 | 10.00 | Clay (1 ft of SW) | Yes | Confined | 2.00 | 30.16 | 1.E-04 | Class I |
| MW-18 | 607.26 | 605.47 | 1.79 | 11.89 | 10.10 | 65.00 | 10.00 | Clay (3' LS boulder, 2' SM) | Yes | Confined | 1.84 | 54.90 | 6.E-07 | ClassII |
| MW-19 | 625.48 | 623.06 | 2.42 | 3.66 | 1.24 | 15.00 | 10.00 | Silt/Clay (2' SC, 2' SM) | Yes | Unconfined | 2.20 | 13.76 | 9.E-05 | Class II |
| MW-20 | 626.98 | 627.25 | -0.27 | 1.71 | 1.98 | 35.00 | 10.00 | Clayey sand | Yes | Confined | 2.30 | 33.02 | 6.E-05 | ClassII |
| MW-21 | 627.23 | 627.07 | 0.16 | 1.98 | 1.82 | 20.00 | 10.00 | Clayey sand | Yes | Unconfined | 1.77 | 18.18 | 5.E-04 | Class I |

ags = above ground surface
amsl = above mean sea level
bgs = below ground surface
btoc = below top of casing
cm/sec = centimeters per second
ft = feet

**Assumptions:**
Aquifer base assumed 100 ft bgs. Conceptual Site Model not available.
8" well radius and 2" casing radius typical per construction completion logs.
Bouwer-Rice solution with visual match drawn to curve.
* Unconfined wells are relatively shallow (screens less than 20' bgs). Confined wells are deeper with fine-grained materials (silt or clay) above the screened interval.

**TABLE 2-6**
QA/QC Analytical Summary
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample Location | Sample Identification Number | Date Sampled | Depth Interval (ft bgs) | Analysis | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | TAL Metals | pH | TCLP | Sieve | TOC | AVS/SEM | Grain Size | TAL Metals Unfiltered | TAL Metals Filtered |
| **Field Duplicates** | | | | | | | | | | | | |
| EZ-RS06 | EZ-RS06-1FD | 12/01/10 | 0 - 0.4 | - | 1 | 1 | - | - | - | - | - | - |
| EZ-RS10 | EZ-RS10-1FD | 12/01/10 | 0 - 0.8 | - | 1 | 1 | - | - | - | - | - | - |
| EZ-RS20 | EZ-RS20-1FD | 12/02/10 | 0 - 0.4 | - | 1 | 1 | - | - | - | - | - | - |
| EZ-RS30 | EZ-RS30-1FD | 12/03/10 | 0 - 1 | 1 | 1 | 1 | - | - | - | - | - | - |
| EZ-SS01 | EZ-SS01-1FD | 11/22/10 | 0 - 2 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-SS11 | EZ-SS11-1FD | 11/18/10 | 0 - 2 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-RSB08 | EZ-RSB08-2FD | 12/01/10 | 5 - 6 | 1 | - | 1 | 1 | - | - | - | - | - |
| EZ-RSB19 | EZ-RSB19-2FD | 12/02/10 | 2.1 - 3.1 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-RSB29 | EZ-RSB29-2FD | 12/03/10 | 6.5-7.5 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-SB03 | EZ-SB03-2FD | 11/30/10 | 3 - 5 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-SB05 | EZ-SB05-2FD | 11/30/10 | 3 - 5 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-SB06 | EZ-SB06-3FD | 11/30/10 | 7 - 9 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-SD-ED-26 | EZ-SD-ED-26-2FD | 12/04/10 | 0 - 6 | 1 | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-ED-27 | EZ-SD-ED-27-2FD | 12/05/10 | 0 - 6 | 1 | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-WD-06 | EZ-SD-WD-06-2FD | 12/02/10 | 0 - 6 | 1 | - | - | - | 1 | 1 | 1 | - | - |
| EZ-SD-ED-26 | EZ-SD-ED-26-1FD | 12/04/10 | -- | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-ED-27 | EZ-SD-ED-27-1FD | 12/05/10 | -- | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-WD-06 | EZ-SD-WD-06-1FD | 12/02/10 | -- | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW06 | EZ-MW06-GWFD | 12/07/10 | -- | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW07 | EZ-MW07-GWFD | 12/14/10 | -- | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW08 | EZ-MW08-GWFD | 12/15/10 | -- | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW09 | EZ-MW09-GWFD | 12/15/10 | -- | - | - | - | - | - | - | - | 1 | 1 |
| **Totals** | | | | 12 | 4 | 5 | 8 | 3 | 3 | 3 | 7 | 7 |
| **Matrix Spikes/Matrix Spike Duplicates** | | | | | | | | | | | | |
| EZ-RS29 | EZ-RS29-1 | 12/03/10 | 0 - 1 | 1 | - | - | | - | - | - | - | - |
| EZ-SS06 | EZ-SS06-1 | 11/18/10 | 0 - 2 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-RSB02 | EZ-RSB02-2 | 11/30/10 | 1.8 - 2.8 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-RSB13 | EZ-RSB13-2 | 12/01/10 | 0 - 1 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-RSB14 | EZ-RSB14-2 | 12/01/10 | 4.5 - 5.5 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-RSB32 | EZ-RSB32-2 | 12/03/10 | 6.4 - 7.4 | 1 | - | - | 1 | - | - | - | - | - |

**TABLE 2-6**
QA/QC Analytical Summary
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample Location | Sample Identification Number | Date Sampled | Depth Interval (ft bgs) | Analysis | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | TAL Metals | pH | TCLP | Sieve | TOC | AVS/SEM | Grain Size | TAL Metals Unfiltered | TAL Metals Filtered |
| EZ-SB04 | EZ-SB04-2 | 11/30/10 | 3 - 5 | 1 | - | - | 1 | - | - | - | - | - |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/01/10 | -- | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/01/10 | 0 - 0.5 | 1 | - | - | - | - | 1 | - | - | - |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/06/10 | -- | - | - | - | - | - | - | - | 1 | 1 |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/06/10 | 0 - 0.5 | 1 | - | - | - | - | 1 | - | - | - |
| EZ-MW16 | EZ-MW16-GW | 12/18/10 | -- | - | - | - | - | - | - | - | 1 | 1 |
| EZ-MW17 | EZ-MW17-GW | 12/17/10 | -- | - | - | - | - | - | - | - | 1 | 1 |
| **Totals** | | | | 9 | 0 | 0 | 6 | 0 | 2 | 0 | 4 | 4 |
| **Equipment Rinsate Blanks** | | | | | | | | | | | | |
| | | | -- | - | - | - | - | - | - | - | - | - |
| | | | -- | - | - | - | - | - | - | - | - | - |
| | | | -- | - | - | - | - | - | - | - | - | - |
| | | | -- | - | - | - | - | - | - | - | - | - |
| | | | -- | - | - | - | - | - | - | - | - | - |
| | | | -- | - | - | - | - | - | - | - | - | - |
| | | | -- | - | - | - | - | - | - | - | - | - |
| **Totals:** | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**TABLE 2-7**
Analytical Methods
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| | Analytical Method | | |
|---|---|---|---|
| **Parameter** | **Soil** | **Sediment** | **Water** |
| TAL Metals | SW6010C | ILM05.4 | -- |
| TCLP Metals | SW1311/6010C | -- | -- |
| 250-micron Sieve | SW6010C | -- | -- |
| TOC | -- | Lloyd-Kahn | -- |
| AVS/SEM | -- | EPA 821 R9-100 | -- |
| Grain Size | -- | ASTM D-422 | -- |
| Total and Dissolved TAL Metals | -- | -- | ILM05.4 |

**TABLE 2-8**
Sample Location, Soil Boring, and Monitoring Well Data
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample Location/Boring/Well ID | Media | Coordinates | | State Plane Coordinates | | Ground Surface Elevation (ft amsl) | Top of Casing Elevation (ft amsl) |
|---|---|---|---|---|---|---|---|
| | | Latitude | Longitude | Northing | Easting | | |
| RS-01 | Residue | 39.16434 | 89.47775 | - | - | - | - |
| RS-02 | Residue | 39.16386 | 89.47802 | - | - | - | - |
| RS-03 | Residue | 39.16375 | 89.47717 | - | - | - | - |
| RS-04 | Residue | 39.16323 | 89.47718 | - | - | - | - |
| RS-05 | Residue | 39.16299 | 89.47817 | - | - | - | - |
| RS-06 | Residue | 39.16297 | 89.47709 | - | - | - | - |
| RS-07 | Residue | 39.16265 | 89.47746 | - | - | - | - |
| RS-08 | Residue | 39.16232 | 89.47734 | - | - | - | - |
| RS-09 | Residue | 39.16195 | 89.47760 | - | - | - | - |
| RS-10 | Residue | 39.16191 | 89.47695 | - | - | - | - |
| RS-11 | Residue | 39.16151 | 89.47739 | - | - | - | - |
| RS-12 | Residue | 39.16106 | 89.47764 | - | - | - | - |
| RS-13 | Residue | 39.16061 | 89.47717 | - | - | - | - |
| RS-14 | Residue | 39.16089 | 89.47773 | - | - | - | - |
| RS-15 | Residue | 39.16060 | 89.47779 | - | - | - | - |
| RS-16 | Residue | 39.16029 | 89.47752 | - | - | - | - |
| RS-17 | Residue | 39.16031 | 89.47644 | - | - | - | - |
| RS-18 | Residue | 39.15916 | 89.47878 | - | - | - | - |
| RS-19 | Residue | 39.15982 | 89.47795 | - | - | - | - |
| RS-20 | Residue | 39.15982 | 89.47718 | - | - | - | - |
| RS-21 | Residue | 39.15946 | 89.47676 | - | - | - | - |
| RS-22 | Residue | 39.15887 | 89.47574 | - | - | - | - |
| RS-23 | Residue | 39.15911 | 89.47681 | - | - | - | - |
| RS-24 | Residue | 39.15930 | 89.47716 | - | - | - | - |
| RS-25 | Residue | 39.15919 | 89.47797 | - | - | - | - |
| RS-26 | Residue | 39.15854 | 89.47866 | - | - | - | - |
| RS-27 | Residue | 39.15913 | 89.47965 | - | - | - | - |
| RS-28 | Residue | 39.15884 | 89.48104 | - | - | - | - |
| RS-29 | Residue | 39.15843 | 89.48101 | - | - | - | - |
| RS-30 | Residue | 39.15849 | 89.48194 | - | - | - | - |
| RS-31 | Residue | 39.15867 | 89.47583 | - | - | - | - |
| RS-32 | Residue | 39.16223 | 89.47590 | - | - | - | - |
| RS-01 | Soil | 39.16434 | 89.47775 | - | - | - | - |
| RS-02 | Soil | 39.16386 | 89.47802 | - | - | - | - |
| RS-03 | Soil | 39.16375 | 89.47717 | - | - | - | - |

**TABLE 2-8**
Sample Location, Soil Boring, and Monitoring Well Data
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample Location/Boring/Well ID | Media | Coordinates | | State Plane Coordinates | | Ground Surface Elevation (ft amsl) | Top of Casing Elevation (ft amsl) |
|---|---|---|---|---|---|---|---|
| | | Latitude | Longitude | Northing | Easting | | |
| RS-04 | Soil | 39.16323 | 89.47718 | - | - | - | - |
| RS-05 | Soil | 39.16299 | 89.47817 | - | - | - | - |
| RS-06 | Soil | 39.16297 | 89.47709 | - | - | - | - |
| RS-07 | Soil | 39.16265 | 89.47746 | - | - | - | - |
| RS-08 | Soil | 39.16232 | 89.47734 | - | - | - | - |
| RS-09 | Soil | 39.16195 | 89.47760 | - | - | - | - |
| RS-10 | Soil | 39.16191 | 89.47695 | - | - | - | - |
| RS-11 | Soil | 39.16151 | 89.47739 | - | - | - | - |
| RS-12 | Soil | 39.16106 | 89.47764 | - | - | - | - |
| RS-13 | Soil | 39.16061 | 89.47717 | - | - | - | - |
| RS-14 | Soil | 39.16089 | 89.47773 | - | - | - | - |
| RS-15 | Soil | 39.16060 | 89.47779 | - | - | - | - |
| RS-16 | Soil | 39.16029 | 89.47752 | - | - | - | - |
| RS-17 | Soil | 39.16031 | 89.47644 | - | - | - | - |
| RS-18 | Soil | 39.15916 | 89.47878 | - | - | - | - |
| RS-19 | Soil | 39.15982 | 89.47795 | - | - | - | - |
| RS-20 | Soil | 39.15982 | 89.47718 | - | - | - | - |
| RS-21 | Soil | 39.15946 | 89.47676 | - | - | - | - |
| RS-22 | Soil | 39.15887 | 89.47574 | - | - | - | - |
| RS-23 | Soil | 39.15911 | 89.47681 | - | - | - | - |
| RS-24 | Soil | 39.15930 | 89.47716 | - | - | - | - |
| RS-25 | Soil | 39.15919 | 89.47797 | - | - | - | - |
| RS-26 | Soil | 39.15854 | 89.47866 | - | - | - | - |
| RS-27 | Soil | 39.15913 | 89.47965 | - | - | - | - |
| RS-28 | Soil | 39.15884 | 89.48104 | - | - | - | - |
| RS-29 | Soil | 39.15843 | 89.48101 | - | - | - | - |
| RS-30 | Soil | 39.15849 | 89.48194 | - | - | - | - |
| RS-31 | Soil | 39.15867 | 89.47583 | - | - | - | - |
| RS-32 | Soil | 39.16223 | 89.47590 | - | - | - | - |
| SB-01 | Soil | 39.16594 | 89.48055 | - | - | - | - |
| SB-02 | Soil | 39.16558 | 89.48061 | - | - | - | - |
| SB-03 | Soil | 39.16509 | 89.48015 | - | - | - | - |
| SB-04 | Soil | 39.16448 | 89.48039 | - | - | - | - |
| SB-05 | Soil | 39.16395 | 89.48037 | - | - | - | - |

**TABLE 2-8**
Sample Location, Soil Boring, and Monitoring Well Data
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample Location/Boring/Well ID | Media | Coordinates | | State Plane Coordinates | | Ground Surface Elevation (ft amsl) | Top of Casing Elevation (ft amsl) |
|---|---|---|---|---|---|---|---|
| | | Latitude | Longitude | Northing | Easting | | |
| SB-06 | Soil | 39.16313 | 89.47996 | - | - | - | - |
| SB-07 | Soil | 39.16187 | 89.47335 | - | - | - | - |
| SB-08 | Soil | 39.16031 | 89.47233 | - | - | - | - |
| SB-09 | Soil | 39.15957 | 89.47336 | - | - | - | - |
| SB-10 | Soil | 39.16579 | 89.47999 | - | - | - | - |
| SB-11 | Soil | 39.16516 | 89.47997 | - | - | - | - |
| SB-12 | Soil | 39.16466 | 89.47999 | - | - | - | - |
| SB-13 | Soil | 39.16484 | 89.47653 | - | - | - | - |
| SB-14 | Soil | 39.16443 | 89.47644 | - | - | - | - |
| SB-15 | Soil | 39.16484 | 89.47592 | - | - | - | - |
| SB-16 | Soil | 39.16439 | 89.47592 | - | - | - | - |
| SB-17 | Soil | 39.16441 | 89.47544 | - | - | - | - |
| SB-18 | Soil | 39.16492 | 89.47512 | - | - | - | - |
| SB-19 | Soil | 39.16448 | 89.47463 | - | - | - | - |
| SB-20 | Soil | 39.16393 | 89.47532 | - | - | - | - |
| SD-WD-06 | Surface Water / Sediment | 39.15804 | 89.48739 | - | - | - | - |
| SD-WD-07 | Surface Water / Sediment | 39.15877 | 89.48335 | - | - | - | - |
| SD-WD-08 | Surface Water / Sediment | 39.15819 | 89.48019 | - | - | - | - |
| SD-WD-09 | Surface Water / Sediment | 39.15982 | 89.47986 | - | - | - | - |
| SD-WD-10 | Surface Water / Sediment | 39.15826 | 89.47878 | - | - | - | - |
| SD-ED-13 | Surface Water / Sediment | 39.16944 | 89.46556 | - | - | - | - |
| SD-ED-16 | Surface Water / Sediment | 39.16768 | 89.46834 | - | - | - | - |
| SD-ED-17 | Surface Water / Sediment | 39.15894 | 89.48236 | - | - | - | - |
| SD-ED-18 | Surface Water | 39.15862 | 89.48190 | - | - | - | - |
| SD-ED-19 | Surface Water | 39.15882 | 89.48162 | - | - | - | - |
| SD-ED-20 | Surface Water / Sediment | 39.15918 | 89.48098 | - | - | - | - |
| SD-ED-21 | Surface Water / Sediment | 39.15925 | 89.48075 | - | - | - | - |
| SD-ED-22 | Surface Water | 39.15993 | 89.47754 | - | - | - | - |
| SD-ED-23 | Surface Water | 39.15993 | 89.47748 | - | - | - | - |
| SD-ED-24 | Surface Water / Sediment | 39.15935 | 89.47549 | - | - | - | - |
| SD-ED-25 | Surface Water / Sediment | 39.15932 | 89.47520 | - | - | - | - |
| SD-ED-26 | Surface Water / Sediment | 39.16188 | 89.47422 | - | - | - | - |
| SD-ED-27 | Surface Water / Sediment | 39.16224 | 89.47417 | - | - | - | - |
| SD-ED-28 | Surface Water / Sediment | 39.16249 | 89.47468 | - | - | - | - |

**TABLE 2-8**
Sample Location, Soil Boring, and Monitoring Well Data
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Sample Location/Boring/Well ID | Media | Coordinates | | State Plane Coordinates | | Ground Surface Elevation (ft amsl) | Top of Casing Elevation (ft amsl) |
|---|---|---|---|---|---|---|---|
| | | Latitude | Longitude | Northing | Easting | | |
| SD-ED-29 | Surface Water / Sediment | 39.16233 | 89.47468 | - | - | - | - |
| SD-ED-30 | Surface Water / Sediment | 39.16264 | 89.47399 | - | - | - | - |
| MW-12 | Groundwater | - | - | 14231077.77 | 938081.39 | 631.78 | 633.89 |
| MW-13 | Groundwater | - | - | 14231310.05 | 937491.18 | 630.24 | 632.62 |
| MW-14 | Groundwater | - | - | 14232022.22 | 938236.36 | 630.46 | 633.05 |
| MW-15 | Groundwater | - | - | 14230049.25 | 938502.89 | 626.83 | 628.85 |
| MW-16 | Groundwater | - | - | 14230495.33 | 937989.28 | 625.43 | 628.00 |
| MW-17 | Groundwater | - | - | 14230345.33 | 937622.41 | 619.30 | 621.67 |
| MW-18 | Groundwater | - | - | 14229858.39 | 937177.51 | 605.47 | 607.26 |
| MW-19 | Groundwater | - | - | 14231263.78 | 939337.69 | 623.06 | 625.48 |
| MW-20 | Groundwater | - | - | 14232795.28 | 938413.28 | 627.25 | 626.98 |
| MW-21 | Groundwater | - | - | 14232795.09 | 938417.4 | 627.23 | 627.07 |

amsl = above mean sea level
ft = feet

TABLE 4-1

Residue Pile and Distributed Residue Analytical Results for Total Site-specific Metals, General Chemistry, and SPLP Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Parameeter | Industrial Soil Risk Screening Levels | Illinois Background Values | Federal MCL | Illinois Regs. Subpart D Secondary Contact and Indigenous Aquatic Life | Illinois Regs. Subpart B General Use Water Quality Standard | Maximum Concentration of Contaminant for the Toxicity Characteristic | CPH-6 2005[a] 0 - 1 ft | CPH-9 2005[a] 0 - 1 ft | MP1-21 2005[a] 0 - 1 ft | NP-13 2005[a] 0 - 1 ft | NP-14 2005[a] 0 - 1 ft | NP-15 2005[a] 0 - 1 ft | NP-16 2005[a] 0 - 1 ft | RCO-10 2005[a] 0 - 1 ft | RCO-5 2005[a] 0 - 1 ft | RRO-12 2005[a] 0 - 1 ft | RR1-1 2005[a] 0 - 1 ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | | |
| Arsenic | 1.6 | 11.3 | | - | - | - | **33 J** | **8.1 J** | **200** | **5.7 J** | **3.1 J** | **11 J** | **12 J** | **41 J** | **19 J** | **11 J** | **9.1** |
| Cadmium | 800 | 0.5 | | - | - | - | 10 U | 6.1 U | **50** | 23 U | 32 U | 19 U | 15 U | 24 U | 21 U | 6.9 U | **5.6** |
| Copper | 41,000 | 12 | | - | - | - | **2,400 J** | **2,100 J** | **3,600** | **190 J** | **140 J** | **1,900 J** | **1,900 J** | **24,000 J** | **2,200 J** | **2,200 J** | **3,400** |
| Lead | 800 | 20.9 | | - | - | - | **800** | **79** | **31,000** | **76** | **74** | **1,200** | **550** | **2,500** | **530** | **810** | **450** |
| Manganese | 23,000 | 630 | | - | - | - | **910** | **330** | **8,300 J** | **490** | **65** | **510** | **1,100** | **880** | **570** | **930** | **330 J** |
| Zinc | 310,000 | - | | - | - | - | **190,000** | **170,000** | **39,000** | **25,000** | **39,000** | **180,000** | **150,000** | **130,000** | **200,000** | **120,000** | **210,000** |
| **General Chemistry** | | | | | | | | | | | | | | | | | |
| pH | - | - | | - | - | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Percent Solids | - | - | | - | - | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **SPLP Metals, mg/l** | | | | | | | | | | | | | | | | | |
| Arsenic, SPLP | - | - | 0.01 | 1.0 | 0.19 | - | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.015 U |
| Cadmium, SPLP | - | - | 0.005 | 0.2 | 0.0012 | - | 0.003 U | 0.003 U | **0.076** | 0.003 U | **0.017** | 0.003 U | 0.003 U | 0.003 U | 0.003 U | 0.003 U | **0.0035** |
| Copper, SPLP | - | - | 1.3 | 1.0 | 0.0134 | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead, SPLP | - | - | 0.015 | 0.1 | 0.0195 | - | 0.01 U | 0.01 U | **0.62** | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Manganese, SPLP | - | - | - | 1.0 | - | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc, SPLP | - | - | - | 1.0 | 0.0254 | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **TCLP Metals, mg/l** | | | | | | | | | | | | | | | | | |
| Arsenic, TCLP | - | - | - | - | - | 5.0 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Cadmium, TCLP | - | - | - | - | - | 1.0 | **0.1** | 0.05 U | **0.21** | **0.14** | **0.35** | **0.11** | **0.074** | 0.05 U | **0.14** | **0.11** | 0.05 U |
| Lead, TCLP | - | - | - | - | - | 5.0 | **0.33** | 0.2 U | **83** | 0.2 U | **0.23** | 0.2 U | 0.2 U | **0.86** | 0.2 U | 0.2 U | **0.35** |

Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted.

= Exceeds Industrial Soil Risk Screening Levels (for total metals)

= Exceeds Illinois Background Values (for total metals)

= Exceeds most stringent of federal MCL, secondary contact and indigenous aquatic life, and general use water quality standards screening criteria (for SPLP metals)

= Exceeds maximum concentration of contaminant for the toxicity characteristic (for TCLP metals)

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

SPLP = Synthetic Precipitation Leaching Procedure

J = estimated detection

J+ = estimated detection, biased high

J- = estimated detection, biased low

U = result not detected

UJ = estimated result not detected

[a]Samples analyzed for SPLP and TCLP metals were collected in 2002.

TABLE 4-1

Residue Pile and Distributed Residue Analytical Results for Total Site-specific Metals, General Chemistry, and SPLP Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Parameeter | Industrial Soil Risk Screening Levels | Illinois Background Values | Federal MCL | Illinois Regs. Subpart D Secondary Contact and Indigenous Aquatic Life | Illinois Regs. Subpart B General Use Water Quality Standard | RR1-2 2005[a] 0 - 1 ft | RR1-3 2005[a] 0 - 1 ft | RR1-4 2005[a] 0 - 1 ft | RR2-11 2005[a] 0 - 1 ft | EZ-RS01 11/30/2010, 8/16/2011 0 - 1 ft | EZ-RS02 8/16/2011 0 - 1 ft | EZ-RS03 8/16/2011 0 - 1 ft | EZ-RS04 12/1/2010, 8/16/2011 0 - 1 ft | EZ-RS05 12/1/2010, 8/16/2011 0 - 1 ft | EZ-RS06 8/16/2011 0 - 1 ft | EZ-RS07 8/16/2011 0 - 1 ft | EZ-RS08 8/16/2011 0 - 1 ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | | |
| Arsenic | 1.6 | 11.3 | | - | - | **6.8** | **16 J** | **7.9 J** | **21 J** | **28.5** | NA | NA | **15.4** | **10.7** | NA | NA | NA |
| Cadmium | 800 | 0.5 | | - | - | **9.4** | 35 U | 4.9 U | 7.2 U | **7.2** | NA | NA | **26.9** | **7.4** | NA | NA | NA |
| Copper | 41,000 | 12 | | - | - | **2,000** | **400 J** | **2,600 J** | **34,000 J** | **866** | NA | NA | **1,390** | **2,540** | NA | NA | NA |
| Lead | 800 | 20.9 | | - | - | **250** | **1,600** | **120** | **7,700** | **692** | NA | NA | **599** | **2,400** | NA | NA | NA |
| Manganese | 23,000 | 630 | | - | - | **190 J** | **160** | **290** | **750** | **966** | NA | NA | **323** | **278** | NA | NA | NA |
| Zinc | 310,000 | - | | - | - | **190,000** | **7,700** | **130,000** | **140,000** | **147,000** | NA | NA | **151,000** | **154,000** | NA | NA | NA |
| **General Chemistry** | | | | | | | | | | | | | | | | | |
| pH | - | - | | - | - | NA | NA | NA | NA | **8.2** | **6.62** | **7.83** | **7.28** | **7.42** | **7.57** | **7.18** | **8.35** |
| Percent Solids | - | - | | - | - | NA | NA | NA | NA | **84.9** | NA | NA | **74.7** | **91.6** | NA | NA | NA |
| **SPLP Metals, mg/l** | | | | | | | | | | | | | | | | | |
| Arsenic, SPLP | - | - | 0.01 | 1.0 | 0.19 | 0.015 U | 0.015 U | 0.015 U | 0.015 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U |
| Cadmium, SPLP | - | - | 0.005 | 0.2 | 0.0012 | **0.0043** | **0.045** | 0.003 U | 0.003 U | 0.0003 U | **0.0014 J** | **0.0012 J** | **0.0012 J** | **0.0011 J** | **0.0021 J** | **0.0012 J** | 0.0003 U |
| Copper, SPLP | - | - | 1.3 | 1.0 | 0.0134 | NA | NA | NA | NA | 0.0019 U | **0.028** | **0.0044 J** | **0.014** | **0.013** | **0.0028 J** | **0.0041 J** | **0.13** |
| Lead, SPLP | - | - | 0.015 | 0.1 | 0.0195 | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.0014 U | 0.0014 U | 0.0014 U | **0.0073** | **0.015** | 0.0014 U | 0.0014 U | **0.03** |
| Manganese, SPLP | - | - | - | 1.0 | - | NA | NA | NA | NA | **0.0024 J** | **0.0096** | **0.0019 J** | **0.0086** | **0.013** | 0.0007 U | **0.0018 J** | **0.011** |
| Zinc, SPLP | - | - | - | 1.0 | 0.0254 | NA | NA | NA | NA | **0.28** | **5** | **0.27** | **1.8** | **2** | **0.38 J** | **3.8** | **1.7** |
| **TCLP Metals, mg/l** | | | | | | | | | | | | | | | | | |
| Arsenic, TCLP | - | - | - | - | - | 0.2 U | 0.2 U | 0.2 U | 0.2 U | NA | NA | NA | NA | NA | NA | NA | NA |
| Cadmium, TCLP | - | - | - | - | - | **0.088** | **0.47** | 0.05 U | **0.076** | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead, TCLP | - | - | - | - | - | 0.2 U | **14** | 0.2 U | **6** | NA | NA | NA | NA | NA | NA | NA | NA |

Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted.

= Exceeds Industrial Soil Risk Screening Levels (for total metals)

= Exceeds Illinois Background Values (for total metals)

= Exceeds most stringent of federal MCL, secondary contact and indigenous aquatic life, and general use water quality standards screening criteria (for SPLP metals)

= Exceeds maximum concentration of contaminant for the toxicity characteristic (for TCLP metals)

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

SPLP = Synthetic Precipitation Leaching Procedure

J = estimated detection

J+ = estimated detection, biased high

J- = estimated detection, biased low

U = result not detected

UJ = estimated result not detected

[a]Samples analyzed for SPLP and TCLP metals were collected in 2002.

TABLE 4-1

Residue Pile and Distributed Residue Analytical Results for Total Site-specific Metals, General Chemistry, and SPLP Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Parameeter | Industrial Soil Risk Screening Levels | Illinois Background Values | Federal MCL | Illinois Regs. Subpart D Secondary Contact and Indigenous Aquatic Life | Illinois Regs. Subpart B General Use Water Quality Standard | EZ-RS09 12/1/2010, 8/16/2011 0 - 1 ft | EZ-RS10 8/16/2011 0 - 1 ft | EZ-RS11 8/16/2011 0 - 1 ft | EZ-RS12 12/1/2010, 8/16/2011 0 - 1 ft | EZ-RS13 8/16/2011 0 - 1 ft | EZ-RS14 8/16/2011 0 - 1 ft | EZ-RS15 8/16/2011 0 - 1 ft | EZ-RS16 12/1/2010, 8/16/2011 0 - 1 ft | EZ-RS17 8/16/2011 0 - 1 ft | EZ-RS18 12/1/2010, 8/16/2011 0 - 1 ft | EZ-RS19 8/16/2011 0 - 1 ft | EZ-RS20 8/16/2011 0 - 1 ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | | |
| Arsenic | 1.6 | 11.3 | | - | - | **8.8** | NA | NA | **15.8** | NA | NA | NA | **10.3** | NA | NA | NA | NA |
| Cadmium | 800 | 0.5 | | - | - | **167** | NA | NA | **8.2** | NA | NA | NA | **7.4** | NA | NA | NA | NA |
| Copper | 41,000 | 12 | | - | - | **428** | NA | NA | **1,500** | NA | NA | NA | **2,090** | NA | NA | NA | NA |
| Lead | 800 | 20.9 | | - | - | **317** | NA | NA | **61.7** | NA | NA | NA | **63.3** | NA | NA | NA | NA |
| Manganese | 23,000 | 630 | | - | - | **75.4** | NA | NA | **19,100** | NA | NA | NA | **297** | NA | NA | NA | NA |
| Zinc | 310,000 | - | | - | - | **185,000** | NA | NA | **172,000** | NA | NA | NA | **296,000** | NA | NA | NA | NA |
| **General Chemistry** | | | | | | | | | | | | | | | | | |
| pH | - | - | | - | - | **7.33** | **7.84** | **8.21** | **7.84** | **7.75** | **7.77** | **7.47** | **7.99** | **8.02** | **7.76** | **6.93** | **8.18** |
| Percent Solids | - | - | | - | - | **82.9** | NA | NA | **83.5** | NA | NA | NA | **80.2** | NA | **78.3** | NA | NA |
| **SPLP Metals, mg/l** | | | | | | | | | | | | | | | | | |
| Arsenic, SPLP | - | - | 0.01 | 1.0 | 0.19 | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U |
| Cadmium, SPLP | - | - | 0.005 | 0.2 | 0.0012 | **0.0047** | 0.0003 U | 0.0003 U | 0.0003 U | 0.0003 U | 0.0003 U | 0.0066 | 0.0003 U | 0.00035 U | **0.0018 J** | **0.0021** | **0.0028** |
| Copper, SPLP | - | - | 1.3 | 1.0 | 0.0134 | **0.043** | 0.0025 U | **0.014** | 0.0019 U | 0.0033 U | 0.0013 U | **0.031** | **0.0071** | 0.0016 U | **0.016** | **0.006 J** | **0.027** |
| Lead, SPLP | - | - | 0.015 | 0.1 | 0.0195 | **0.0091** | 0.0014 U | 0.0014 U | 0.0014 U | 0.0014 U | 0.0014 U | **0.2** | 0.0014 U | **0.0018 J** | **0.037** | **0.054** | **0.032** |
| Manganese, SPLP | - | - | - | 1.0 | - | **0.0081** | 0.0007 U | **0.0024 J** | 0.0007 U | 0.0007 U | 0.0007 U | **0.057** | 0.0007 U | 0.0007 U | **0.014** | **0.0036 J** | **0.014** |
| Zinc, SPLP | - | - | - | 1.0 | 0.0254 | **3.6** | **0.18 J** | **0.5** | **0.097** | **0.38** | **0.095** | **5.8** | **0.34** | **0.12** | **1.1** | **1.3** | **4.5** |
| **TCLP Metals, mg/l** | | | | | | | | | | | | | | | | | |
| Arsenic, TCLP | - | - | - | - | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Cadmium, TCLP | - | - | - | - | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead, TCLP | - | - | - | - | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted.

= Exceeds Industrial Soil Risk Screening Levels (for total metals)

= Exceeds Illinois Background Values (for total metals)

= Exceeds most stringent of federal MCL, secondary contact and indigenous aquatic life, and general use water quality standards screening criteria (for SPLP metals)

= Exceeds maximum concentration of contaminant for the toxicity characteristic (for TCLP metals)

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

SPLP = Synthetic Precipitation Leaching Procedure

J = estimated detection

J+ = estimated detection, biased high

J- = estimated detection, biased low

U = result not detected

UJ = estimated result not detected

[a]Samples analyzed for SPLP and TCLP metals were collected in 2002.

TABLE 4-1

Residue Pile and Distributed Residue Analytical Results for Total Site-specific Metals, General Chemistry, and SPLP Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site - Hillsboro, Illinois*

| Parameeter | Industrial Soil Risk Screening Levels | Illinois Background Values | Federal MCL | Illinois Regs. Subpart D Secondary Contact and Indigenous Aquatic Life | Illinois Regs. Subpart B General Use Water Quality Standard | EZ-RS21 8/16/2011 0 - 1 ft | EZ-RS22 12/1/2010, 8/16/2011 0 - 1 ft | EZ-RS23 8/16/2011 0 - 1 ft | EZ-RS24 8/16/2011 0 - 1 ft | EZ-RS25 12/2/2010, 8/16/2011 0 - 1 ft | EZ-RS26 8/16/2011 0 - 1 ft | EZ-RS27 8/16/2011 0 - 1 ft | EZ-RS28 8/16/2011 0 - 1 ft | EZ-RS29 12/3/2010, 8/16/2011 0 - 1 ft | EZ-RS30 12/3/2010, 8/16/2011 0 - 1 ft | EZ-RS31 8/16/2011 0 - 1 ft | EZ-RS32 8/16/2011 0 - 1 ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | | |
| Arsenic | 1.6 | 11.3 | | - | - | NA | **6.4** | NA | NA | **14** | NA | NA | NA | **13.6** | **13.7** | NA | NA |
| Cadmium | 800 | 0.5 | | - | - | NA | **24.6** | NA | NA | **17.2** | NA | NA | NA | **23 J** | **24.3** | NA | NA |
| Copper | 41,000 | 12 | | - | - | NA | **186** | NA | NA | **505** | NA | NA | NA | **536 J** | **610** | NA | NA |
| Lead | 800 | 20.9 | | - | - | NA | **412** | NA | NA | **169** | NA | NA | NA | **5,030 J** | **2,730** | NA | NA |
| Manganese | 23,000 | 630 | | - | - | NA | **319** | NA | NA | **490** | NA | NA | NA | **108** | **196** | NA | NA |
| Zinc | 310,000 | - | | - | - | NA | **54,100** | NA | NA | **165,000** | NA | NA | NA | **45,900 J** | **32,700** | NA | NA |
| **General Chemistry** | | | | | | | | | | | | | | | | | |
| pH | - | - | | - | - | **7.48** | **7.21** | **6.13** | **7.81** | **8.57** | **5.88** | **5.82** | **5.59** | **6.8** | **6.87** | **7.94** | **7.36** |
| Percent Solids | - | - | | - | - | NA | **77.7** | NA | NA | **87.2** | NA | NA | NA | **84.5** | **80.3** | NA | NA |
| **SPLP Metals, mg/l** | | | | | | | | | | | | | | | | | |
| Arsenic, SPLP | - | - | 0.01 | 1.0 | 0.19 | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | 0.004 U | **0.0076 J** | 0.004 U | 0.004 U | 0.004 U | 0.004 U |
| Cadmium, SPLP | - | - | 0.005 | 0.2 | 0.0012 | 0.19 | **0.00092 J** | **0.0021** | **0.00046 J** | 0.0003 U | 0.036 | **0.0017 J** | 0.009 | **0.0034** | **0.0014 J** | 0.0003 U | **0.002** |
| Copper, SPLP | - | - | 1.3 | 1.0 | 0.0134 | 0.0012 U | 0.0012 U | 0.0022 U | **0.011** | **0.0088** | **0.011** | **0.0077** | **0.06** | **0.029** | **0.034 J** | **0.0048 J** | 0.0012 U |
| Lead, SPLP | - | - | 0.015 | 0.1 | 0.0195 | 0.0014 U | 0.0014 U | **0.008** | **0.03** | **0.0044 J** | **0.23** | **0.011** | **0.18** | **0.17** | **0.18 J** | **0.1** | 0.0014 U |
| Manganese, SPLP | - | - | - | 1.0 | - | 0.0007 U | 0.0007 U | **0.0068** | **0.01** | **0.0038 J** | **0.16** | **0.0095** | **0.15** | **0.0039 J** | **0.0057 J** | 0.002 U | 0.00073 U |
| Zinc, SPLP | - | - | - | 1.0 | 0.0254 | **0.82** | **0.21** | **2.8** | **2.2** | **1.2** | **14** | **0.76** | **3.5** | **1.9 J** | **1.3 J** | **0.58** | **0.33** |
| **TCLP Metals, mg/l** | | | | | | | | | | | | | | | | | |
| Arsenic, TCLP | - | - | - | - | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Cadmium, TCLP | - | - | - | - | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead, TCLP | - | - | - | - | - | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted.

= Exceeds Industrial Soil Risk Screening Levels (for total metals)

= Exceeds Illinois Background Values (for total metals)

= Exceeds most stringent of federal MCL, secondary contact and indigenous aquatic life, and general use water quality standards screening criteria (for SPLP metals)

= Exceeds maximum concentration of contaminant for the toxicity characteristic (for TCLP metals)

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

SPLP = Synthetic Precipitation Leaching Procedure

J = estimated detection

J+ = estimated detection, biased high

J- = estimated detection, biased low

U = result not detected

UJ = estimated result not detected

[a]Samples analyzed for SPLP and TCLP metals were collected in 2002.

TABLE 4-2

Onsite Soil Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Industrial Soil Risk Screening Levels | Illinois Background values | A1-26-S1 0 - 0.5 ft | A1-3-S1 0 - 0.5 ft | A1-3-S1-2 0.5 - 1 ft | A2-13-S1 0 - 0.5 ft | A2-3-S1 0 - 0.5 ft | A2-3-S1D 0 - 0.5 ft | NA-S1 0 - 0.5 ft | NA-S2 0 - 0.5 ft | NA-S3 0 - 0.5 ft | NA-S4 0 - 0.5 ft | S-A1-6-9 07/15/2002 8 - 9 ft | S-A1-23-7 07/16/2002 6 - 7 ft | S-A1-7-3 07/15/2002 2 - 3 ft | S-A1-24-10 07/16/2002 9 - 10 ft | S-A1-3-9 07/15/2002 8 - 9 ft | S-MA-6-4 07/17/2002 3 - 4 ft | S-MA-9-2 07/17/2002 1 - 2 ft | S-NA8-2 07/17/2002 1 - 2 ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| Arsenic, total | 1.6 | 11.3 | **12** | **21** | **4.5** | **2.3** | **11** | **7.4** | **7.3** | **4** | **3.7** | **3** | **1.9** | **6.1** | **4.3** | **5.1** | **3.7** | **11** | **7.2** | **4** |
| Cadium, total | 800 | 0.5 | **7.3 J** | **7.8 J** | **4.7 J** | **5.8 J** | **7.7 J** | **7.3 J** | **2.5** | **5.9** | **2.7** | **1.5** | **87** | **56** | **44** | **6.1** | **5.6** | **2** | **8.2** | **0.12** |
| Copper, total | 41,000 | 12 | **130 J** | **180 J** | **12 J** | **27 J** | **7.7 J** | **12 J** | **20** | **67** | **19** | **10** | **9.1** | **14** | **14** | **16** | **11** | **23** | **21** | **11** |
| Lead, total | 800 | 20.9 | **500** | **1,100** | **24** | **26** | **30** | **29** | **87** | **120** | **40** | **31** | **8.2** | **8.9** | **22** | **19** | **9.1** | **12** | **10** | **12** |
| Manganese, total | 23,000 | 630 | **540** | **490** | **190** | **160** | **960** | **400** | **1,000 J** | **260 J** | **260 J** | **280 J** | **400** | **200** | **120** | **180** | **98** | **240** | **550** | **38** |
| Zinc, total | 310,000 | - | **4,800 J** | **2,700 J** | **93 J** | **770 J** | **460 J** | **710 J** | **1,600** | **5,100** | **1,500** | **950** | **11,000** | **5,700** | **2,800** | **2,000** | **1,100** | **550** | **2500** | **270** |
| **Sieved Metals** | | | | | | | | | | | | | | | | | | | | |
| Lead, seive | 800 | 20.9 | | | | | | | | | | | | | | | | | | |

Note:

Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Residential Soil Risk Screening Levels

= Exceeds Illinois Background Values

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

TABLE 4-2

Onsite Soil Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Industrial Soil Risk Screening Levels | Illinois Background values | S-WA-8-2 07/17/2002 1 - 2 ft | S-WA-9-2 07/17/2002 1 - 2 ft | S-NA9-2 07/18/2002 1 - 2 ft | A2-19-6 07/18/2002 1 - 2 ft | A2-23-3 07/18/2002 2 - 3 ft | A2-24-3 07/18/2002 2 - 3 ft | A2-15-3 07/18/2002 2 - 3 ft | A3-20-2 07/19/2002 1 - 2 ft | A3-25-2 07/18/2002 1 - 2 ft | S-A4-22-2 07/19/2002 1 - 2 ft | S-A4-15-2 07/19/2002 1 - 2 ft | S-A4-3-2 07/19/2002 1 - 2 ft | S-A4-17-2 07/19/2002 1 - 2 ft | S-A3-22-6 07/19/2002 5 - 6 ft | S-A3-19-5 07/19/2002 4 - 5 ft | S-A4-1-6 07/19/2002 1 - 2 ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | | | |
| Arsenic, total | 1.6 | 11.3 | **6.4** | **2.3** | **6.3** | **12** | **4.2** | **4.1** | **3.9** | **8.3** | **8.2** | **8.4** | **11** | **3.3** | **9.3** | **6.8** | **13** | **3.4** |
| Cadium, total | 800 | 0.5 | **25** | **70** | **0.83** | **3.8** | **4.2** | **13** | **6.8** | **6.3** | **33** | **1.3** | **1** | **1.5** | **1.2** | **21** | **19** | **0.41** |
| Copper, total | 41,000 | 12 | **18** | **17** | **24** | **17** | **15** | **11** | **35** | **21** | **19** | **12** | **24** | **17** | **11** | **12** | **21** | **11** |
| Lead, total | 800 | 20.9 | **100** | **48** | **12** | **18** | **11** | **7.4** | **23** | **11** | **12** | **21** | **20** | **13** | **28** | **13** | **16** | **15** |
| Manganese, total | 23,000 | 630 | **580** | **120** | **170** | **540** | **87** | **140** | **82** | **350** | **410** | **420 J** | **1,900 J** | **100 J** | **920 J** | **230 J** | **280 J** | **1,200 J** |
| Zinc, total | 310,000 | - | **2,200** | **1,400** | **350** | **2,200** | **2,700** | **2,700** | **1,500** | **1,900** | **1,700** | **420 J** | **190 J** | **350 J** | **990 J** | **3,900 J** | **2,000 J** | **50 J** |
| **Sieved Metals** | | | | | | | | | | | | | | | | | | |
| Lead, seive | 800 | 20.9 | | | | | | | | | | | | | | | | |

Note:

Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Residential Soil Risk Screening Levels

= Exceeds Illinois Background Values

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

TABLE 4-2

Onsite Soil Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Industrial Soil Risk Screening Levels | Illinois Background values | RS-01 11/30/2010 2 - 3 ft | RS-02 11/30-12/1/2010 1.8 - 2.8 ft | RS-03 11/30/2010 2 - 3 ft | RS-04 12/1/2010 1.4 - 2.4 ft | RS-05 12/1/2010 4.5 - 5.5 ft | RS-06 12/1/2010 1.4 - 2.4 ft | RS-07 12/1/2010 1.6 - 2.6 ft | RS-08 12/1/2010 5 - 6 ft | RS-09 12/1/2010 3.3 - 4.3 ft | RS-10 12/1/2010 1.8 - 2.8 ft | RS-11 12/1/2010 5 - 6 ft | RS-12 12/1/2010 3.6 - 5.6 ft | RS-14 12/1/2010 4.5 - 5.5 ft | RS-15 12/1/2010 1.2 - 2.2 ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | |
| Arsenic, total | 1.6 | 11.3 | **7.1 J** | **7.7 J** | **9.1 J** | **8.2 J** | **7.3 J** | **2.8 J** | **3.5 J** | **7.7 J** | **5.2 J** | **6.5 J** | **11.2 J** | **7.7 J** | **5.5** | **9 J** |
| Cadium, total | 800 | 0.5 | **0.84 J** | **1.2** | **20.5 J** | **4.2 J** | **1.1 J** | **12.1 J** | 0.51 UJ | **7.2 J** | **66 J** | **8.4 J** | 0.52 UJ | **2.5 J** | **3.9 J** | **5 J** |
| Copper, total | 41,000 | 12 | **14.1 J** | **20.3 J** | **19.5 J** | **16 J** | **16.1 J** | **12.8 J** | **18.2 J** | **16.7 J** | **12.2 J** | **14.9 J** | **19 J** | **15.7 J** | **12.5 J** | **19.8 J** |
| Lead, total | 800 | 20.9 | **20.2** | **16.3** | **17.7** | **12.2** | **15.9** | **9.1** | **10.5** | **74.3** | **12.4** | **12.3** | **13.5** | **9.3** | **11.3 J** | **12.9** |
| Manganese, total | 23,000 | 630 | **1,430 J** | **254 J** | **261 J** | **208 J** | **1,440 J** | **442 J** | **229 J** | **140 J** | **262 J** | **686 J** | **513 J** | **224 J** | **931 J** | **194 J** |
| Zinc, total | 310,000 | - | **767 J** | **459 J** | **816 J** | **551 J** | **1,290 J** | **491 J** | **112 J** | **829 J** | **1,210 J** | **705 J** | **470 J** | **398 J** | **768** | **2,470 J** |
| **Sieved Metals** | | | | | | | | | | | | | | | | |
| Lead, seive | 800 | 20.9 | **18.1** | **12.8 J** | **16.2** | **13.8** | **17.6** | **15.3** | **10.6** | **124** | **14.8** | **13.6** | **14** | **17.7** | **16.4 J** | **12.6** |

Note:

Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Residential Soil Risk Screening Levels

= Exceeds Illinois Background Values

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

TABLE 4-2

Onsite Soil Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Industrial Soil Risk Screening Levels | Illinois Background values | RS-16 12/1-12/2/2010 6.8 - 7.8 ft | RS-17 12/1-12/2/2010 2.8 - 3.8 ft | RS-18 12/1-12/2/2010 6.6 - 7.6 ft | RS-19 12/1-12/2/2010 2.1 - 3.1 ft | RS-21 12/1-12/2/2010 1.7 - 2.7 ft | RS-22 12/1-12/2/2010 1.7 - 2.7 ft | RS-23 12/1-12/2/2010 1.6 - 2.6 ft | RS-24 12/2/2010 3 - 4 ft | RS-25 12/2/2010 2.6 - 3.6 ft | RS-26 12/2/2010 1.4 - 2.4 ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | |
| Arsenic, total | 1.6 | 11.3 | **15.9 J** | **6.3 J** | **3.3 J** | **8.7 J** | **9 J** | **6.9 J** | **7.8 J** | **9.6 J** | **12.1 J** | **11.1 J** |
| Cadium, total | 800 | 0.5 | **90.3 J** | **3.3 J** | **1.3 J** | **8.2 J** | **1.7 J** | **1.3** | **16** | **2.1** | **0.72** | **6.1** |
| Copper, total | 41,000 | 12 | **7.8 J** | **15.1 J** | **10.6 J** | **10.1 J** | **17.2 J** | **16.4 J** | **22.5 J** | **25.1 J** | **20.2 J** | **28 J** |
| Lead, total | 800 | 20.9 | **32.9** | **12.2** | **9.4** | **17.6** | **17.3** | **15.6** | **14.7** | **16.6** | **17.7** | **89.6** |
| Manganese, total | 23,000 | 630 | **2,210 J** | **256 J** | **37.1 J** | **304 J** | **920 J** | **209 J** | **358 J** | **298 J** | **424 J** | **293 J** |
| Zinc, total | 310,000 | - | **1,910 J** | **241 J** | **109 J** | **1,360 J** | **82.1 J** | **801 J** | **3,060 J** | **620 J** | **129 J** | **4,520 J** |
| **Sieved Metals** | | | | | | | | | | | | |
| Lead, seive | 800 | 20.9 | **10.6** | **12.8** | **7.3** | **15.1** | **12.3** | **14.8** | **15.3** | **22.5** | **14.4** | **105** |

Note:

Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Residential Soil Risk Screening Levels

= Exceeds Illinois Background Values

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

TABLE 4-2

Onsite Soil Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Industrial Soil Risk Screening Levels | Illinois Background values | RS-27 12/2/2010 3 - 5 ft | RS-28 12/2/2010 3 - 5 ft | RS-29 12/3/2010 6.5 - 7.5 ft | RS-30 12/3/2010 3.3 - 4.3 ft | RS-31 12/3/2010 2.4 - 3.4 ft | RS-32 12/3/2010 6.4 - 7.4 ft | SB-07 11/29/2010 0 - 2 ft | SB-07 11/29/2010 3 - 5 ft | SB-07 11/29/2010 7 - 9 ft | SB-08 11/29/2010 0 - 2 ft | SB-08 11/29/2010 3 - 5 ft | SB-08 11/29/2010 7 - 9 ft | SB-09 11/29/2010 0 - 2 ft | SB-09 11/29/2010 3 - 5 ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | |
| Arsenic, total | 1.6 | 11.3 | **1.7 J** | **4.3 J** | **7.4 J** | **4.9 J** | **7.3 J** | **12 J** | **9.4** | **3.3** | **18.2** | **6.4** | **4.2** | **6.1** | **14.5** | **1.9 J** |
| Cadium, total | 800 | 0.5 | **3.6** | **3.3** | **41** | **197** | **3.6** | **0.92** | **0.89 J** | **0.077 J** | **0.2 J** | **1 J** | **0.11 J** | **0.11 J** | **1.1 J** | 0.54 U |
| Copper, total | 41,000 | 12 | **7.1 J** | **6.6 J** | **18.7 J** | **10.9 J** | **15.6 J** | **17.4 J** | **12.8 J** | **7.2 J** | **9 J** | **9.9 J** | **7.8 J** | **9.6 J** | **24.3 J** | **7.7 J** |
| Lead, total | 800 | 20.9 | **8.1** | **11.4** | **16.1** | **34.9** | **15.2** | **17.8 J** | **12.5 J** | **9.6 J** | **14.7 J** | **28.1 J** | **9.3 J** | **12.6 J** | **15.8 J** | **9.1 J** |
| Manganese, total | 23,000 | 630 | **376 J** | **181 J** | **386 J** | **252 J** | **190 J** | **822 J** | **814 J** | **93 J** | **281 J** | **1,340 J** | **92.3 J** | **64.2 J** | **625 J** | **17.1 J** |
| Zinc, total | 310,000 | - | **990 J** | **875 J** | **10,400 J** | **4,760 J** | **1,150 J** | **130 J** | **793** | **33.8** | **39.8** | **692** | **25.4** | **25.7** | **665** | **15.7 J** |
| **Sieved Metals** | | | | | | | | | | | | | | | | |
| Lead, seive | 800 | 20.9 | **19 J** | **21.7** | **25.5** | **29.8** | 0.03 U | **39.5** | **16.6** | **10.4** | **15.3** | **17.9** | **11.4** | **16.1** | **61.8** | **10.2** |

Note:

Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Residential Soil Risk Screening Levels

= Exceeds Illinois Background Values

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

TABLE 4-2

Onsite Soil Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Industrial Soil Risk Screening Levels | Illinois Background values | SB-09 11/29/2010 7 - 9 ft | SS-04 11/18/2010 0 - 2 ft | SS-05 11/18/2010 0 - 2 ft | SS-06 11/18/2010 0 - 2 ft | SS-07 11/18/2010 0 - 2 ft | SS-08 11/18/2010 0 - 2 ft | SS-09 11/18/2010 0 - 2 ft | SS-10 11/18/2010 0 - 2 ft | SS-11 11/18/2010 0 - 2 ft |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | |
| Arsenic, total | 1.6 | 11.3 | **6.9 J** | **1.3 R** | **8.6** | **8.2** | **7.7** | **15.4** | **3.2** | **11.6** | **10.3** |
| Cadium, total | 800 | 0.5 | 0.55 U | **7.4** | **4.7** | **1.7** | **1** | **4.1** | **5.2** | **2.5** | **9.2** |
| Copper, total | 41,000 | 12 | **13.3 J** | **8.4** | **145** | **31.5** | **29.6** | **108** | **14.1** | **26** | **607 J** |
| Lead, total | 800 | 20.9 | **9.7 J** | **0.78 J** | **56.1 J** | **1.3 R** | **1.2 R** | **1.1 R** | **21.2 J** | **1.2 R** | **594 J** |
| Manganese, total | 23,000 | 630 | **42.1 J** | **367** | **362** | **94.5** | **313** | **534** | **68.3** | **2,380** | **425** |
| Zinc, total | 310,000 | - | **39.4 J** | **1,080 J** | **11,100 J** | **1,740 J** | **1,520 J** | **7,240 J** | **957 J** | **2,300 J** | **26,400 J** |
| **Sieved Metals** | | | | | | | | | | | |
| Lead, seive | 800 | 20.9 | **8.8** | **8** | **169 J** | **106** | **33.5** | **104** | **60.8** | **35.3** | **645** |

Note:

Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Residential Soil Risk Screening Levels

= Exceeds Illinois Background Values

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

TABLE 4-3

Offsite Soil Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Residential Soil Risk Screening Levels non-HHRA adjusted | Illinois Background values | SB-01 EZ-SB01-1 11/29/2010 0 - 2 ft | SB-01 EZ-SB01-2 11/29/2010 3 - 5 ft | SB-01 EZ-SB01-3 11/29/2010 7 - 9 ft | SB-02 EZ-SB02-1 11/30/2010 0 - 2 ft | SB-02 EZ-SB02-2 11/30/2010 3 - 5 ft | SB-02 EZ-SB02-3 11/30/2010 7 - 9 ft | SB-03 EZ-SB03-1 11/30/2010 0 - 2 ft | SB-03 EZ-SB03-2 11/30/2010 3 - 5 ft | SB-03 EZ-SB03-3 11/30/2010 7 - 9 ft | SB-04 EZ-SB04-1 11/30/2010 0 - 2 ft | SB-04 EZ-SB04-2 11/30/2010 3 - 5 ft | SB-04 EZ-SB04-3 11/30/2010 7 - 9 ft | SB-05 EZ-SB05-1 11/30/2010 0 - 2 ft | SB-05 EZ-SB05-2 11/30/2010 3 - 5 ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | |
| Arsenic, total | 0.39 | 11.3 | **14.2 J** | **6 J** | **3.9 J** | **10.8 J** | **8 J** | **5.5 J** | **9.1 J** | **5.9 J** | **4.5** | **10.5** | **5.9** | **5.7** | **7.1** | **9.7** |
| Cadmium, total | 70 | 0.5 | **1.1** | 0.51 U | 0.48 U | **0.66** | 0.51 U | 0.47 U | **1.9** | 0.51 U | **0.34 J** | **0.67 J** | **0.19 J** | **0.088 J** | **0.53 J** | **0.17 J** |
| Copper, total | 3,100 | 12 | **23.1 J** | **12.4 J** | **7.9 J** | **12.7 J** | **15.4 J** | **8.3 J** | **14.5 J** | **18 J** | **6.4 J** | **14.8 J** | **12.5 J** | **8.2 J** | **9.6 J** | **16.7 J** |
| Lead, total | 400 | 20.9 | **40.7 J** | **11.5** | **8.8** | **29.3** | **17.1** | **16.9** | **43.8** | **14.4** | **9.5 J** | **16.9 J** | **11.3 J** | **9.8 J** | **16.8 J** | **16.6 J** |
| Manganese, total | 1,800 | 630 | **912 J** | **364 J** | **266 J** | **2,490 J** | **584 J** | **971 J** | **1,780 J** | **138 J** | **390 J** | **1,260 J** | **549 J** | **375 J** | **672 J** | **635 J** |
| Zinc, total | 23,000 | - | **315 J** | **46.4 J** | **22.2 J** | **164 J** | **42.4 J** | **22.4 J** | **565 J** | **101 J** | **99.4** | **283** | **39.2** | **24.3** | **274** | **50.7** |
| **Sieved Metals** | | | | | | | | | | | | | | | | |
| Pb, sieve | 400 | 20.9 | **16.8** | **11.6** | **10** | **14.2** | **12.3** | **10.5** | **18.3** | **14.9** | **7.9** | **10.3** | **9.5 J** | **9.6** | **14** | **13.2** |

Note: Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Residential Soil Risk Screening Levels

= Exceeds Illinois Background Values

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

TABLE 4-3

Offsite Soil Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Residential Soil Risk Screening Levels non-HHRA adjusted | Illinois Background values | SB-05 EZ-SB05-3 11/30/2010 7 - 9 ft | SB-06 EZ-SB06-1 11/30/2010 0 - 2 ft | SB-06 EZ-SB06-2 11/30/2010 3 - 5 ft | SB-06 EZ-SB06-3 11/30/2010 7 - 9 ft | SS-01 EZ-SS01-1 11/22/2010 0 - 2 ft | SS-02 EZ-SS02-1 11/22/2010 0 - 2 ft | SS-03 EZ-SS03-1 11/22/2010 0 - 2 ft |
|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | |
| Arsenic, total | 0.39 | 11.3 | **4.1** | **16.3** | **5.6** | **6.8** | **3.5** | **12.7** | **17.8** |
| Cadmium, total | 70 | 0.5 | **0.21 J** | **1.7 J** | **0.23 J** | **0.2 J** | **1.2** | **1.6** | **0.94** |
| Copper, total | 3,100 | 12 | **8.7 J** | **14.2 J** | **13.3 J** | **11.6 J** | **7.5** | **12** | **14.1** |
| Lead, total | 400 | 20.9 | **15.2 J** | **46 J** | **11.2 J** | **23.8 J** | **1.1 R** | **1.2 R** | **1.1 R** |
| Manganese, total | 1,800 | 630 | **1,340 J** | **1,740 J** | **543 J** | **1,300 J** | **322** | **1,610** | **989** |
| Zinc, total | 23,000 | - | **26.1** | **246** | **37** | **31.1** | **495 J** | **489 J** | **738 J** |
| **Sieved Metals** | | | | | | | | | |
| Pb, sieve | 400 | 20.9 | **8** | **17.9** | **10** | **12.1** | **26** | **25.5** | **28** |

Note: Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Residential Soil Risk Screening Levels

= Exceeds Illinois Background Values

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

TABLE 4-4

Surface Water Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Illinois Regs. Subpart B General Use Water Quality Standard* | Illinois Regs. Subpart D Secondary Contact and Indigenous Aquatic Life | National Recommended Water Quality Criteria (Freshwater) | SW-ED-13 3/10/2003 | SD-ED-13 12/1/2010 | SW-ED-16 3/10/2003 | SD-ED-16 12/4/2010 | SD-ED-24 12/3/2010 | SD-ED-25 12/3/2010 | SD-ED-26 12/4/2010 | SD-ED-27 12/5/2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | |
| Arsenic, total | 0.19 | 1.0 | 0.15 | 0.0081 U | 0.01 U | 0.0081 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Cadmium, total | 0.0012 | 0.2 | 0.00025 | **0.0071** | **0.0027 J** | 0.00053 U | **0.0021 J** | 0.005 U | 0.005 U | **0.0082** | **0.0012 J** |
| Copper, total | 0.0134 | 1.0 | - | **0.004** | **0.004 J** | **0.002** | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U |
| Lead, total | 0.0195 | 0.1 | 0.0025 | 0.0013 U | 0.01 U | 0.0013 U | 0.01 U | 0.01 U | 0.01 U | **0.0263** | 0.01 U |
| Manganese, total | - | 1.0 | - | **0.38** | **1.1** | **0.1** | **1.13** | 0.015 U | 0.015 U | 0.015 U | **0.0076 J** |
| Zinc, total | 0.0254 | 1.0 | 0.12 | **11** | **4.13** | **0.84** | **3.21** | **0.206** | **0.179** | **4.85** | **1.45** |
| **Dissolved Metals** | | | | | | | | | | | |
| Arsenic, dissolved | 0.19 | 1.0 | 0.15 | NA | 0.01 U | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Cadmium, dissolved | 0.0012 | 0.2 | 0.00025 | NA | **0.0025 J** | NA | **0.0016 J** | 0.005 U | 0.005 U | **0.007** | **0.0013 J** |
| Copper, dissolved | 0.0134 | 1.0 | - | NA | **0.0036 J** | NA | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U |
| Lead, dissolved | 0.0195 | 0.1 | 0.0025 | NA | 0.01 U | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Manganese, dissolved | - | 1.0 | - | NA | **1.09** | NA | **1.09** | 0.015 U | 0.015 U | 0.015 U | **0.0057 J** |
| Zinc, dissolved | 0.0254 | 1.0 | 0.12 | NA | **4.01** | NA | **3.05** | **0.159** | **0.155** | **4.41** | **1.3** |

Note: Concentrations are presented in units of milligrams per liter (mg/L)

= Concentration exceeds the most stringent standard.

Detected concentrations are bolded.
- = no value
NA = not reported or analyzed
J = estimated detection
U = result not detected
UJ = estimated result not detected

TABLE 4-4

Surface Water Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Illinois Regs. Subpart B General Use Water Quality Standard* | Illinois Regs. Subpart D Secondary Contact and Indigenous Aquatic Life | National Recommended Water Quality Criteria (Freshwater) | SD-ED-28 12/5/2010 | SD-ED-29 12/5/2010 | SD-ED-30 12/6/2010 | SW-WD-6 3/10/2003 | SW-WD-6 6/13/2003 | SD-WD-06 12/2/2010 | SW-WD-7 3/10/2003 | SD-WD-07 12/2/2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | |
| Arsenic, total | 0.19 | 1.0 | 0.15 | 0.01 U | 0.01 U | 0.01 U | 0.0081 U | **0.0012 J** | 0.01 U | 0.0081 U | 0.01 U |
| Cadmium, total | 0.0012 | 0.2 | 0.00025 | **0.0015 J** | 0.005 U | 0.005 U | **0.019** | **0.0058** | **0.0136** | **0.034** | **0.0187** |
| Copper, total | 0.0134 | 1.0 | - | 0.025 U | 0.025 U | **0.0039 J** | **0.0016** | **0.0033 J** | **0.0052 J** | **0.0049** | **0.0034 J** |
| Lead, total | 0.0195 | 0.1 | 0.0025 | 0.01 U | 0.01 U | 0.01 U | 0.0013 U | **0.0028** | **0.0189 J+** | **0.0023** | 0.01 U |
| Manganese, total | - | 1.0 | - | **0.008 J** | **0.0104 J** | **0.0166** | **0.62** | **0.35** | **0.506** | **0.077** | **0.3** |
| Zinc, total | 0.0254 | 1.0 | 0.12 | **1.48** | **0.35** | **0.404** | **15** | **4** | **5.65** | **25** | **7.08** |
| **Dissolved Metals** | | | | | | | | | | | |
| Arsenic, dissolved | 0.19 | 1.0 | 0.15 | 0.01 U | 0.01 U | 0.01 U | NA | NA | 0.01 U | NA | 0.01 U |
| Cadmium, dissolved | 0.0012 | 0.2 | 0.00025 | **0.0011 J** | 0.005 U | 0.005 U | NA | NA | **0.0097** | NA | **0.0146** |
| Copper, dissolved | 0.0134 | 1.0 | - | 0.025 U | 0.025 U | 0.025 U | NA | NA | 0.025 U | NA | 0.025 U |
| Lead, dissolved | 0.0195 | 0.1 | 0.0025 | 0.01 U | 0.01 U | 0.01 U | NA | NA | 0.01 U | NA | 0.01 U |
| Manganese, dissolved | - | 1.0 | - | **0.0066 J** | **0.0091 J** | **0.0163** | NA | NA | **0.494** | NA | **0.278** |
| Zinc, dissolved | 0.0254 | 1.0 | 0.12 | **1.38** | **0.301** | **0.284** | NA | NA | **5.14** | NA | **6.66** |

Note: Concentrations are presented in units of milligrams per liter (mg/L)

= Concentration exceeds the most stringent standard.

Detected concentrations are bolded.
- = no value
NA = not reported or analyzed
J = estimated detection
U = result not detected
UJ = estimated result not detected

TABLE 4-4

Surface Water Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Illinois Regs. Subpart B General Use Water Quality Standard* | Illinois Regs. Subpart D Secondary Contact and Indigenous Aquatic Life | National Recommended Water Quality Criteria (Freshwater) | SW-WD-8 3/10/2003 | SD-WD-08 12/1/2010 | SW-WD-9 3/10/2003 | SD-WD-09 12/2/2010 | SW-WD-10 3/10/2003 | SD-WD-10 12/2/2010 | SD-WD-17 12/4/2010 | SD-WD-18 12/7/2010 | SD-WD-19 12/7/2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | |
| Arsenic, total | 0.19 | 1.0 | 0.15 | 0.0081U | 0.01 U | 0.0081 U | 0.01 U | 0.0081 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Cadmium, total | 0.0012 | 0.2 | 0.00025 | **0.0023** | **0.0412** | **0.23** | **0.0346** | **0.0058** | **0.0529** | **0.018** | **0.0171** | **0.0174** |
| Copper, total | 0.0134 | 1.0 | - | **0.0011** | 0.025 U | **0.0026** | 0.025 U | **0.0059** | **0.0077 J** | **0.0039 J** | **0.0043 J** | **0.0035 J** |
| Lead, total | 0.0195 | 0.1 | 0.0025 | 0.0013 U | 0.01 U | 0.0013 U | 0.01 U | 0.0013 U | **0.0401** | **0.0041 J** | **0.0044 J** | 0.01 U |
| Manganese, total | - | 1.0 | - | **0.4** | **0.115** | **0.01** | **0.1** | **0.49** | **0.156** | **0.271** | **0.3** | **0.3** |
| Zinc, total | 0.0254 | 1.0 | 0.12 | **1.2** | **7.3** | **26** | **7.5** | **3.7** | **8.66** | **3.71** | **3.65** | **3.72** |
| **Dissolved Metals** | | | | | | | | | | | | |
| Arsenic, dissolved | 0.19 | 1.0 | 0.15 | NA | 0.01 U | NA | 0.01 U | NA | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Cadmium, dissolved | 0.0012 | 0.2 | 0.00025 | NA | **0.0406** | NA | **0.0258** | NA | **0.0519** | **0.0114** | **0.0099** | **0.0097** |
| Copper, dissolved | 0.0134 | 1.0 | - | NA | 0.025 U | NA | 0.025 U | NA | 0.025 U | **0.0031 J** | 0.025 U | **0.003 J** |
| Lead, dissolved | 0.0195 | 0.1 | 0.0025 | NA | 0.01 U | NA | 0.01 U | NA | **0.0037 J** | 0.01 U | 0.01 U | 0.01 U |
| Manganese, dissolved | - | 1.0 | - | NA | **0.112** | NA | **0.0923** | NA | **0.114** | **0.26** | **0.293** | **0.285** |
| Zinc, dissolved | 0.0254 | 1.0 | 0.12 | NA | **7.25** | NA | **7.8** | NA | **8.14** | **3.7** | **3.61** | **3.7 J** |

Note: Concentrations are presented in units of milligrams per liter (mg/L)

= Concentration exceeds the most stringent standard.

Detected concentrations are bolded.
- = no value
NA = not reported or analyzed
J = estimated detection
U = result not detected
UJ = estimated result not detected

TABLE 4-4

Surface Water Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Illinois Regs. Subpart B General Use Water Quality Standard* | Illinois Regs. Subpart D Secondary Contact and Indigenous Aquatic Life | National Recommended Water Quality Criteria (Freshwater) | SD-WD-20 12/7/2010 | SD-WD-21 12/7/2010 | SD-WD-22 12/3/2010 | SD-WD-23 12/3/2010 | SW-WD-PN 3/10/2003 | SW-WD-PS 3/10/2003 | SW-ED-11 3/10/2003 | SW-WD-11 6/13/2003 | SW-WD-12 6/13/2003 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | |
| Arsenic, total | 0.19 | 1.0 | 0.15 | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.0081 U | 0.0081 U | 0.0081 U | **0.0023 J** | **0.0022 J** |
| Cadmium, total | 0.0012 | 0.2 | 0.00025 | **0.018** | **0.0177** | **0.117** | **0.106** | **0.087** | **0.069** | 0.00053 U | **0.00019 J** | **0.0012** |
| Copper, total | 0.0134 | 1.0 | - | **0.0055 J** | **0.004 J** | **0.0115 J** | **0.033** | **0.0023** | **0.0017** | **0.0044** | **0.0037 J** | **0.0041 J** |
| Lead, total | 0.0195 | 0.1 | 0.0025 | **0.0089 J** | **0.0046 J** | **0.0061 J** | **0.027** | **0.0032** | **0.0022** | 0.0013 U | **0.0038** | **0.0052** |
| Manganese, total | - | 1.0 | - | **0.307** | **0.309** | **0.533** | **0.447** | **0.3** | **0.27** | **0.11** | **0.25** | **0.27** |
| Zinc, total | 0.0254 | 1.0 | 0.12 | **3.77** | **3.79** | **5.52** | **7.64** | **16** | **14** | **1.4** | 0.072 U | **0.71** |
| **Dissolved Metals** | | | | | | | | | | | | |
| Arsenic, dissolved | 0.19 | 1.0 | 0.15 | 0.01 U | 0.01 U | 0.01 U | 0.01 U | NA | NA | NA | NA | NA |
| Cadmium, dissolved | 0.0012 | 0.2 | 0.00025 | **0.0095** | **0.0096** | **0.112** | **0.0537** | NA | NA | NA | NA | NA |
| Copper, dissolved | 0.0134 | 1.0 | - | 0.025 U | 0.025 U | **0.0094 J** | **0.0041 J** | NA | NA | NA | NA | NA |
| Lead, dissolved | 0.0195 | 0.1 | 0.0025 | 0.01 U | 0.01 U | **0.0051 J** | 0.01 U | NA | NA | NA | NA | NA |
| Manganese, dissolved | - | 1.0 | - | **0.292** | **0.288** | **0.519** | **0.0549** | NA | NA | NA | NA | NA |
| Zinc, dissolved | 0.0254 | 1.0 | 0.12 | **3.58** | **3.65** | **5.37** | **3.29** | NA | NA | NA | NA | NA |

Note: Concentrations are presented in units of milligrams per liter (mg/L)

= Concentration exceeds the most stringent standard.

Detected concentrations are bolded.
- = no value
NA = not reported or analyzed
J = estimated detection
U = result not detected
UJ = estimated result not detected

TABLE 4-5

Sediment Analytical Results for Site-Specific Metals and General Chemistry

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Ecological Screening Level | SD-ED-11 07/09/2002 | SD-ED-12 7/9/2002 | SD-ED-13 07/09/2002 | SD-ED-13 12/1/2010 | SD-ED-14 7/8/2002 | SD-ED-15 7/8/2002 | SD-ED-16 07/08/2002 | SD-ED-16 12/4/2010 | SD-ED-24 12/3/2010 | SD-ED-25 12/3/2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | |
| Arsenic, total | 9.79 | **2.1 J** | **2.4 J** | **6.1 J** | **11 J** | **7.2 J** | **5.8 J** | **3.2 J** | **4 J** | **5.2 J** | **2.2** |
| Cadmium, total | 0.99 | **0.91** | **2.4** | **13** | **8.7 J** | **3.7** | **2.3** | **8.9** | **0.65** | **15.9** | **57.8** |
| Copper, total | 31.6 | **7.5** | **8.9** | **52** | **184 J** | **18** | **4.8** | **53** | **8.9 J** | **204 J+** | **18.1** |
| Lead, total | 35.8 | **14** | **25** | **84** | **319** | **75** | **20** | **87** | **20.2 J** | **297 J** | **66.8** |
| Manganese, total | 460 | **130** | **70** | **340** | **336 J** | **750** | **740** | **390** | **493 J** | **73.6 J** | **36.1** |
| Zinc, total | 121 | **460 J** | **830 J** | **11,000 J** | **4,170 J** | **5,100 J** | **530 J** | **8,400 J** | **428 J** | **24,000 J** | **2,380** |
| **SEM Metals** | | | | | | | | | | | |
| Cadmium, SEM | 0.99 | NA | NA | NA | **0.44 J** | NA | NA | NA | **0.086** | **17** | **57** |
| Copper, SEM | 31.6 | NA | NA | NA | **3.2 J** | NA | NA | NA | **3.6 J** | **80 J** | **19** |
| Lead, SEM | 35.8 | NA | NA | NA | **14** | NA | NA | NA | **6.3** | **220** | **110** |
| Mercury, SEM | - | NA | NA | NA | 2 U | NA | NA | NA | 2 U | 2 U | 2 |
| Nickel, SEM | - | NA | NA | NA | **1.2** | NA | NA | NA | **2** | **18** | **3.2** |
| Silver, SEM | - | NA | NA | NA | 0.006 UJ | NA | NA | NA | 0.006 U | **0.029** | 0.007 |
| Zinc, SEM | 121 | NA | NA | NA | **300 J** | NA | NA | NA | **44** | **27,000** | **2,800** |
| **General Chemistry** | | | | | | | | | | | |
| Acid Volatile Sulfide | - | NA | NA | NA | **79** | NA | NA | NA | **1.7** | **110** | **230** |
| Total Organic Carbon | - | NA | NA | NA | **3,000 J** | NA | NA | NA | 710 U | **18,000** | **36,000** |
| Percent Solids | - | NA | NA | NA | 65.4 | NA | NA | NA | 80.9 | 65.7 | 76.7 |
| Grain Size - Sieve 4.75 phi, percent passing | - | NA | NA | NA | 100 | NA | NA | NA | 98.8 | 99.2 | 97.1 |
| Grain Size - Sieve No. 10, percent passing | - | NA | NA | NA | 96.4 | NA | NA | NA | 95.2 | 87.7 | 94.3 |
| Grain Size - Sieve No. 20, percent passing | - | NA | NA | NA | 74.5 | NA | NA | NA | 78.8 | 49.1 | 89.9 |
| Grain Size - Sieve No. 40, percent passing | - | NA | NA | NA | 57.1 | NA | NA | NA | 61.7 | 24.4 | 62.4 |
| Grain Size - Sieve No. 60, percent passing | - | NA | NA | NA | 46.6 | NA | NA | NA | 46.2 | 12.1 | 31.1 |
| Grain Size - Sieve No. 80, percent passing | - | NA | NA | NA | 40.9 | NA | NA | NA | 38.6 | 8.2 | 19.8 |
| Grain Size - Sieve No. 100, percent passing | - | NA | NA | NA | 38.8 | NA | NA | NA | 36 | 7.2 | 17.2 |
| Grain Size - Sieve No. 200, percent passing | - | NA | NA | NA | 31 | NA | NA | NA | 27.9 | 3.9 | 12.1 |
| Grain Size - Sieve No. 230 (63 µm), percent | - | NA | NA | NA | 17 | NA | NA | NA | 25.2 | 0.11 | 10.7 |

Note: Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Ecological Screening Levels

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

TABLE 4-5

Sediment Analytical Results for Site-Specific Metals and General Chemistry

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Ecological Screening Level | | SD-ED-26 12/4/2010 | SD-ED-27 12/5/2010 | SD-ED-28 12/5/2010 | SD-ED-29 12/5/2010 | SD-ED-30 12/6/2010 | SD-WD-01 07/08/2002 | SD-WD-02 07/08/2002 | SD-WD-03 07/08/2002 | SD-WD-04 07/08/2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | |
| Arsenic, total | 9.79 | **J** | **14.3 J** | **7.6 J** | **4.9 J** | **3.4 J** | **10.2 J** | **3.4 J** | **3.9 J** | **2.5 J** | **3.2 J** |
| Cadmium, total | 0.99 | | **46.3** | **2.3** | **9** | 0.55 U | **4** | **1.2** | **1.6** | **0.96** | **0.83** |
| Copper, total | 31.6 | **J** | **812 J+** | **55.1 J** | **90.8 J** | **12.5 J** | **29.2** | **9.9** | **15** | **27** | **5.7** |
| Lead, total | 35.8 | **J** | **917 J** | **45.7 J** | **138 J** | **13.4 J** | **50.8** | **26** | **49** | **32** | **29** |
| Manganese, total | 460 | **J** | **650 J** | **441 J** | **239 J+** | **134 J** | **672** | **230** | **420** | **190** | **330** |
| Zinc, total | 121 | **J** | **245,000 J** | **12,100 J** | **18,800 J** | **241 J** | **4,150 J** | **500 J** | **1,400 J** | **400 J** | **520 J** |
| **SEM Metals** | | | | | | | | | | | |
| Cadmium, SEM | 0.99 | | **30** | **3.8 J** | **0.58** | **0.12** | **1.2** | NA | NA | NA | NA |
| Copper, SEM | 31.6 | **J** | **4.7 J** | **51 J** | **4.6 J** | **2.8 J** | **9.1 J** | NA | NA | NA | NA |
| Lead, SEM | 35.8 | | **370 J** | **77 J** | **12** | **7.9** | **19** | NA | NA | NA | NA |
| Mercury, SEM | - | U | 2 U | 2 U | 2 U | 2 U | 2 U | NA | NA | NA | NA |
| Nickel, SEM | - | | **150** | **25 J** | **2.1** | **0.99** | **3.6** | NA | NA | NA | NA |
| Silver, SEM | - | U | **0.094** | 0.009 U | 0.006 U | 0.007 U | 0.007 U | NA | NA | NA | NA |
| Zinc, SEM | 121 | | **230,000** | **19,000 J** | **1,500** | **280** | **1,500** | NA | NA | NA | NA |
| **General Chemistry** | | | | | | | | | | | |
| Acid Volatile Sulfide | - | | **230 J** | **1,400 J** | **97 J** | **89 J** | **31 J** | NA | NA | NA | NA |
| Total Organic Carbon | - | | **91,000** | 870 U | 810 U | 780 U | 1,000 U | NA | NA | NA | NA |
| Percent Solids | - | | 38.1 | 66.3 | 71.1 | 73.9 | 55.6 | NA | NA | NA | NA |
| Grain Size - Sieve 4.75 phi, percent passing | - | | 99 | 99.5 | 99 | 99.3 | 99.1 | NA | NA | NA | NA |
| Grain Size - Sieve No. 10, percent passing | - | | 97.1 | 88.9 | 93.5 | 90.6 | 94.1 | NA | NA | NA | NA |
| Grain Size - Sieve No. 20, percent passing | - | | 85 | 66.3 | 76.1 | 70.8 | 76.1 | NA | NA | NA | NA |
| Grain Size - Sieve No. 40, percent passing | - | | 72.9 | 50.2 | 57.6 | 52.4 | 58.7 | NA | NA | NA | NA |
| Grain Size - Sieve No. 60, percent passing | - | | 63 | 39.6 | 44.3 | 40.2 | 44.7 | NA | NA | NA | NA |
| Grain Size - Sieve No. 80, percent passing | - | | 55.2 | 34.5 | 37.5 | 30.5 | 38 | NA | NA | NA | NA |
| Grain Size - Sieve No. 100, percent passing | - | | 51.5 | 32.6 | 35.1 | 28 | 35.5 | NA | NA | NA | NA |
| Grain Size - Sieve No. 200, percent passing | - | | 32.1 | 25.6 | 26.6 | 20.3 | 27.6 | NA | NA | NA | NA |
| Grain Size - Sieve No. 230 (63 µm), percent | - | | 16 | 23 | 21.7 | 16.8 | 24.5 | NA | NA | NA | NA |

Note: Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Ecological Screening Levels

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

TABLE 4-5

Sediment Analytical Results for Site-Specific Metals and General Chemistry

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Ecological Screening Level | SD-WD-05 07/08/2002 | SD-WD-06 07/08/2002 | SD-WD-06 12/2/2010 | SD-WD-07 07/08/2002 | SD-WD-07 12/2/2010 | SD-WD-8 07/09/2002 | SD-WD-08 12/1/2010 | SD-WD-9 07/09/2002 | SD-WD-09 12/2/2010 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | |
| Arsenic, total | 9.79 | **5.4 J** | **8J** | **9.5 J** | **25 J** | **6.9 J** | **7 J** | **17 J** | **7.9 J** | **7.5 J** |
| Cadmium, total | 0.99 | **0.48** | **23** | **28.8** | **96** | **5.5** | **17** | **11.6** | **550** | **2.7** |
| Copper, total | 31.6 | **9.6** | **51** | **67.9 J** | **320** | **18.1 J** | **97** | **78.3 J** | **58** | **54.4 J** |
| Lead, total | 35.8 | **28** | **290 J** | **326 J** | **2700** | **65.1 J** | **450** | **519 J** | **220** | **222 J** |
| Manganese, total | 460 | **480** | **380** | **287** | **110** | **91.2 J** | **360** | **1,530 J** | **230** | **384 J** |
| Zinc, total | 121 | **310 J** | **10,000 J** | **8,100 J** | **23,000 J** | **4,480 J** | **7,600 J** | **3,690 J** | **12,000 J** | **1,930 J** |
| **SEM Metals** | | | | | | | | | | |
| Cadmium, SEM | 0.99 | NA | NA | **38** | NA | **10** | NA | **7.6** | NA | **7** |
| Copper, SEM | 31.6 | NA | NA | **45 J** | NA | **5.3 J** | NA | **28 J** | NA | **11 J** |
| Lead, SEM | 35.8 | NA | NA | **350 J** | NA | **40** | NA | **280** | NA | **180** |
| Mercury, SEM | - | NA | NA | 2 U | NA | 2 U | NA | 2 U | NA | 2 U |
| Nickel, SEM | - | NA | NA | **12** | NA | **2.9** | NA | **3.6** | NA | **0.9** |
| Silver, SEM | - | NA | NA | 0.009 U | NA | 0.006 U | NA | 0.006 U | NA | **0.015** |
| Zinc, SEM | 121 | NA | NA | **15,000** | NA | **3,200** | NA | **3,000** | NA | **630** |
| **General Chemistry** | | | | | | | | | | |
| Acid Volatile Sulfide | - | NA | NA | **2,900 J** | NA | **52 J** | NA | **220 J** | NA | **4.1 J** |
| Total Organic Carbon | - | NA | NA | **39,000 J** | NA | 700 U | NA | 770 U | NA | 780 U |
| Percent Solids | - | NA | NA | 64.1 | NA | 82 | NA | 75 | NA | 73.7 |
| Grain Size - Sieve 4.75 phi, percent passing | - | NA | NA | 96.3 | NA | 96.9 | NA | 97.7 | NA | 97.3 |
| Grain Size - Sieve No. 10, percent passing | - | NA | NA | 85.2 | NA | 82.4 | NA | 89.8 | NA | 79.6 |
| Grain Size - Sieve No. 20, percent passing | - | NA | NA | 70.4 | NA | 64.3 | NA | 69.5 | NA | 56 |
| Grain Size - Sieve No. 40, percent passing | - | NA | NA | 53.8 | NA | 46.2 | NA | 50.5 | NA | 42.4 |
| Grain Size - Sieve No. 60, percent passing | - | NA | NA | 35.7 | NA | 28.7 | NA | 37.6 | NA | 33.7 |
| Grain Size - Sieve No. 80, percent passing | - | NA | NA | 27.4 | NA | 20.7 | NA | 32.5 | NA | 30.6 |
| Grain Size - Sieve No. 100, percent passing | - | NA | NA | 24.8 | NA | 17.9 | NA | 30.7 | NA | 29.3 |
| Grain Size - Sieve No. 200, percent passing | - | NA | NA | 16.4 | NA | 10.5 | NA | 24.8 | NA | 24.5 |
| Grain Size - Sieve No. 230 (63 µm), percent | - | NA | NA | 14.5 | NA | 9 | NA | 22.6 | NA | 15.8 |

Note: Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Ecological Screening Levels

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

TABLE 4-5

Sediment Analytical Results for Site-Specific Metals and General Chemistry

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Ecological Screening Level | SD-WD-10 07/08/2002 | SD-WD-10 12/2/2010 | SD-WD-17 12/4/2010 | SD-WD-20 12/7/2010 | SD-WD-21 12/7/2010 |
|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | |
| Arsenic, total | 9.79 | **15 J** | **4.4 J** | **13.4 J** | **11.7 J** | **9.4 J** |
| Cadmium, total | 0.99 | **1.4** | **5.6** | **34.7** | **7.9** | **3.4** |
| Copper, total | 31.6 | **30** | **23.6 J** | **165 J+** | **186 J+** | **70.8** |
| Lead, total | 35.8 | **46** | **243 J** | **1,070 J** | **703** | **229** |
| Manganese, total | 460 | **100** | **104 J** | **715 J** | **453** | **326** |
| Zinc, total | 121 | **920 J** | **819 J** | **9,970 J** | **5,100** | **3,570** |
| **SEM Metals** | | | | | | |
| Cadmium, SEM | 0.99 | NA | **4.4** | **58** | **11** | **4.7** |
| Copper, SEM | 31.6 | NA | **28 J** | **130 J** | **100 J** | **39 J** |
| Lead, SEM | 35.8 | NA | **210** | **900** | **820** | **180** |
| Mercury, SEM | - | NA | 2 U | 2 U | 2 U | 2 U |
| Nickel, SEM | - | NA | **1.4** | **14** | **6.8** | **6.3** |
| Silver, SEM | - | NA | **0.054** | **0.022** | **0.034** | **0.013** |
| Zinc, SEM | 121 | NA | **1,600** | **11,000** | **7,200** | **3,400** |
| **General Chemistry** | | | | | | |
| Acid Volatile Sulfide | - | NA | **34 J** | **1.7 J** | **140** | **28 J** |
| Total Organic Carbon | - | NA | 750 U | **40,000** | 790 U | 810 U |
| Percent Solids | - | NA | 76.2 | 75.1 | 73 | 70.7 |
| Grain Size - Sieve 4.75 phi, percent passing | - | NA | 97.6 | 90.1 | 99.2 | 99.2 |
| Grain Size - Sieve No. 10, percent passing | - | NA | 89.7 | 74 | 89 | 91.4 |
| Grain Size - Sieve No. 20, percent passing | - | NA | 70 | 55.7 | 68.3 | 73 |
| Grain Size - Sieve No. 40, percent passing | - | NA | 50.9 | 40.3 | 50.7 | 58.2 |
| Grain Size - Sieve No. 60, percent passing | - | NA | 34 | 28 | 38.5 | 47.1 |
| Grain Size - Sieve No. 80, percent passing | - | NA | 27.2 | 21.9 | 33.8 | 41.6 |
| Grain Size - Sieve No. 100, percent passing | - | NA | 25.1 | 19.7 | 31.9 | 39.5 |
| Grain Size - Sieve No. 200, percent passing | - | NA | 19 | 12.8 | 25.8 | 31.9 |
| Grain Size - Sieve No. 230 (63 µm), percent | - | NA | 16.7 | 11.2 | 22.2 | 29 |

Note: Concentrations are presented in units of milligrams per kilogram (mg/kg) unless otherwise noted

= Exceeds Ecological Screening Levels

Detected concentrations are bolded.

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

TABLE 4-6

Groundwater Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Illinois Class II Standard | G101 3/18/2003 | G101 12/16/2010 | G102 3/18/2003 | G102 12/6/2010 | G103 3/19/2003 | G103 12/14/2010 | G104 3/18/2003 | G104 12/15/2010 | G105 3/18/2003 | G105 12/14/2010 | G106 3/19/2003 | G-106 12/6/2010 | G-107 3/19/2003 | G-107 12/16/2010 | G-109 3/18/2003 | G-109 12/14/2010 | MW-1 3/19/2003 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | | | |
| Arsenic, total | 0.2 | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0045 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | **0.0106 J** | **0.075** | 0.01 U | 0.0081 |
| Cadium, total | 0.05 | 0.0005 | 0.005 U | 0.00053 | 0.005 U | 0.0005 | 0.005 U | 0.00053 | 0.005 U | 0.0005 | 0.005 U | 0.00053 | **0.0008 J** | **0.061** | **0.0801** | 0.00053 | 0.005 U | 0.00053 |
| Copper, total | 0.65 | **0.0018** | 0.025 U | 0.0018 | 0.025 U | 0.0009 | 0.025 U | 0.087 | **0.0084 J** | 0.0009 | 0.025 U | 0.0009 | 0.025 U | **0.01** | **0.0334** | 0.22 | 0.025 U | **0.0037** |
| Lead, total | 0.1 | 0.0013 | 0.01 U | 0.0013 | 0.01 U | 0.0013 | 0.01 U | **0.079** | 0.01 U | 0.0013 | 0.01 U | 0.0013 | 0.01 U | **0.061** | 0.01 R | **0.15** | 0.01 U | **0.0013** |
| Manganese, total | 10 | **0.055** | 0.015 U | **0.29** | **0.0322** | **0.016** | 0.015 U | **2.2** | **0.174** | **0.086** | **0.0972** | **0.02** | 0.015 U | **1.1** | **2.48** | **8.1** | 0.015 U | **0.072** |
| Zinc, total | 10 | **0.082** | **0.131 J** | 0.004 U | 0.06 U | 0.011 U | **0.0077 J** | 1.5 U | 0.06 UJ | 0.001 U | **0.0106 J** | 0.07 U | **0.0092 J** | **19** | **7.38 J** | **0.92** | 0.06 U | **0.94** |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | |
| Arsenic, dissolved | 0.2 | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0081 |
| Cadium, dissolved | 0.05 | 0.0005 | 0.005 U | 0.00053 | 0.005 U | 0.0005 | 0.005 U | 0.00053 | 0.005 U | 0.0005 | 0.005 U | 0.00053 | 0.005 U | **0.035** | **0.00068 J** | 0.00053 | 0.005 U | 0.00053 |
| Copper, dissolved | 0.65 | 0.0009 | 0.025 U | 0.0018 | 0.025 U | 0.0009 | 0.025 U | 0.0009 | 0.025 U | 0.0009 | 0.025 U | 0.0009 | 0.025 U | 0.0009 | 0.025 U | 0.0009 | 0.025 U | 0.0037 |
| Lead, dissolved | 0.1 | 0.0013 | 0.01 U | 0.0013 | 0.01 U | 0.0013 | 0.01 U | 0.0013 | 0.01 U | 0.0013 | 0.01 U | 0.0013 | 0.01 U | **0.0068** | 0.01 R | 0.0013 | 0.01 U | **0.0013** |
| Manganese, dissolved | 10 | **0.0014 J** | 0.015 U | **0.29 J** | **0.0276** | **0.012 J** | 0.015 U | 0.018 J | **0.156** | **0.086 J** | **0.103** | **0.0025 J** | 0.015 U | **1.2** J | **2.25** | **0.016 J** | 0.015 U | **0.019** |
| Zinc, dissolved | 10 | 0.0026 U | 0.06 U | 0.005 U | **0.0117 J** | 0.009 U | **0.0045 J** | 0.11 U | 0.06 UJ | 0.009 U | **0.0097 J** | 0.026 U | **0.0062 J** | **17** | **3.98 J** | 0.005 U | **0.0038 J** | **0.97** |

Note: Concentrations are presented in units of milligrams per liter (mg/L)

shading indicates detected above screening levels

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

**Bold** indicates a detected concentration

TABLE 4-6

Groundwater Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Illinois Class II Standard | MW-1 12/6/2010 | MW-2 3/19/2003 | MW-2 12/16/2010 | MW-4 3/18/2003 | MW-4 12/16/2010 | MW-5 3/18/2003 | MW-5 12/7/2010 | MW-6 3/18/2003 | MW-6 12/7/2010 | MW-7 3/18/2003 | MW-7 12/14/2010 | MW-8 3/19/2003 | MW-8 12/15/2010 | MW-9 3/19/2003 | MW-9 12/15/2010 | MW-10 3/18/2003 | MW-10 12/17/2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | | | |
| Arsenic, total | 0.2 | 0.01 U | 0.0081 | 0.01 U | **0.017** | 0.01 U | 0.0081 | **0.006 J** | 0.0081 | 0.01 U | 0.0081 U | 0.01 U | 0.0081 | 0.010 U | 0.0081 | 0.01 R | **0.058** | 0.01 U |
| Cadium, total | 0.05 | **0.0146** | **0.0053** | 0.005 U | **0.082** | **0.0198** | 0.00053 | 0.005 U | **0.086** | **0.106** | **0.39** | **0.23** | **0.031** | **0.0101** | **0.00073** | **0.0159** | 0.00053 | 0.005 U |
| Copper, total | 0.65 | **0.0059 J** | **0.0099** | 0.025 U | **0.95** | **0.0208 J** | 0.0009 | 0.025 U | **0.0021** | **0.0034 J** | **0.001 J** | 0.025 U | **0.0099** | 0.025 U | 0.0009 | 0.025 U | **0.13** | 0.025 U |
| Lead, total | 0.1 | **0.0076 J** | 0.0013 | 0.01 U | **0.93** | **0.0214 J** | 0.0013 | 0.01 U | **0.0096** | **0.0062 J** | **0.0013 J** | 0.01 U | **0.13 J** | 0.010 U | 0.0034 | 0.01 U | **0.08** | 0.01 UJ |
| Manganese, total | 10 | **1.20** | **0.053** | 0.015 U | **1.4** | **0.136** | 0.15 | **2.14** | **0.87** | **1.28** | **12** | **4.63** | **0.0044** | **0.0639** | **0.92** | **0.203** | **2.8 J** | **0.0258 J** |
| Zinc, total | 10 | **9.20** | **4.1** | **0.381 J** | **210** | **15.50 J** | **0.3** | **0.187** | **7.1** | **8.63** | **120** | **67.80** | **13** | **6.38** | 0.24 | **3.09 J** | 0.59 | **0.0176 J** |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | |
| Arsenic, dissolved | 0.2 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | **0.0051 J** | 0.0081 | 0.01 U | 0.0081 | 0.01 U | 0.0081 | 0.010 U | 0.0081 | 0.01 U | 0.0081 | 0.01 U |
| Cadium, dissolved | 0.05 | **0.0151** | **0.0054** | 0.005 U | **0.00071** | **0.0107** | 0.00053 | 0.005 U | **0.079** | **0.0962** | **0.39** | **0.241** | **0.025** | **0.0107** | **0.00091** | **0.005 J** | 0.00053 | 0.005 U |
| Copper, dissolved | 0.65 | **0.0037 J** | **0.0038** | 0.025 U | 0.0009 | 0.025 U | 0.0009 | 0.025 U | **0.0009** | 0.025 U | **0.001 J** | 0.025 U | **0.002** | 0.025 U | 0.0009 | **0.0026 J** | 0.0009 | 0.025 U |
| Lead, dissolved | 0.1 | **0.0027 J** | 0.0013 | 0.01 U | **0.0015** | 0.01 U | 0.0013 | 0.01 U | **0.0013** | 0.01 U | **0.0013 J** | **0.0111 J** | **0.018** | 0.010 U | 0.0013 | 0.01 U | 0.0013 | 0.01 UJ |
| Manganese, dissolved | 10 | **1.15** | **0.056 J** | 0.015 U | **0.78 J** | **0.07** | **0.17 J** | **2.220** | **0.94 J** | **1.13** | **13 J** | **4.79** | **0.0032 J** | **0.0654** | **1 J** | **0.224** | **0.014** | **0.0081 J** |
| Zinc, dissolved | 10 | **9.49** | **4.5** | **0.357 J** | 2.3 **U** | **7.87 J** | **0.31** | **0.192** | **6.4** | **7.65** | **120** | **68.40** | **13** | **6.60** | 0.2 | **2.26 J** | 0.01 U | **0.007 J** |

Note: Concentrations are presented in units of milligrams per liter (mg/L)

shading indicates detected above screening levels

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

**Bold** indicates a detected concentration

TABLE 4-6

Groundwater Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Illinois Class II Standard | MW-11 6/20/2003 | MW-11 12/16/2010 | MW-12 12/18/2010 | MW-13 12/6/2010 | MW-14 12/18/2010 | MW-15 12/18/2010 | MW-16 12/18/2010 | MW-17 12/17/2010 | MW-18 12/18/2010 | MW-19 12/14/2010 | MW-20 12/6/2010 | MW-21 12/6/2010 | P-01 12/5/2010 | P-02 12/5/2010 | P-03 12/16/2010 | P-04 12/16/2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | | |
| Arsenic, total | 0.2 | **0.00071** | 0.01 U | **0.0049 J** | 0.01 U | **0.0049 J** | **0.0052 J** | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | **0.0035 J** | **0.01 J** | 0.01 U |
| Cadium, total | 0.05 | **0.00095** | 0.005 U | 0.005 U | **0.0011 J** | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | **0.00071 J** | **0.00074 J** | 0.005 U | 0.005 U |
| Copper, total | 0.65 | 0.0017 | 0.025 U | 0.025 U | **0.0029 J** | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | **0.0042 J** | **0.0018 J** | **0.0026 J** |
| Lead, total | 0.1 | 0.00082 | 0.01 U | 0.01 UJ | 0.01 U | 0.01 UJ | 0.01 R | 0.01 R | 0.01 R | 0.01 R | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 R | 0.01 R |
| Manganese, total | 10 | **0.34** | **0.031 J** | **0.582 J** | **0.327** | **0.183 J** | **0.545 J** | **0.42 J** | **0.591 J** | **0.146 J** | **0.34** | **0.424** | **0.46** | **0.0828** | **0.174** | **0.221** | **0.161** |
| Zinc, total | 10 | **0.46 J** | 0.06 UJ | **0.165** | **0.499** | **0.0414 J** | **0.0535 J** | **0.0463 J** | **0.0207 J** | **0.027 J** | **0.143** | 0.06 U | **0.0025 J** | **0.006 J** | **0.0163 J** | **0.079 J** | 0.06 U |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | |
| Arsenic, dissolved | 0.2 | **0.00069** | **0.0105 J** | **0.0064 J** | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | **0.0114 J** | 0.01 U |
| Cadium, dissolved | 0.05 | **0.00085** | 0.005 U | 0.005 U | **0.00097 J** | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Copper, dissolved | 0.65 | **0.0012** | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U |
| Lead, dissolved | 0.1 | **0.0011** | 0.01 U | 0.01 UJ | 0.01 U | 0.01 UJ | 0.01 U | 0.01 U | 0.01 R | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Manganese, dissolved | 10 | **0.42** | **0.0286 J** | **0.603 J** | **0.313** | **0.143 J** | **0.421 J** | **0.407 J** | **0.662 J** | **0.0771 J** | **0.333** | **0.409** | **0.416** | **0.0824** | 0.015 U | **0.0953** | 0.015 U |
| Zinc, dissolved | 10 | 0.39 | 0.06 UJ | **0.178** | **0.475** | **0.0198 J** | **0.0148 J** | **0.0152 J** | **0.0042 J** | 0.06 U | **0.135** | 0.06 U | 0.06 U | **0.0016 J** | 0.06 U | **0.0323 J** | **0.0087 J** |

Note: Concentrations are presented in units of milligrams per liter (mg/L)

shading indicates detected above screening levels

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

**Bold** indicates a detected concentration

TABLE 4-6

Groundwater Analytical Results for Site-specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Metal | Illinois Class II Standard | P-05 12/6/2010 | P-06 12/16/2010 |
|---|---|---|---|
| **Total Metals** | | | |
| Arsenic, total | 0.2 | 0.01 U | 0.01 U |
| Cadium, total | 0.05 | 0.005 U | 0.005 U |
| Copper, total | 0.65 | 0.025 U | **0.0021 J** |
| Lead, total | 0.1 | 0.01 U | 0.01 U |
| Manganese, total | 10 | **0.0257** | **0.243** |
| Zinc, total | 10 | **0.0036 J** | **0.588 J** |
| **Dissolved Metals** | | | |
| Arsenic, dissolved | 0.2 | 0.01 U | 0.01 U |
| Cadium, dissolved | 0.05 | 0.005 U | 0.005 U |
| Copper, dissolved | 0.65 | **0.0288** | **0.002 J** |
| Lead, dissolved | 0.1 | 0.01 U | 0.01 U |
| Manganese, dissolved | 10 | **0.00094 J** | **0.414** |
| Zinc, dissolved | 10 | 0.06 U | **0.895 J** |

Note: Concentrations are presented in units of milligrams per liter (mg/L)

shading indicates detected above screening levels

- = no value

NA = not reported or analyzed

J = estimated detection

U = result not detected

UJ = estimated result not detected

R = rejected

**Bold** indicates a detected concentration

TABLE 4-7

Summary of Analytical Results for Site-Specific Metals

OU2 Supplemental Remedial Investigation

*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| | Arsenic | | | | Cadmium | | | | Copper | | | Lead | | | | Manganese | | | Zinc | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Media** | **Total** | **Dissolved** | **TCLP** | **SPLP** | **Total** | **Dissolved** | **TCLP** | **SPLP** | **Total** | **Dissolved** | **SPLP** | **Total** | **Dissolved** | **TCLP** | **SPLP** | **Total** | **Dissolved** | **SPLP** | **Total** | **Dissolved** | **SPLP** |
| Residue Piles | **> SC** | | | | < SC | | | | < SC | | | **> SC** | | | | < SC | | | < SC | | |
| Residue | **> SC** | | < SC | < SC | < SC | | < SC | **> SC[de]** | < SC | | **> SC[e]** | **> SC** | | **> SC** | **> SC[de]** | < SC | | **> SC[d]** | < SC | | **> SC[de]** |
| Onsite Surface Soil | **> SC[c]** | | | | < SC | | | | < SC | | | < SC | | | | < SC | | | < SC | | |
| Onsite Subsurface Soil | **> SC[c]** | | | | < SC | | | | < SC | | | < SC | | | | < SC | | | < SC | | |
| Triangular Area Surface Soil | **> SC[c]** | | | | < SC | | | | < SC | | | < SC | | | | < SC | | | < SC | | |
| Triangular Area Subsurface Soil | **> SC[c]** | | | | < SC | | | | < SC | | | < SC | | | | < SC | | | < SC | | |
| Offsite Surface Soil | **> SC[c]** | | | | < SC | | | | < SC | | | < SC | | | | < SC | | | < SC | | |
| Offsite Subsurface Soil | **> SC[c]** | | | | < SC | | | | < SC | | | < SC | | | | < SC | | | < SC | | |
| Onsite Surface Water | < SC | < SC | | | **> SC** | **> SC** | | | < SC | < SC | | **> SC[b]** | < SC | | | **> SC[a]** | **> SC[a]** | | **> SC** | **> SC** | |
| Onsite Sediment | **> SC** | | | | **> SC** | | | | **> SC** | | | **> SC** | | | | **> SC** | | | **> SC** | | |
| Offsite Surface Water | < SC | < SC | | | **> SC** | **> SC** | | | < SC | < SC | | **> SC[a]** | < SC | | | **> SC[a]** | **> SC** | | **> SC** | **> SC** | |
| Offsite Sediment | **> SC** | | | | **> SC** | | | | **> SC** | | | **> SC** | | | | **> SC** | | | **> SC** | | |
| Groundwater | < SC | < SC | | | **> SC** | **> SC** | | | < SC | < SC | | < SC | < SC | | | < SC | < SC | | **> SC** | **> SC** | |

Notes:

> SC - Metal was observed above its applicable screening criteria

< SC - Metal was observed above its applicable screening criteria

Bolded cell indicates metal is above its applicable screening criteria.

Shaded cell indicates media has been impacted by site operations and is a COPC.

[a]Metal observed above its applicable screening criteria in one sample.

[b]Metal observed above its applicable screening criteria in two samples.

[c]Metal in media is naturally occuring and not considered site-related and COPC.

[d]Concentration is above the federal MCL that identifies potential migration pathways to groundwater.

[e]Concentration is above the most stringent screening criteria that identify potential migration pathways to surface water.

COPC - chemical of potential concern

NA - not applicable

SPLP - synthetic precipitation leaching procedure

TCLP - toxicity characteristic leaching procedure

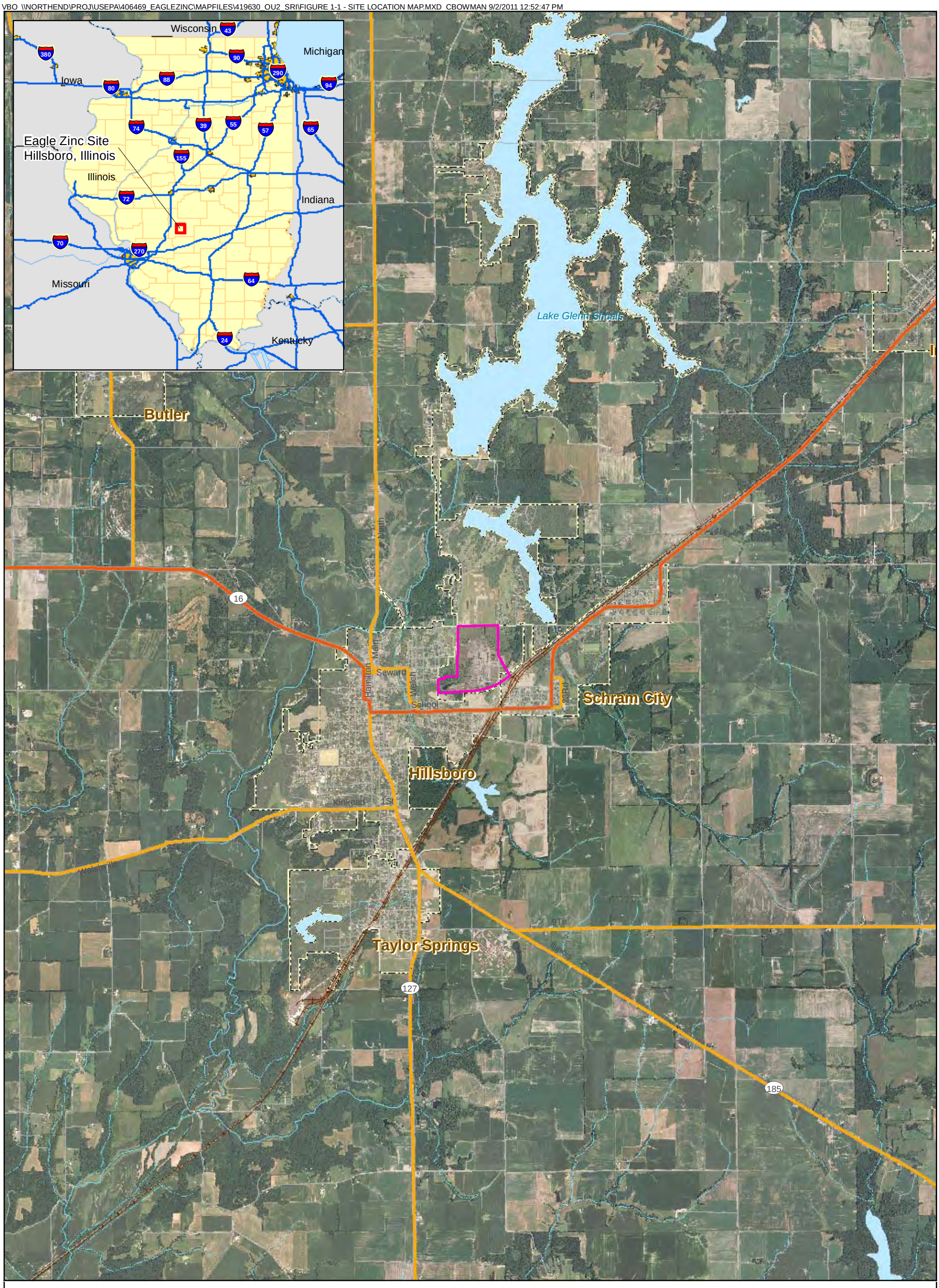
MCL - maximum contaminant level

TABLE 7-1
Summary of Affected Media, Receptors, Pathways, and Contaminants of Concern
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site, Hillsboro, Illinois*

| Receptors | Medium | Potential Exposure Pathways | Contaminants of Concern |
|---|---|---|---|
| Future Onsite Industrial Worker | Residue | Ingestion<br>Dermal<br>Inhalation | Antimony<br>Lead<br>Zinc |
| | Surface Soil | Ingestion<br>Dermal<br>Inhalation | Antimony<br>Lead<br>Zinc |
| Future Onsite Construction Worker | Residue | Ingestion<br>Dermal<br>Inhalation | Antimony<br>Cobalt<br>Lead<br>Nickel<br>Zinc |
| | Soil | Ingestion<br>Dermal<br>Inhalation | Antimony<br>Cobalt<br>Lead<br>Nickel<br>Zinc |
| Ecological Receptors | Surface Water | | Total and Dissolved Cadmium<br>Total and Dissolved Zinc |
| | Sediment | | Cadmium<br>Zinc |

# Figures

VBO \\NORTHEND\PROJ\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 1-1 - SITE LOCATION MAP.MXD CBOWMAN 9/2/2011 12:52:47 PM




**Legend**
Site Boundary

N
W E
S

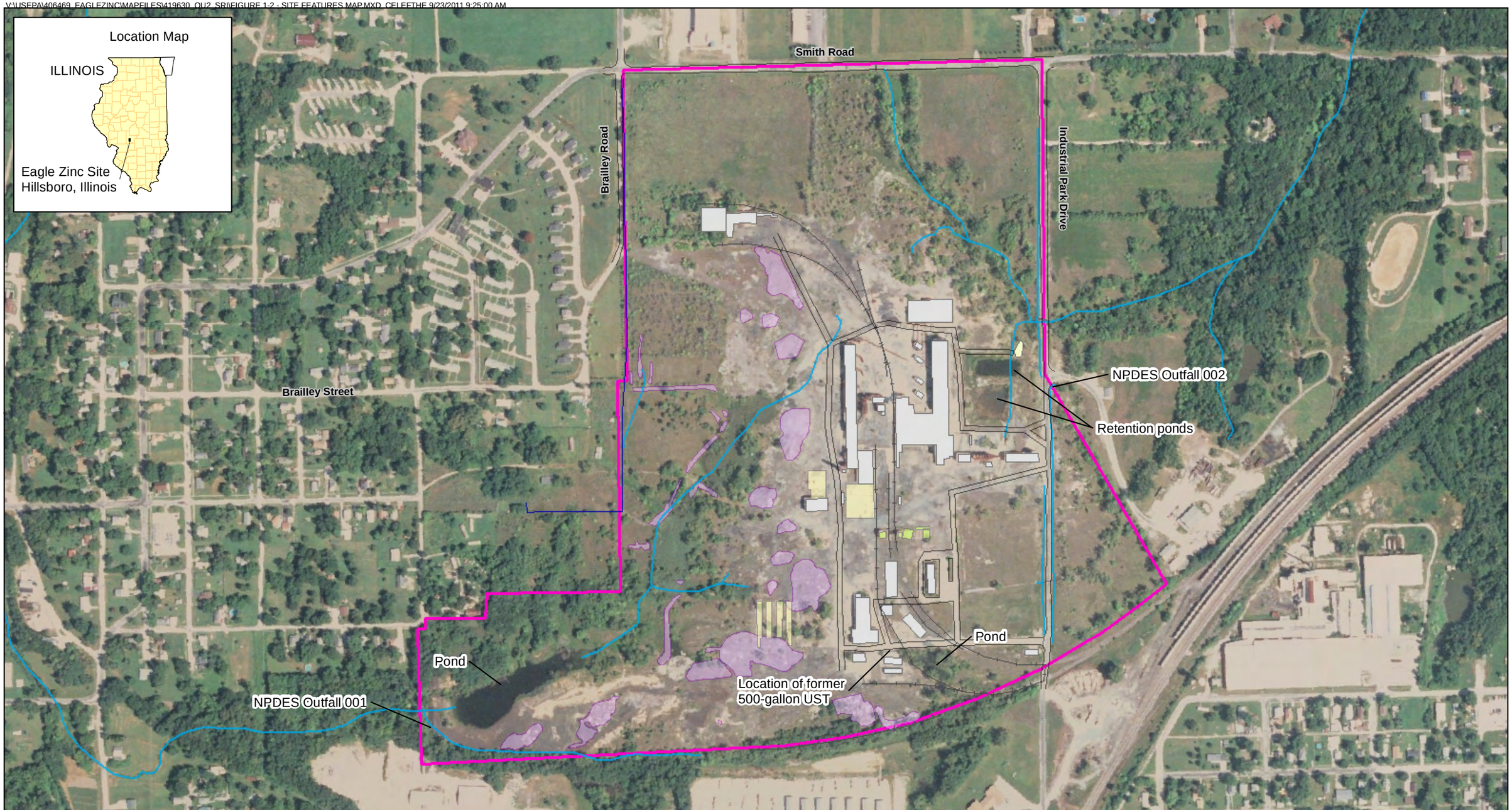
0 2,000 4,000 8,000 Feet

**1 inch = 4,000 feet**

Figure 1-1
Site Location Map
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

V:\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 1-2 - SITE FEATURES MAP.MXD CELEETHE 9/23/2011 9:25:00 AM




**Legend**

- Fence
- Drainage Ditch/Ephemeral Stream
- Railroad Spars
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

N
W E
S

0 200 400 800
Feet

Figure 1-2
Site Features Map
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

1912
Site initially developed for zinc processing under the name Lanyon Zinc Company. Products: zinc, sulfuric acid.

1919
Site purchased by Eagle-Picher Industries. Products: zinc, sulfuric acid.

1958
Ceased production of leaded zinc oxide.

1993
October, CERCLA expanded Site Inspection conducted by IEPA.

1998
April, Removal of 500-gallons underground UST results in reporting of a Leaking UST (LUST) incident to the IEPA.

May, Site entered into Interim Consent Order with IEPA.

1998
March, GBI Reports entitled *Monitoring Well Installation* and *Ground Water Sampling Interim Report* and *Interim Report of Residue Sampling and Analysis* submitted to IEPA.

2001
Summer, Engineered storm water retention pond constructed at Outfall 002.

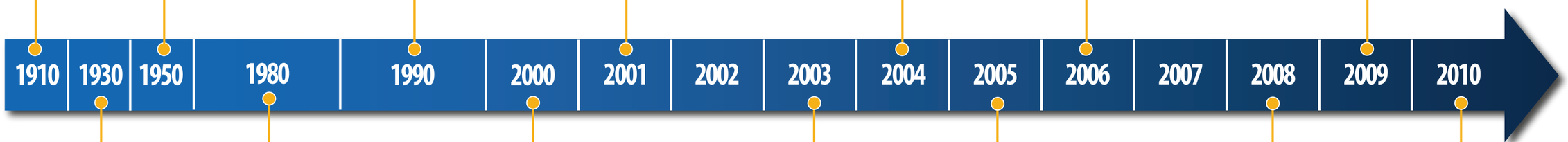
December 31, Eagle Zinc Parties enter into AOC with USEPA for completion of RI/FS.

2004
Environ submits Ecological Risk Screening Evaluation.

August, IEPA issues a No Further Remediation (NFR) letter for the former UST.

2006
Environ submits Draft Feasibility Study Report.

2009
January, USEPA decision to complete interim action to address immediate threat posed by buildings.




1935
Began manufacture of zinc oxide and leaded zinc oxide. Ceased zinc smelting and sulfuric acid production.

1980
November, Site Purchased by The Sherwin-Williams Company.

1980-1982
The IEPA collects several sets of surface water samples. Metal concentrations are detected above applicable state surface water quality standards. Sherwin-Williams removes 18,000 tons of residue material from 10 acres of the site.

1981
June, Site initially listed on CERCLIS as a Discover Action.

1982
Environmental Risk Assessment report is prepared by Risk Science International (RSI).

1984
CERCLA Preliminary Assessment conducted by IEPA.

Site purchased by Eagle Zinc Company, a Division of T.L. Diamond & Company.

2000
June, NPDES Storm Water Permit No. IL 0074519 issued to Eagle Zinc Company.

December, SWPPP is prepared for Eagle Zinc.

2003
Cessation of industrial operations at the site.

Environ submits Phase 1 Source Characterization Technical Memorandum and Phase 2 Remedial Investigation Pathway Assessment Technical Memorandum.

2005
Environ submits Remedial Investigation Report and Remedial Investigation Report Addendum.

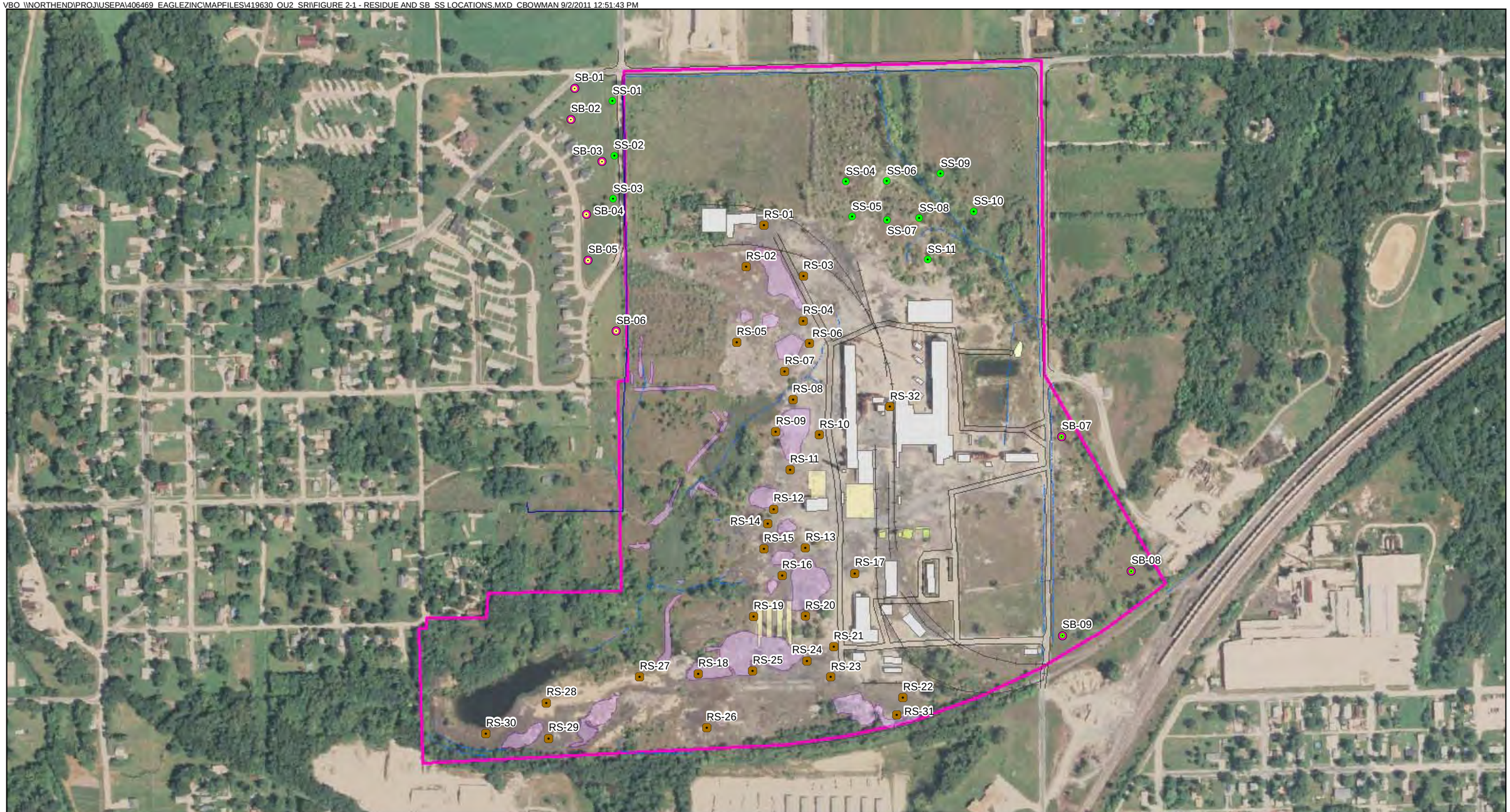
2008
CH2M HILL submits a Supplemental FS Report.

April, IEPA XRF Sampling of Buildings and Confirmation Sampling.

2010
November, CH2M HILL performs supplemental RI.

Figure 1-3
Site History Timeline
*OU2 Supplemental Remedial Investigation*
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

VBO \\NORTHEND\PROJ\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 2-1 - RESIDUE AND SB_SS LOCATIONS.MXD CBOWMAN 9/2/2011 12:51:43 PM




**Legend**

- Residential Soil Boring
- Residue/Soil Boring
- Soil Boring
- Surface Soil
- Fence
- Ditch
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

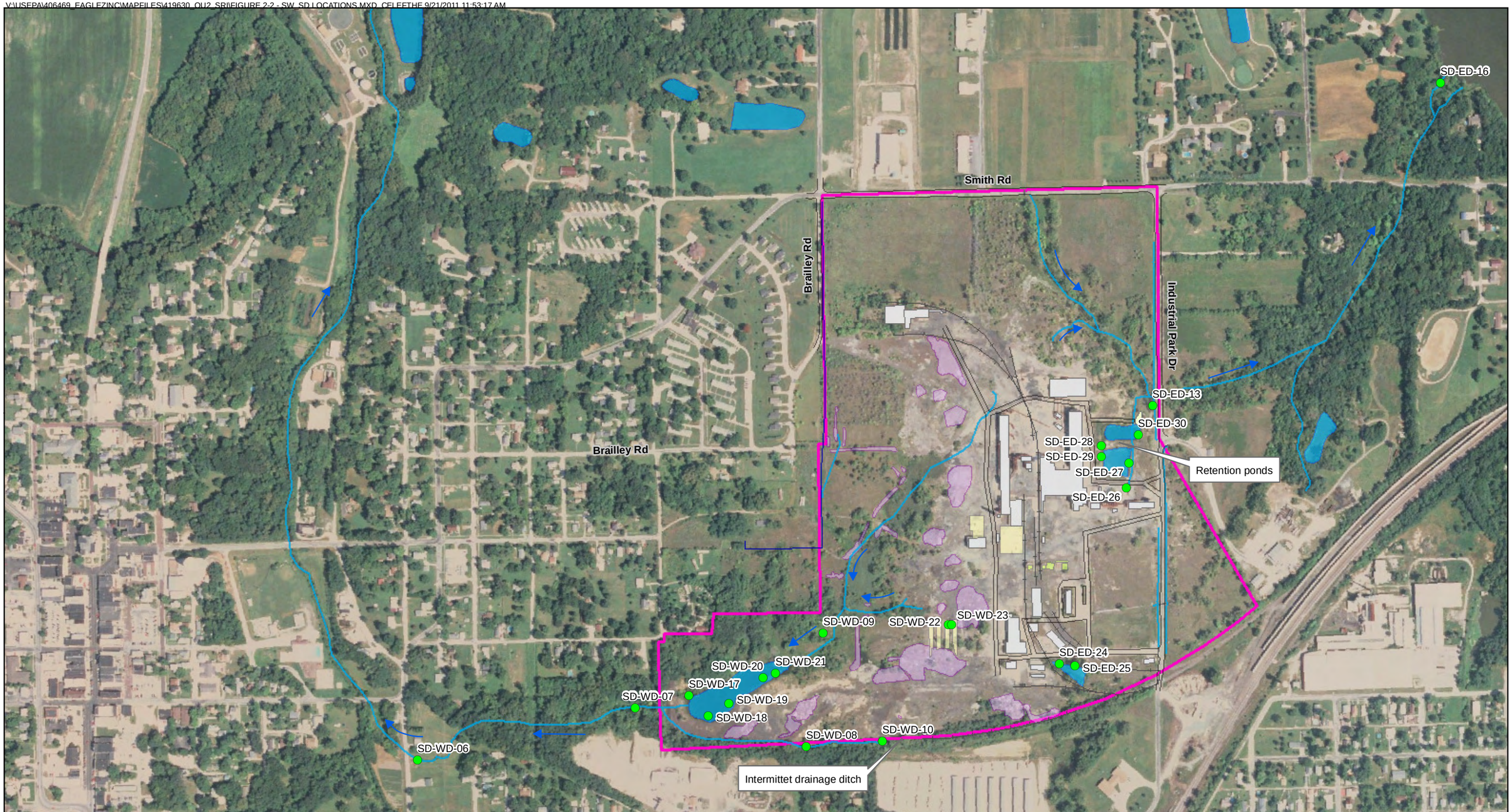
N
W E
S

0 200 400 800
Feet

Figure 2-1
Residue and Soil Sample Locations
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

V:\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 2-2 - SW_SD LOCATIONS.MXD, CELEETHE 9/21/2011 11:53:17 AM




**Legend**

- Surface Water and Sediment Location
- Fence
- Drainage Ditch/Ephemeral Stream
- Flow_direction
- Pond
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

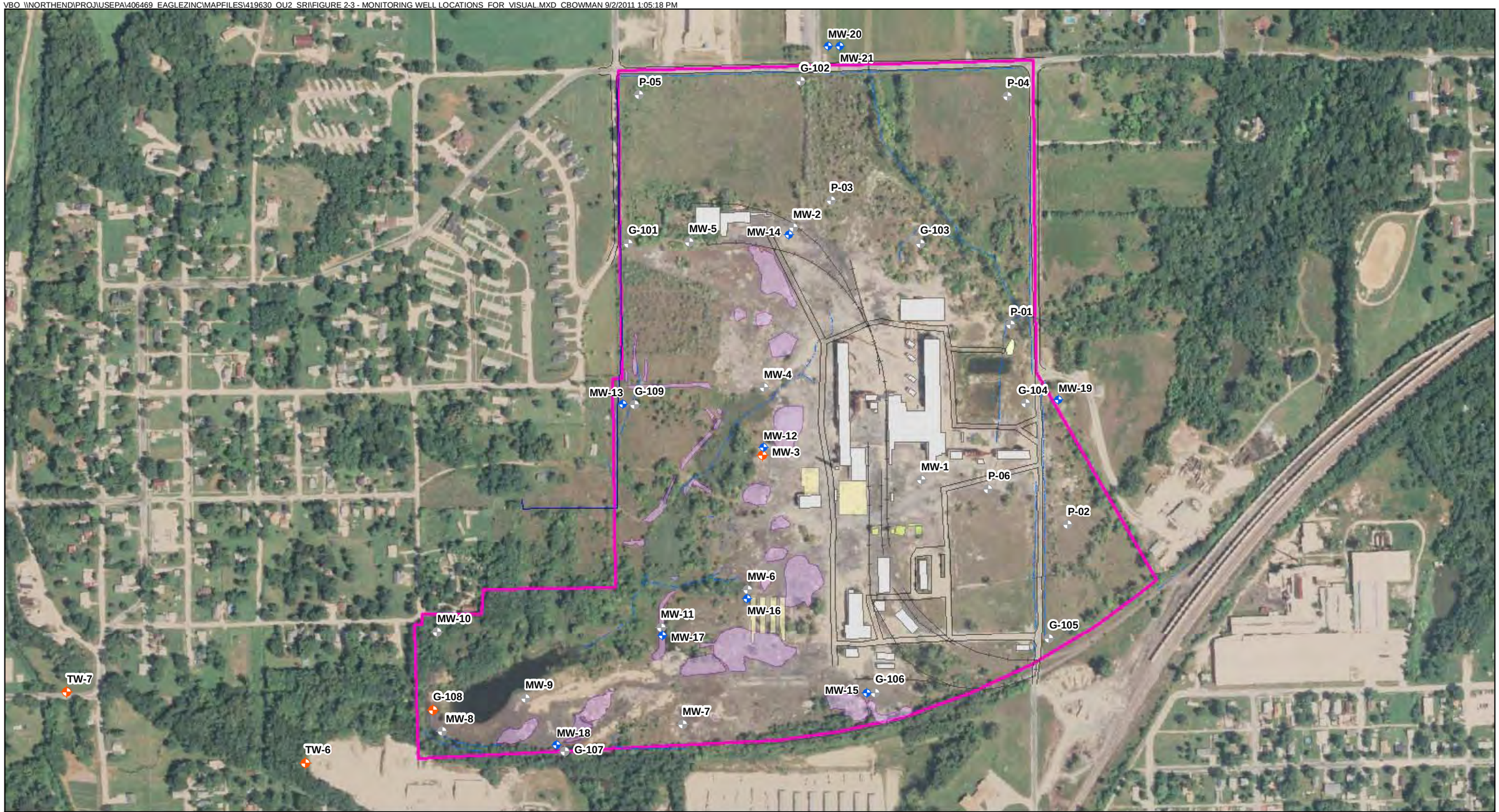
N
W E
S

0 250 500 1,000
Feet

Figure 2-2
Surface Water and Sediment Sample Locations
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

VBO \\NORTHEND\PROJ\USEPA\406469 EAGLEZINC\MAPFILES\419630 OU2 SRI\FIGURE 2-3 - MONITORING WELL LOCATIONS FOR VISUAL.MXD CBOWMAN 9/2/2011 1:05:18 PM




**Legend**

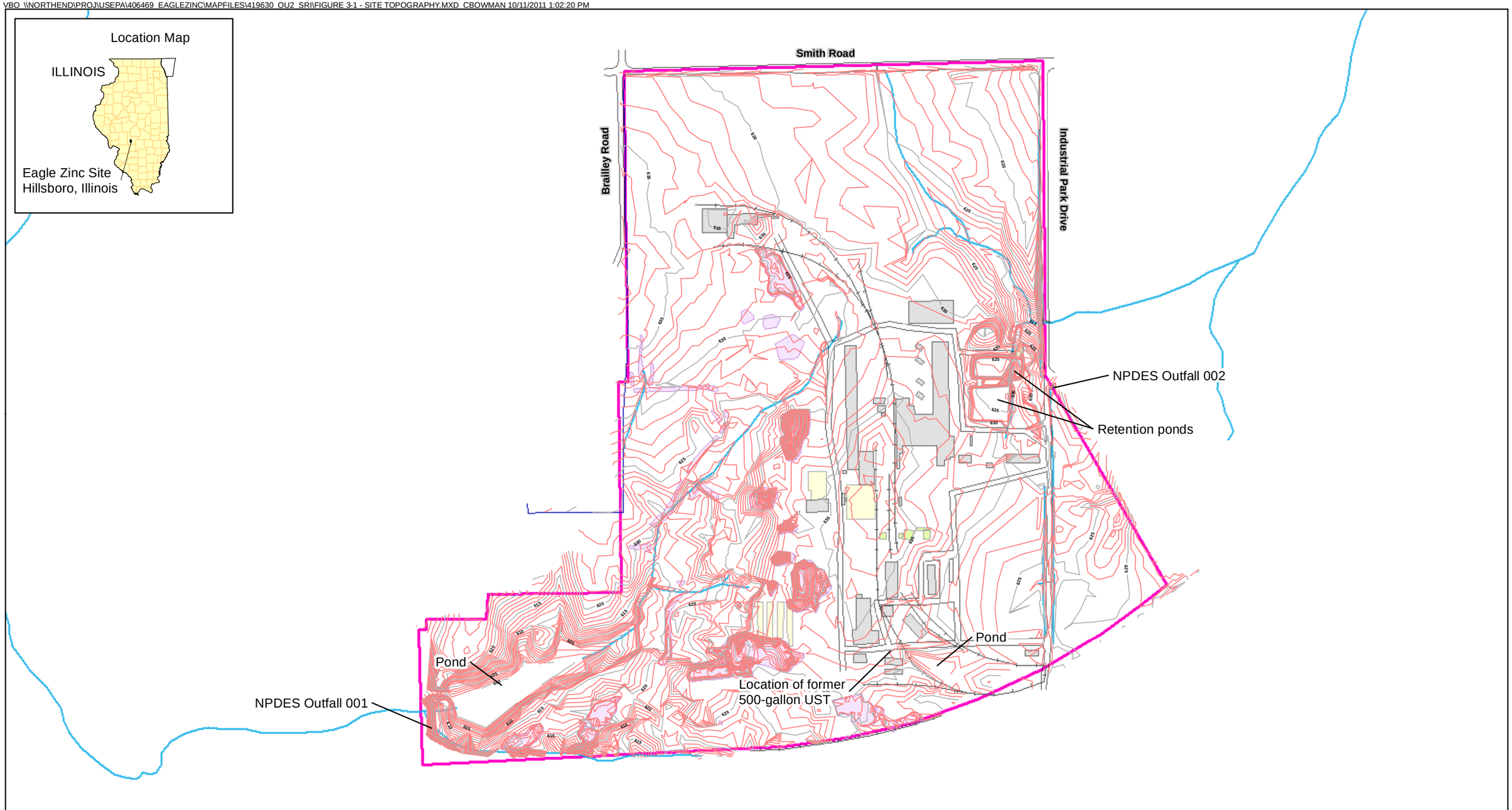
- 2010 SRI Monitoring Well
- Existing Monitoring Well
- Abandoned Monitoring Well
- Fence
- Ditch
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

N
W E
S

0 200 400 800
Feet

Figure 2-3
Site Monitoring Well Locations
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL




**Legend**

- Fence
- Drainage Ditch/Ephemeral Stream
- Railroad Spars
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

N
W E
S

0 200 400 800
Feet

Figure 3-1
Site Topography
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

VBO \\NORTHEND\PROJ\USEPA\406469 EAGLEZINC\MAPFILES\419630 OU2 SRI\FIGURE 3-2 - RESIDUE THICKNESS AREA 1.MXD CBOWMAN 5/8/2012 4:39:08 PM

**Legend**

- Soil Boring (2010)
- Soil Boring (2005)
- Fence
- Ditch
- Railroad
- Residue Visible at Surface
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

Residue thickness is shown in feet

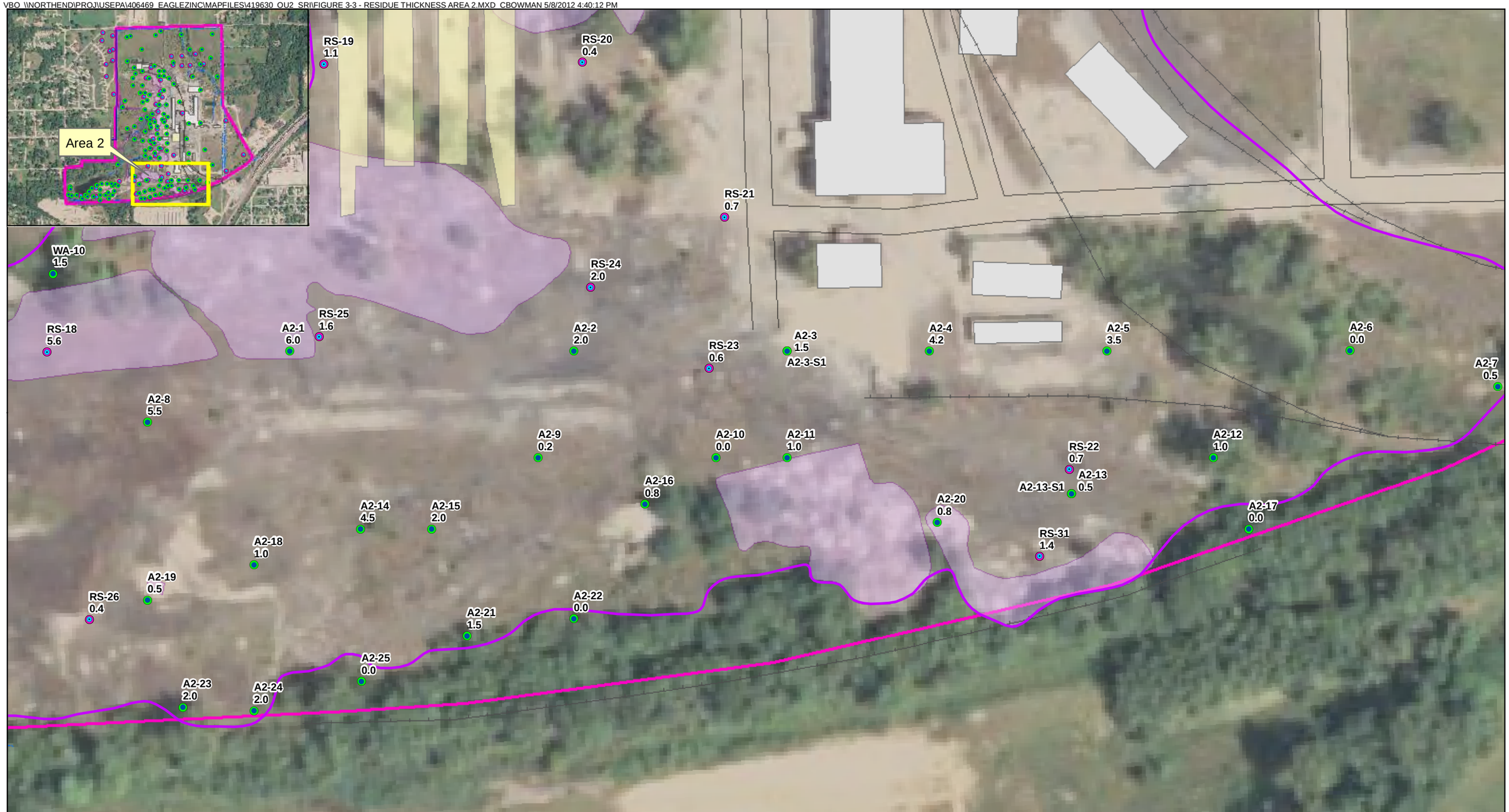
N
W E
S

0 40 80 160
Feet

Figure 3-2
Residue Thickness Area 1
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

VBO \\NORTHEND\PROJ\USEPA\406469 EAGLEZINC\MAPFILES\419630 OU2 SRI\FIGURE 3-3 - RESIDUE THICKNESS AREA 2.MXD CBOWMAN 5/8/2012 4:40:12 PM




**Legend**

- Soil Boring (2010)
- Soil Boring (2005)
- Fence
- Ditch
- Railroad
- Residue Visible at Surface
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

Residue thickness is shown in feet

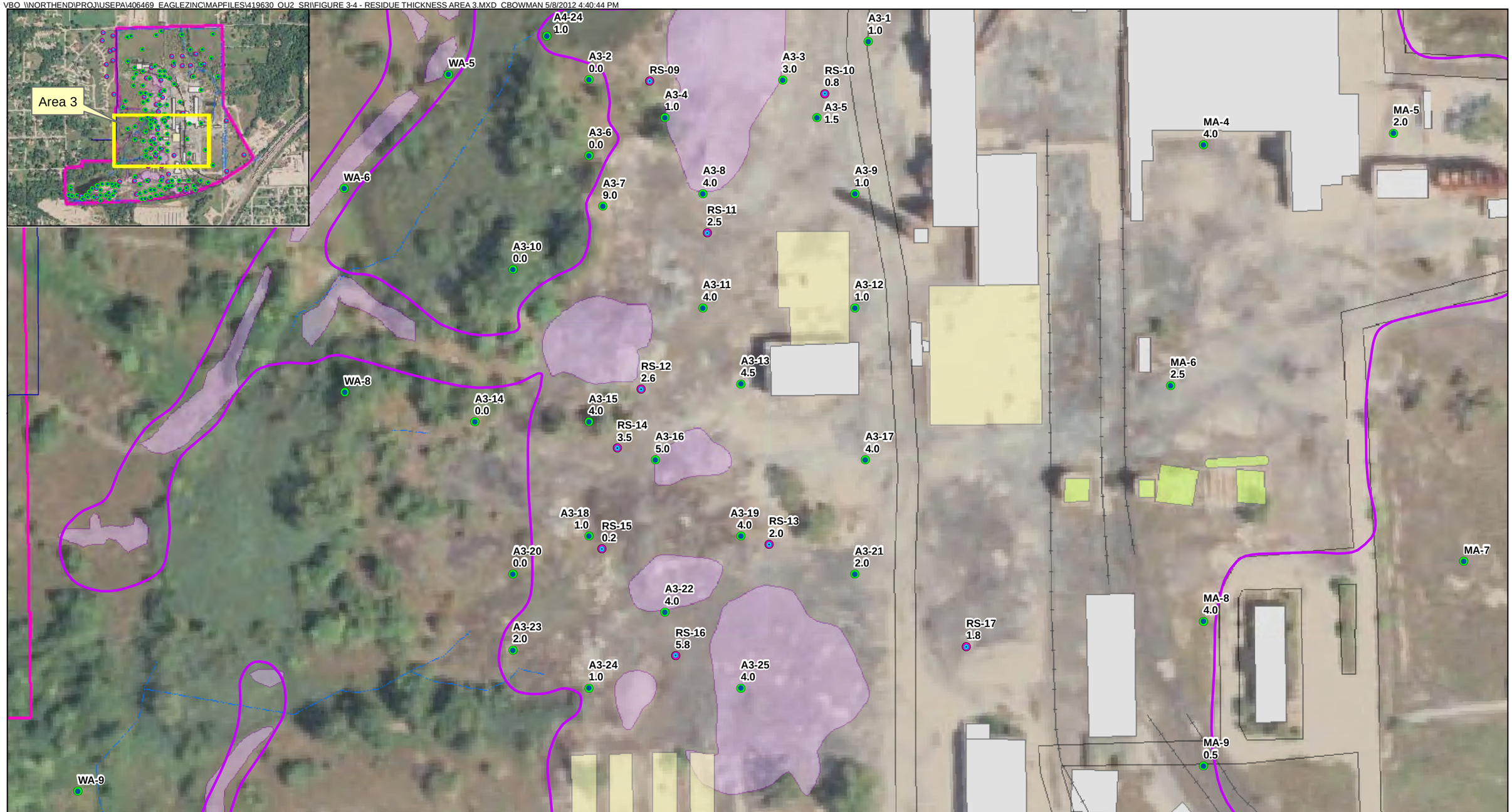
N
W E
S

0 40 80 160
Feet

Figure 3-3
Residue Thickness Area 2
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

VBO \\NORTHEND\PROJ\USEPA\406469 EAGLEZINC\MAPFILES\419630 OU2 SRI\FIGURE 3-4 - RESIDUE THICKNESS AREA 3.MXD CBOWMAN 5/8/2012 4:40:44 PM




**Legend**

- Soil Boring (2010)
- Soil Boring (2005)
- Fence
- Ditch
- Railroad
- Residue Visible at Surface
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

Residue thickness is shown in feet

N W E S

0 50 100 200 Feet

Figure 3-4
Residue Thickness Area 3
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

VBO \\NORTHEND\PROJ\USEPA\406469 EAGLEZINC\MAPFILES\419630 OU2 SRI\FIGURE 3-5 - RESIDUE THICKNESS AREA 4.MXD CBOWMAN 5/8/2012 4:45:39 PM

**Legend**

- Soil Boring (2010)
- Soil Boring (2005)
- Fence
- Ditch
- Railroad
- Residue Visible at Surface
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

Residue thickness is shown in feet

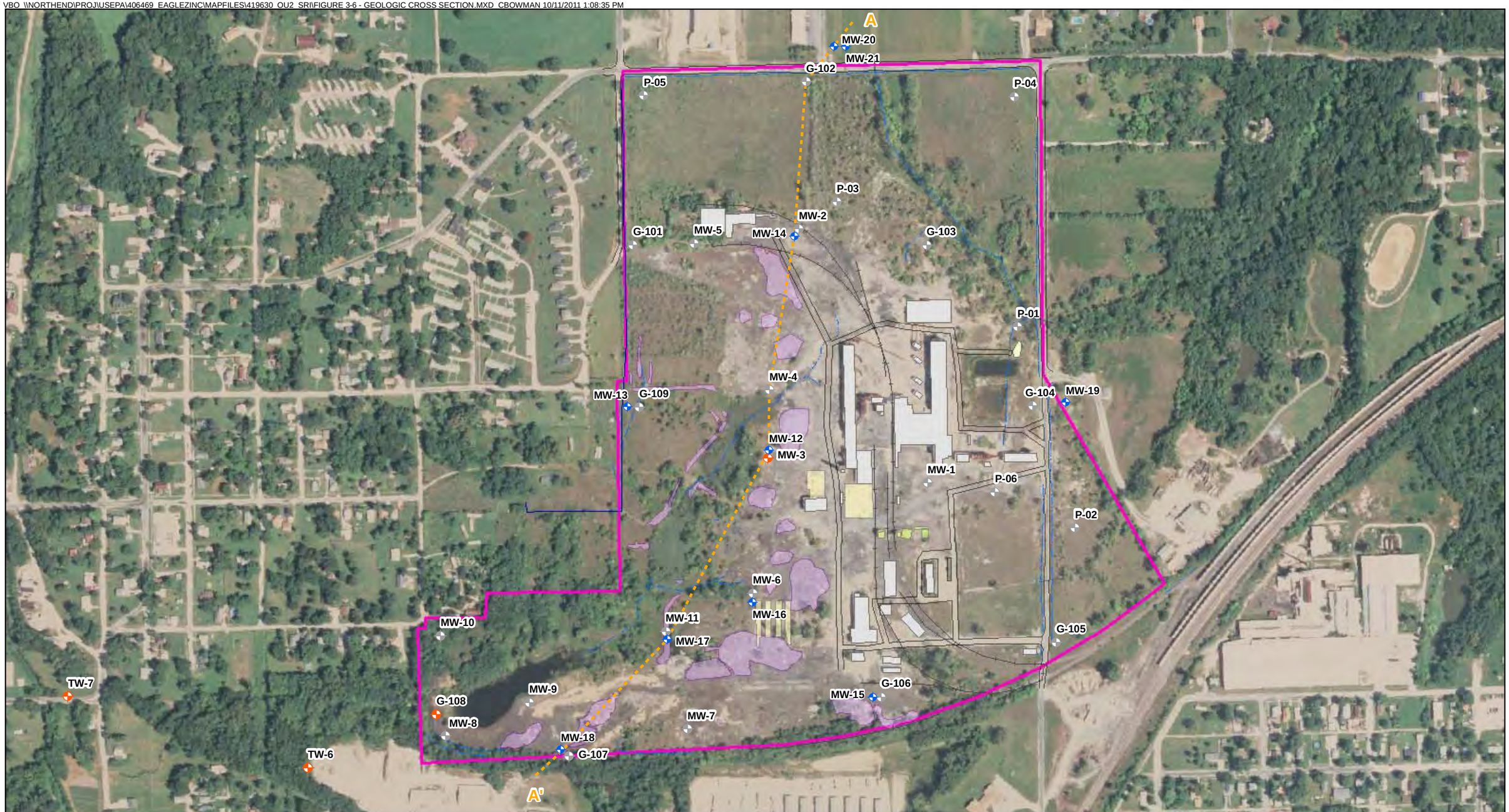
N
W E
S

0 50 100 200
Feet

Figure 3-5
Residue Thickness Area 4
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

VBO \\NORTHEND\PROJ\USEPA\406469 EAGLEZINC\MAPFILES\419630 OU2 SRI\FIGURE 3-6 - GEOLOGIC CROSS SECTION.MXD CBOWMAN 10/11/2011 1:08:35 PM




**Legend**

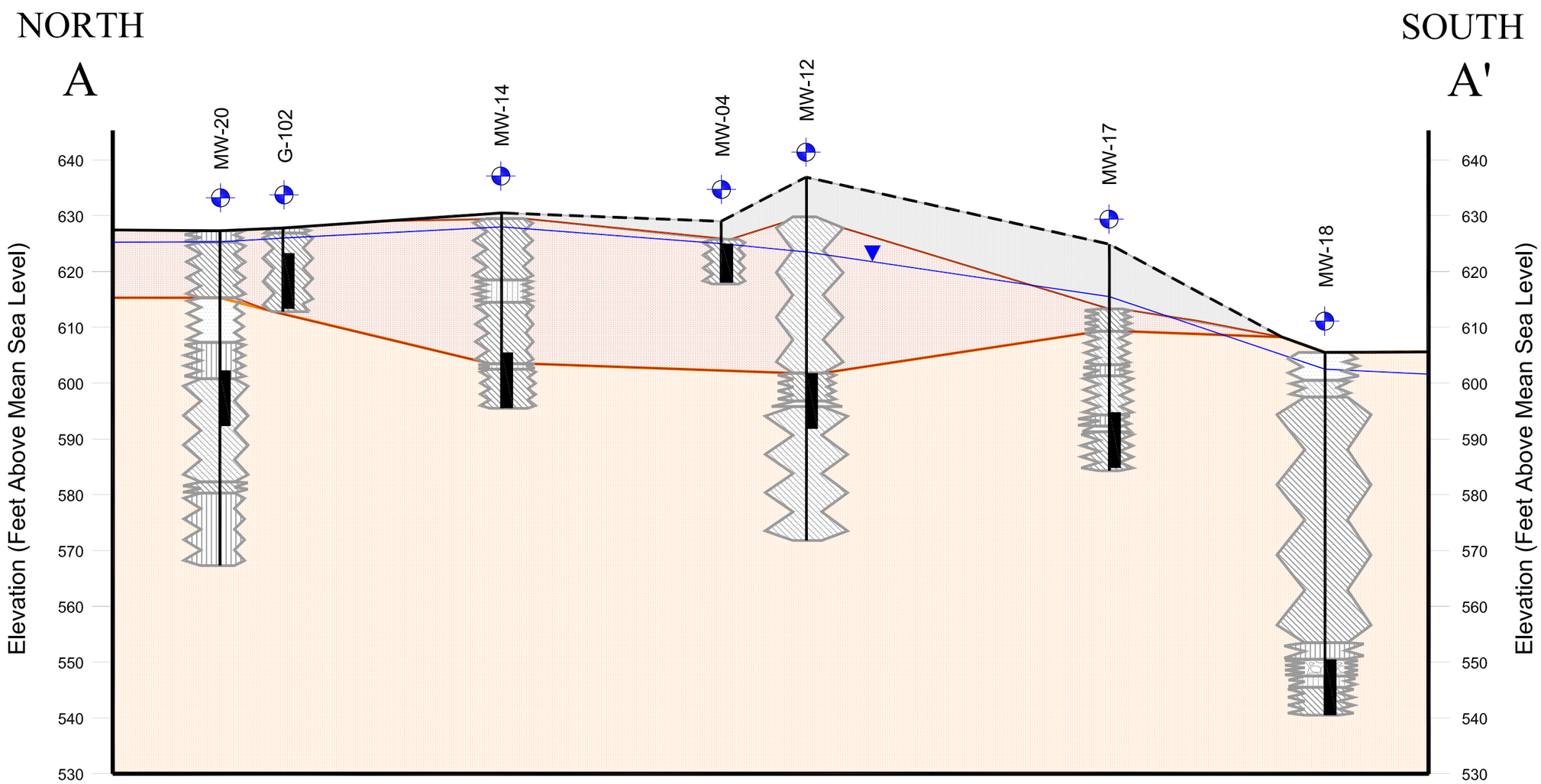
- 2010 SRI Monitoring Well
- Existing Monitoring Well
- Abandoned Monitoring Well
- Fence
- Ditch
- Geologic Cross Section
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

N
W E
S

0 200 400 800
Feet

Figure 3-6
Geologic Cross-Section Location Map
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL




Legend

- Monitoring Well
- Water Table (01/2011)
- Well Screen
- Residue Surface (Inferred Between Monitoring Wells)
- Clay
- Silt
- Silty Sand
- Sand
- Clayey Sand
- Limestone Boulder
- Residue
- Clay/Silt
- Clay/Silt/Isolated Sand Lenses

*Note: The geological and hydrogeological data on this cross-section was generalized and interpolated between monitoring wells and soil borings. Information on actual conditions exist only at the specified locations.*

0 V: 20 H: 33 Feet

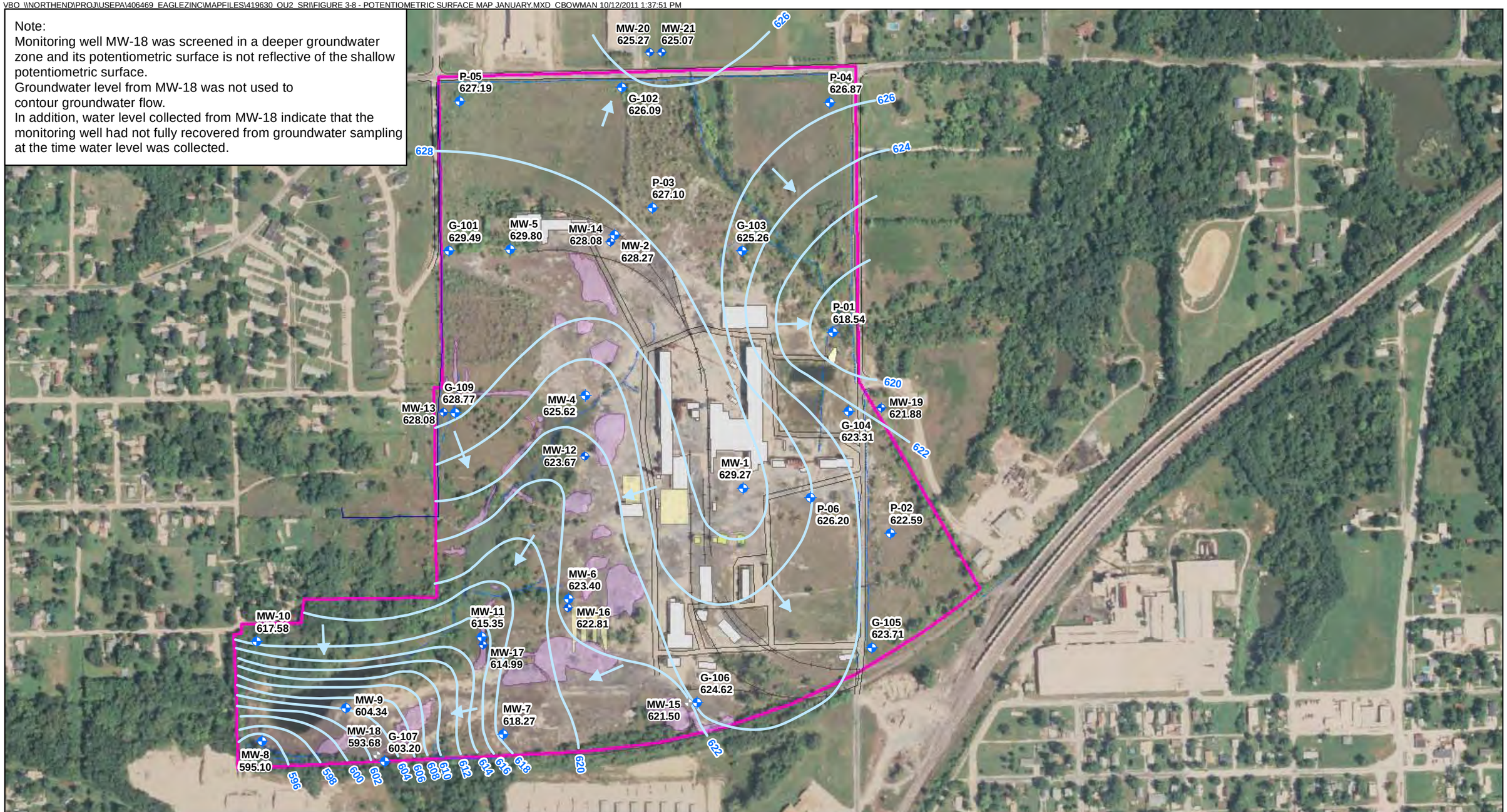
FIGURE 3-7

GEOLOGIC CROSS-SECTION A-A'

OU2 Supplemental Remedial Investigation
Eagle Zinc Superfund Site - Hillsboro, Illinois

CH2MHILL

Note:
Monitoring well MW-18 was screened in a deeper groundwater zone and its potentiometric surface is not reflective of the shallow potentiometric surface.
Groundwater level from MW-18 was not used to contour groundwater flow.
In addition, water level collected from MW-18 indicate that the monitoring well had not fully recovered from groundwater sampling at the time water level was collected.




**Legend**

- Monitoring Well
- Inferred Groundwater Flow Direction
- Groundwater Contour
- Fence
- Ditch
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

N
W E
S

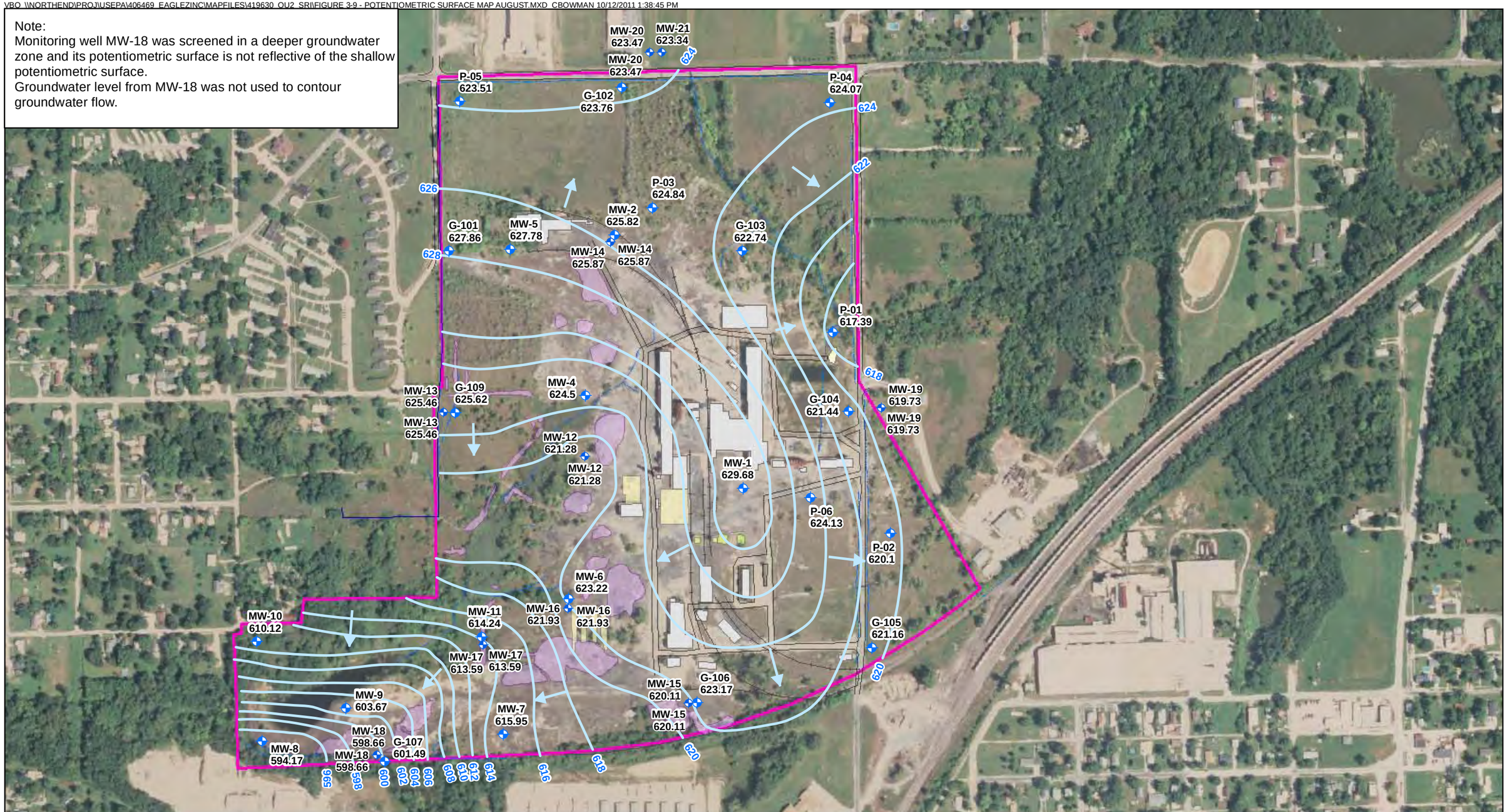
0 200 400 800
Feet

Figure 3-8
Potentiometric Surface Map - January 2011
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

VBO \\NORTHEND\PROJ\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 3-9 - POTENTIOMETRIC SURFACE MAP AUGUST.MXD CBOWMAN 10/12/2011 1:38:45 PM

Note:
Monitoring well MW-18 was screened in a deeper groundwater zone and its potentiometric surface is not reflective of the shallow potentiometric surface.
Groundwater level from MW-18 was not used to contour groundwater flow.




**Legend**

- Monitoring Well
- Inferred Groundwater Flow Direction
- Groundwater Contour
- Fence
- Ditch
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

N
W E
S

0 200 400 800
Feet

Figure 3-9
Potentiometric Surface Map - August 2011
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

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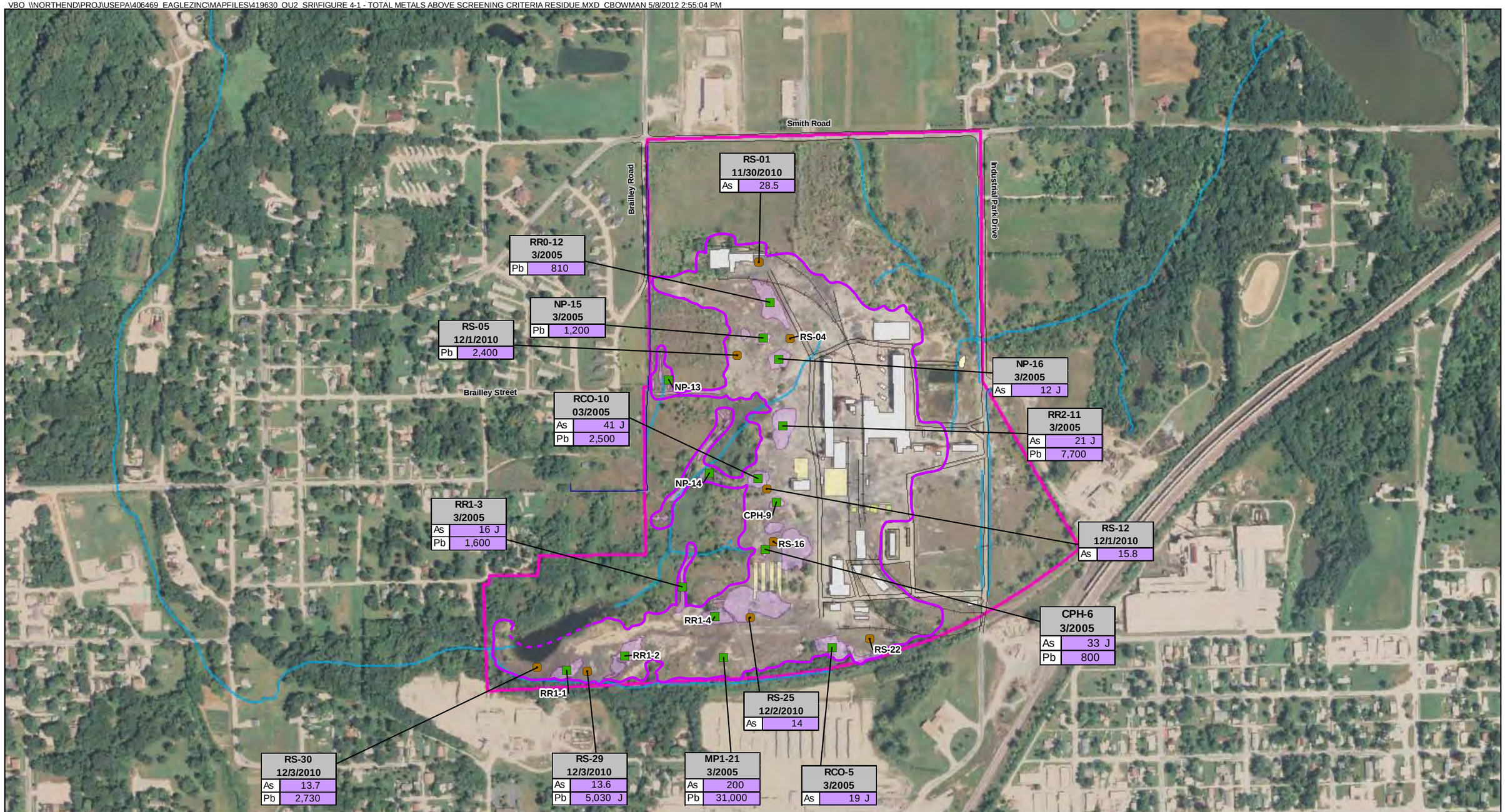
VBO \\NORTHEND\PROJ\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 4-1 - TOTAL METALS ABOVE SCREENING CRITERIA RESIDUE.MXD CBOWMAN 5/8/2012 2:55:04 PM




**Legend**

- Residue/Soil Boring
- Residue Pile Sample
- Fence
- Drainage Ditch/Ephemeral Stream
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert
- Residue Visible at Surface

NA = Not analyzed
As = Arsenic
Cd = Cadmium
Cu = Copper
Pb = Lead
Mn = Manganese
Zn = Zinc

Notes:
Soil concentrations and screening criteria are presented in units of milligrams per kilogram (mg/kg)
Concentrations exceeds industrial soil risk screening level and Illinois background value
- = Value not available
J = Estimated detection
U = Result not detected

| Metal | *Total Metals Screening Criteria* | |
|---|---|---|
| | Industrial Soil Risk Screening Levels | Illinois Background Values |
| As | 1.6 | 11.3 |
| Cd | 800 | 0.5 |
| Cu | 41,000 | 12 |
| Pb | 800 | 20.9 |
| Mn | 23,000 | 630 |
| Zn | 310,000 | - |

N
W E
S

0 250 500
Feet

Figure 4-1
Total Metal Concentrations Above Screening Criteria and Illinois Background Value in Residue
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

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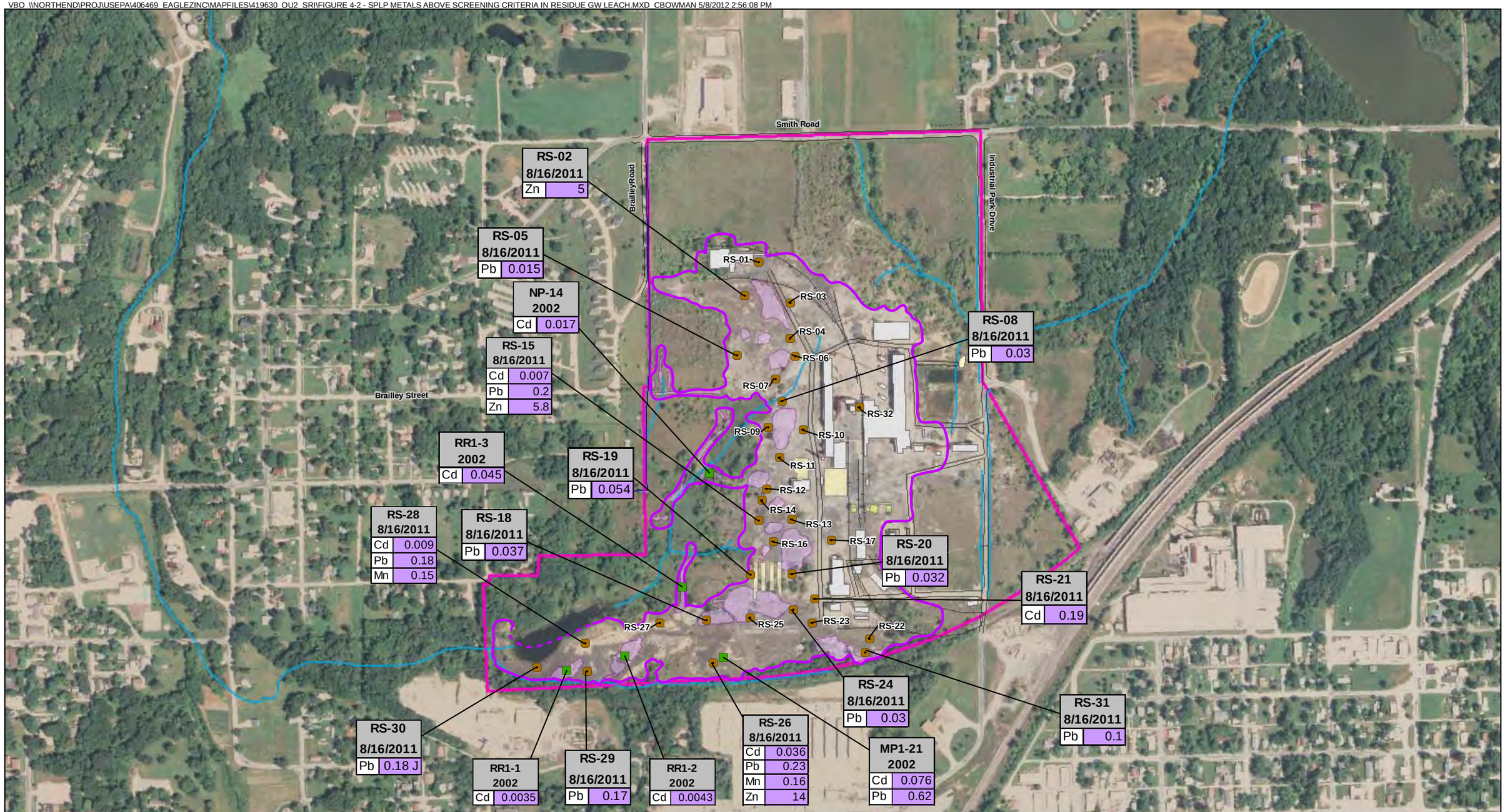
VBO \\NORTHEND\PROJ\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 4-2 - SPLP METALS ABOVE SCREENING CRITERIA IN RESIDUE GW LEACH.MXD CBOWMAN 5/8/2012 2:56:08 PM




**Legend**

- Residue Pile Sample
- Residue/Soil Boring
- Fence
- Drainage Ditch/Ephemeral Stream
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert
- Residue Visible at Surface

Cd = Cadmium
Pb = Lead
Mn = Manganese
Zn = Zinc

Notes:
SPLP metals concentrations and screening criteria are presented in units of milligrams per liter (mg/L)
SPLP metal concentration exceeds SPLP metal screening criteria for potential to leach to groundwater
J = Estimated detection
MCL = Maximum Contaminant Level
SPLP = Synthetic Precipitation Leaching Procedure
[1]In the absence of an available MCL value, Illinois Class 1 standard was used as screening criteria.

| | *SPLP Metal Screening Criteria* |
|---|---|
| **Metal** | **Federal MCL** |
| Cd | 0.005 |
| Pb | 0.015 |
| Mn | 0.15[1] |
| Zn | 5[1] |

N
W E
S

0 250 500 Feet

Figure 4-2
SPLP Metal Concentrations in Residue with Potential to Leach to Groundwater
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

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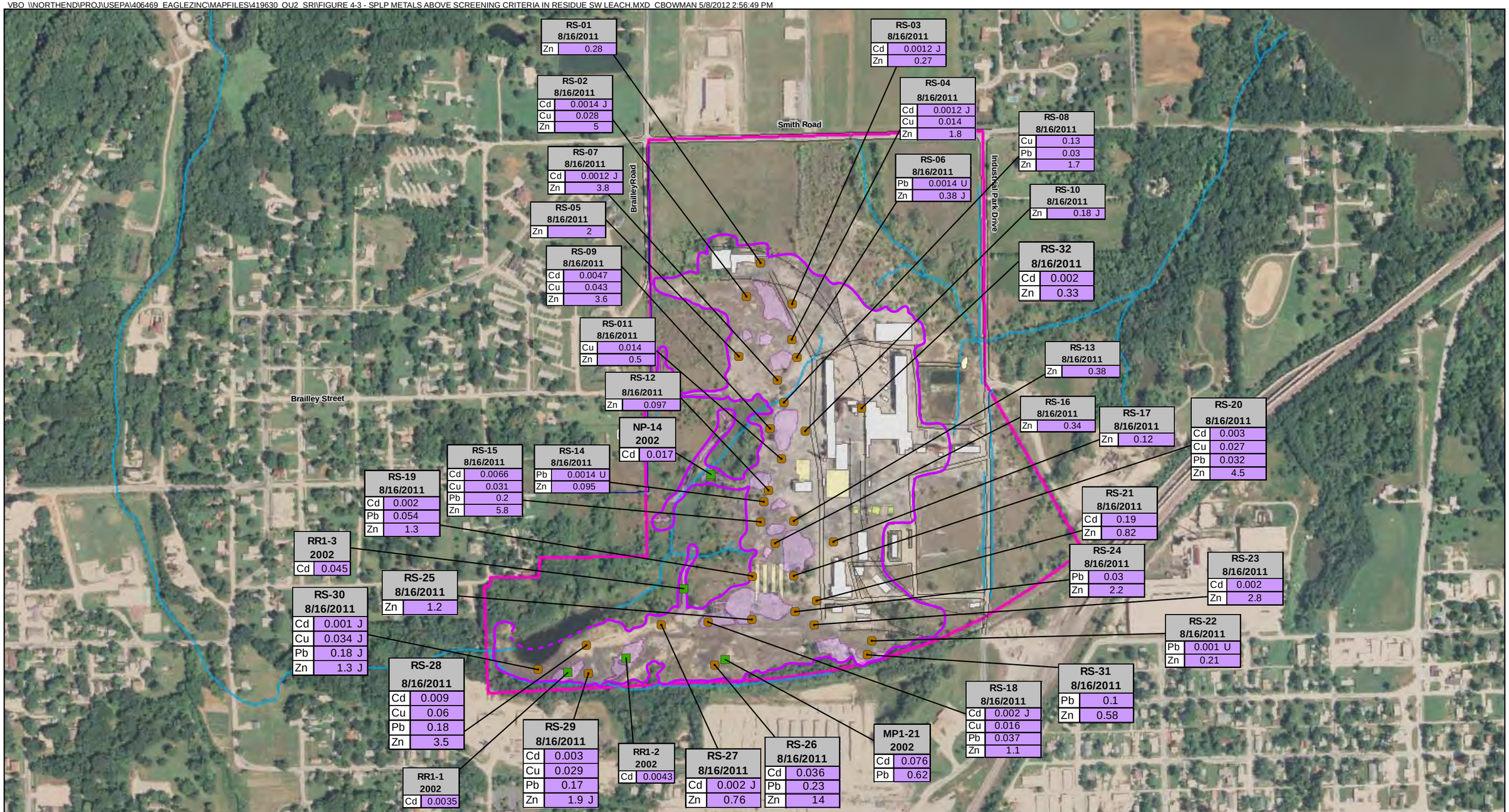
VBO \\NORTHEND\PROJ\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 4-3 - SPLP METALS ABOVE SCREENING CRITERIA IN RESIDUE SW LEACH.MXD CBOWMAN 5/8/2012 2:56:49 PM




**Legend**

- Residue Pile Sample
- Residue/Soil Boring
- Fence
- Drainage Ditch/Ephemeral Stream
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert
- Residue Visible at Surface

Cd = Cadmium
Pb = Lead
Mn = Manganese
Zn = Zinc

Notes:
SPLP metals concentrations and screening criteria are presented in units of milligrams per liter (mg/L)
SPLP metal concentration exceeds SPLP metal screening criteria for potential to leach to surface water
- = No value available
J = Estimated detection
SPLP = Synthetic Precipitation Leaching Procedure
U = Result not detected

| | *SPLP Metal Screening Criteria* [1] | |
|---|---|---|
| **Metal** | **Illinois Regs. Subpart B General Use Water Quality Standard*** | **Illinois Regs. Subpart D Secondary Contact and Indigenous Aquatic Life** |
| Cd | 0.0012 | 0.2 |
| Cu | 0.0134 | 1.0 |
| Pb | 0.0195 | 0.1 |
| Zn | 0.0254 | 1.0 |

[1]Most stringent criteria shaded

N
W E
S

0 250 500 Feet

Figure 4-3
SPLP Metal Concentrations in Residue with Potential to Leach to Surface Water
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

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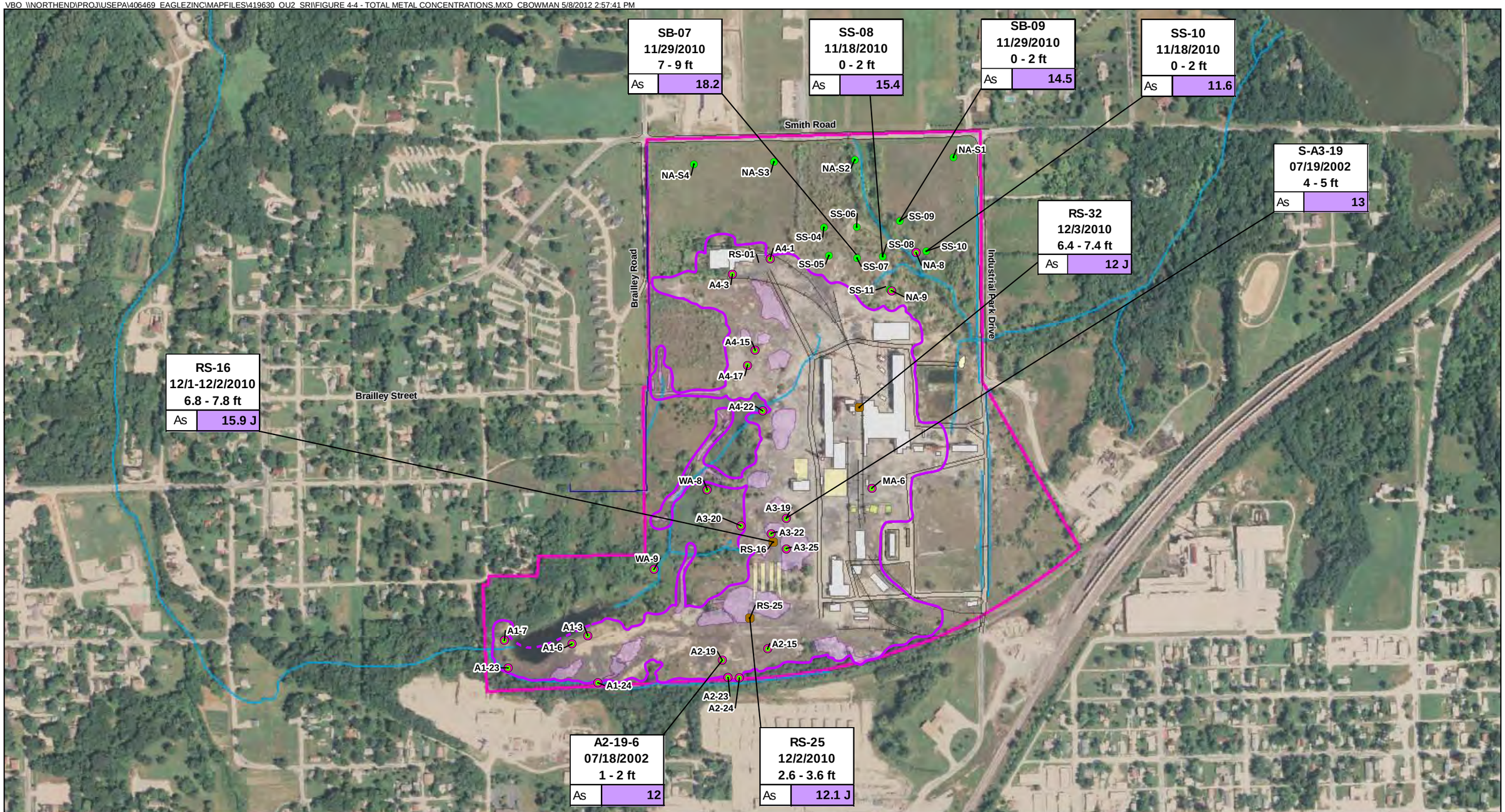
VBO \\NORTHEND\PROJ\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 4-4 - TOTAL METAL CONCENTRATIONS.MXD CBOWMAN 5/8/2012 2:57:41 PM




**Legend**

- Residue/Soil Boring
- Soil Boring
- Surface Soil
- Fence
- Drainage Ditch/Ephemeral Stream
- Railroad
- Site Boundary
- Residue Visible at Surface
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

Notes:
Soil concentrations and screening criteria are presented in units of milligrams per kilogram (mg/kg)
Concentration exceeds screening criteria and Illinois Background Value for Soil
As = Arsenic
Pb = Lead
J = Estimated detection

| Metal | Soil Screening Criteria: Industrial Soil Risk Screening Level | Soil Screening Criteria: Illinois Background Value |
|---|---|---|
| As | 1.6 | 11.3 |
| Pb | 800 | 20.9 |

| Sample ID<br>Sampel Date<br>Depth of Sample | |
|---|---|
| Metal | Concentration mg/kg |

N
W E
S

0 250 500 1,000 Feet

Figure 4-4
Total Metal Concentrations Above Screening Criteria and Background Values in Onsite Soil
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

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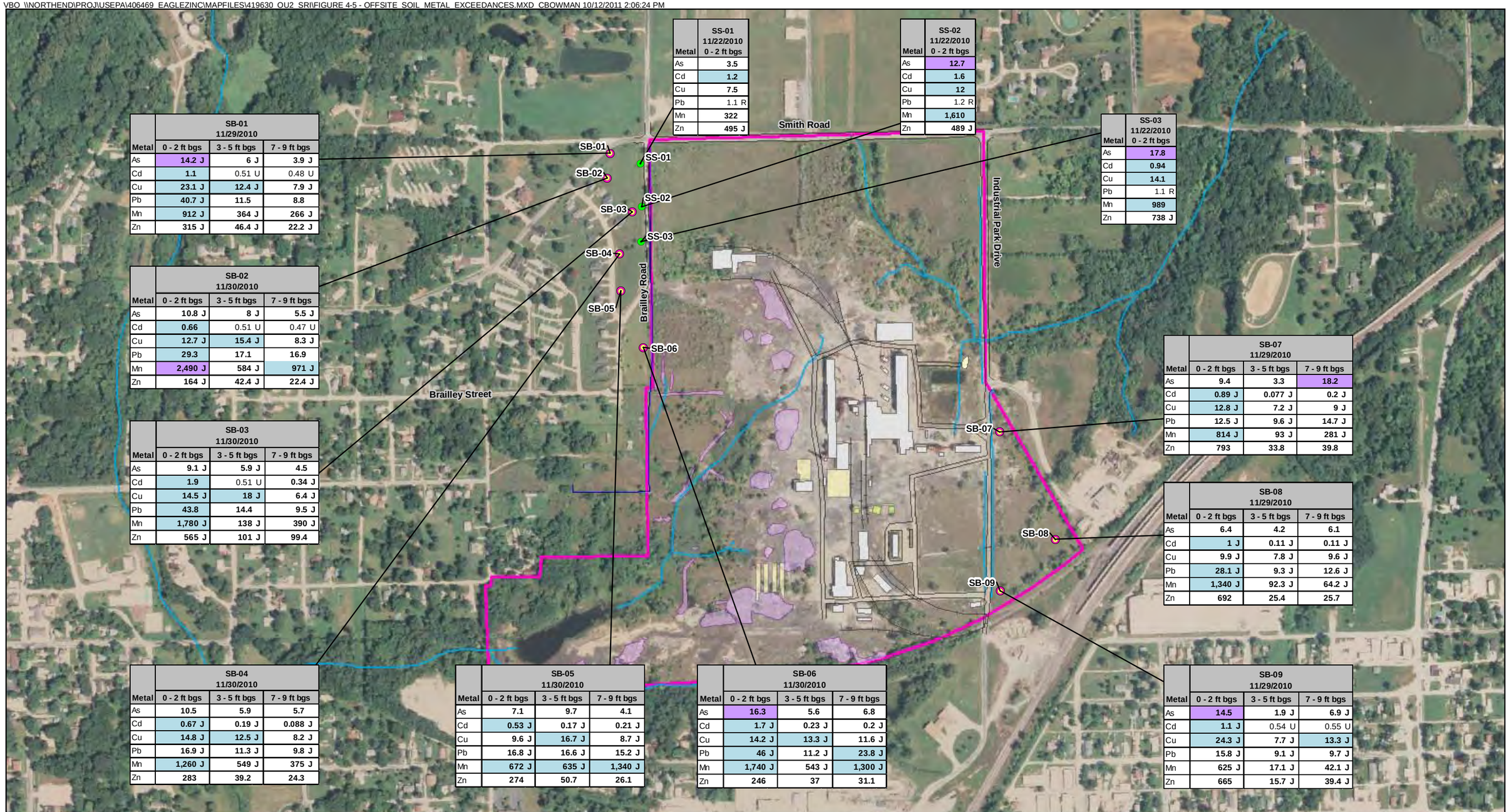
VBO \\NORTHEND\PROJ\USEPA\406469 EAGLEZINC\MAPFILES\419630 OU2 SRI\FIGURE 4-5 - OFFSITE SOIL METAL EXCEEDANCES.MXD CBOWMAN 10/12/2011 2:06:24 PM




| Metal | SS-01 11/22/2010 0 - 2 ft bgs |
|---|---|
| As | 3.5 |
| Cd | 1.2 |
| Cu | 7.5 |
| Pb | 1.1 R |
| Mn | 322 |
| Zn | 495 J |

| Metal | SS-02 11/22/2010 0 - 2 ft bgs |
|---|---|
| As | 12.7 |
| Cd | 1.6 |
| Cu | 12 |
| Pb | 1.2 R |
| Mn | 1,610 |
| Zn | 489 J |

| Metal | SS-03 11/22/2010 0 - 2 ft bgs |
|---|---|
| As | 17.8 |
| Cd | 0.94 |
| Cu | 14.1 |
| Pb | 1.1 R |
| Mn | 989 |
| Zn | 738 J |

| Metal | SB-01 11/29/2010 | | |
|---|---|---|---|
| | 0 - 2 ft bgs | 3 - 5 ft bgs | 7 - 9 ft bgs |
| As | 14.2 J | 6 J | 3.9 J |
| Cd | 1.1 | 0.51 U | 0.48 U |
| Cu | 23.1 J | 12.4 J | 7.9 J |
| Pb | 40.7 J | 11.5 | 8.8 |
| Mn | 912 J | 364 J | 266 J |
| Zn | 315 J | 46.4 J | 22.2 J |

| Metal | SB-02 11/30/2010 | | |
|---|---|---|---|
| | 0 - 2 ft bgs | 3 - 5 ft bgs | 7 - 9 ft bgs |
| As | 10.8 J | 8 J | 5.5 J |
| Cd | 0.66 | 0.51 U | 0.47 U |
| Cu | 12.7 J | 15.4 J | 8.3 J |
| Pb | 29.3 | 17.1 | 16.9 |
| Mn | 2,490 J | 584 J | 971 J |
| Zn | 164 J | 42.4 J | 22.4 J |

| Metal | SB-03 11/30/2010 | | |
|---|---|---|---|
| | 0 - 2 ft bgs | 3 - 5 ft bgs | 7 - 9 ft bgs |
| As | 9.1 J | 5.9 J | 4.5 |
| Cd | 1.9 | 0.51 U | 0.34 J |
| Cu | 14.5 J | 18 J | 6.4 J |
| Pb | 43.8 | 14.4 | 9.5 J |
| Mn | 1,780 J | 138 J | 390 J |
| Zn | 565 J | 101 J | 99.4 |

| Metal | SB-04 11/30/2010 | | |
|---|---|---|---|
| | 0 - 2 ft bgs | 3 - 5 ft bgs | 7 - 9 ft bgs |
| As | 10.5 | 5.9 | 5.7 |
| Cd | 0.67 J | 0.19 J | 0.088 J |
| Cu | 14.8 J | 12.5 J | 8.2 J |
| Pb | 16.9 J | 11.3 J | 9.8 J |
| Mn | 1,260 J | 549 J | 375 J |
| Zn | 283 | 39.2 | 24.3 |

| Metal | SB-05 11/30/2010 | | |
|---|---|---|---|
| | 0 - 2 ft bgs | 3 - 5 ft bgs | 7 - 9 ft bgs |
| As | 7.1 | 9.7 | 4.1 |
| Cd | 0.53 J | 0.17 J | 0.21 J |
| Cu | 9.6 J | 16.7 J | 8.7 J |
| Pb | 16.8 J | 16.6 J | 15.2 J |
| Mn | 672 J | 635 J | 1,340 J |
| Zn | 274 | 50.7 | 26.1 |

| Metal | SB-06 11/30/2010 | | |
|---|---|---|---|
| | 0 - 2 ft bgs | 3 - 5 ft bgs | 7 - 9 ft bgs |
| As | 16.3 | 5.6 | 6.8 |
| Cd | 1.7 J | 0.23 J | 0.2 J |
| Cu | 14.2 J | 13.3 J | 11.6 J |
| Pb | 46 J | 11.2 J | 23.8 J |
| Mn | 1,740 J | 543 J | 1,300 J |
| Zn | 246 | 37 | 31.1 |

| Metal | SB-07 11/29/2010 | | |
|---|---|---|---|
| | 0 - 2 ft bgs | 3 - 5 ft bgs | 7 - 9 ft bgs |
| As | 9.4 | 3.3 | 18.2 |
| Cd | 0.89 J | 0.077 J | 0.2 J |
| Cu | 12.8 J | 7.2 J | 9 J |
| Pb | 12.5 J | 9.6 J | 14.7 J |
| Mn | 814 J | 93 J | 281 J |
| Zn | 793 | 33.8 | 39.8 |

| Metal | SB-08 11/29/2010 | | |
|---|---|---|---|
| | 0 - 2 ft bgs | 3 - 5 ft bgs | 7 - 9 ft bgs |
| As | 6.4 | 4.2 | 6.1 |
| Cd | 1 J | 0.11 J | 0.11 J |
| Cu | 9.9 J | 7.8 J | 9.6 J |
| Pb | 28.1 J | 9.3 J | 12.6 J |
| Mn | 1,340 J | 92.3 J | 64.2 J |
| Zn | 692 | 25.4 | 25.7 |

| Metal | SB-09 11/29/2010 | | |
|---|---|---|---|
| | 0 - 2 ft bgs | 3 - 5 ft bgs | 7 - 9 ft bgs |
| As | 14.5 | 1.9 J | 6.9 J |
| Cd | 1.1 J | 0.54 U | 0.55 U |
| Cu | 24.3 J | 7.7 J | 13.3 J |
| Pb | 15.8 J | 9.1 J | 9.7 J |
| Mn | 625 J | 17.1 J | 42.1 J |
| Zn | 665 | 15.7 J | 39.4 J |

**Legend**

- Soil Boring
- Surface Soil
- Fence
- Drainage Ditch/Ephemeral Stream
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

As = Arsenic
Cd = Cadmium
Cu = Copper
Pb = Lead
Mn = Manganese
Zn = Zinc

Notes:
1. Soil concentrations and screening criteria are presented in units of milligrams per kilogram (mg/kg)
2. Detected concentrations are **bolded.**
3. Concentration exceedes the screening criteria and Illinois background value for soil
4. Concentration exceedes Illinois background value for soil
5. - = Screening criteria not available
6. J = Estimated detection
7. U = Result not detected
8. R = Rejected
9. HHRA = human health risk assessment

| Metal | Offsite Soil Screening Criteria | |
|---|---|---|
| | Residential Soil Risk Screening Levels (non-HHRA adjusted) | Illinois Background values |
| As | 0.39 | 11.3 |
| Cd | 70 | 0.5 |
| Cu | 3,100 | 12 |
| Pb | 400 | 20.9 |
| Mn | 1,800 | 630 |
| Zn | 23,000 | - |

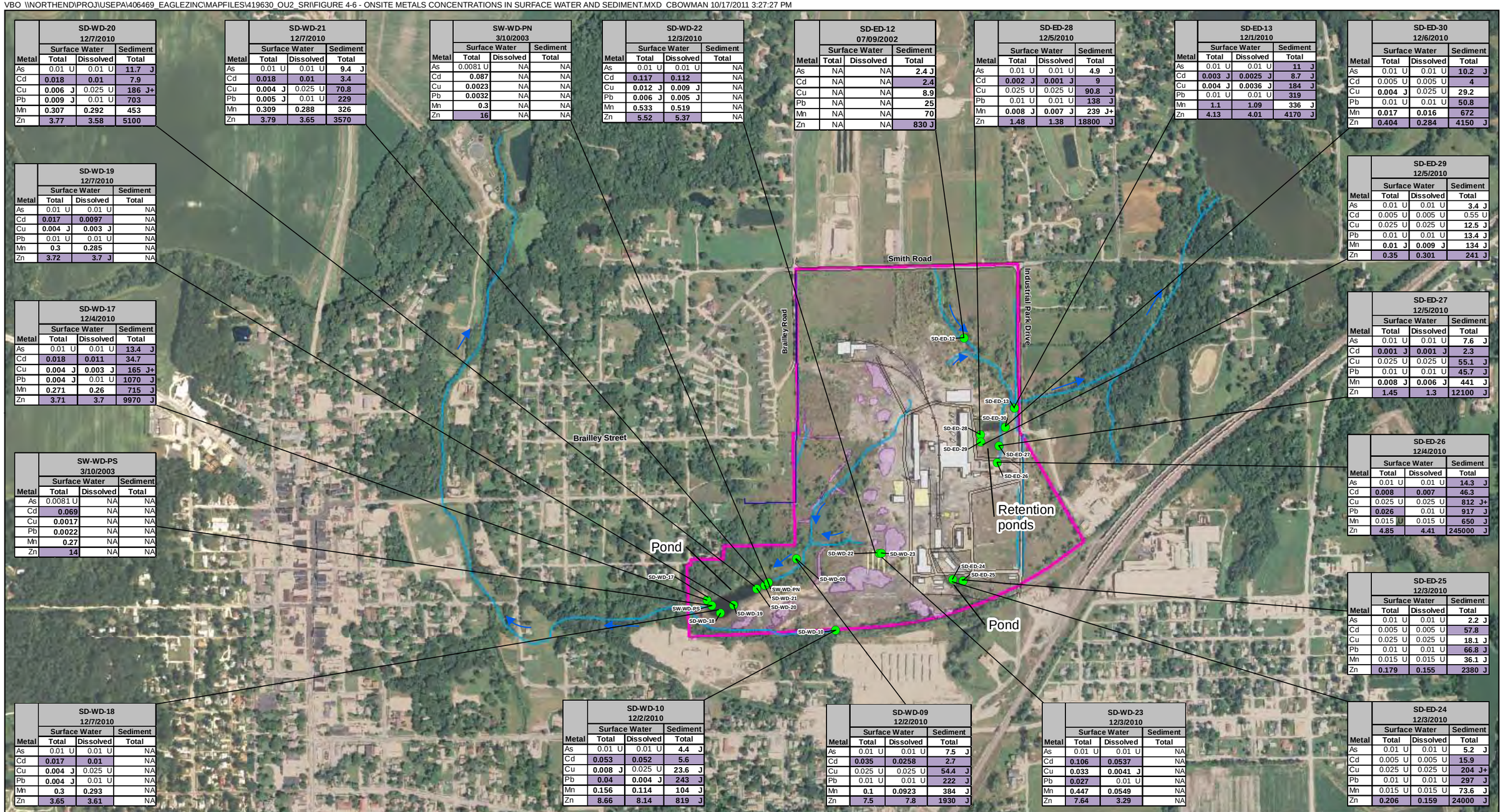
N
W E
S

0 250 500 1,000 Feet

Figure 4-5
Total Metal Concentrations in Offsite Soil
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

VBO \\NORTHEND\PROJ\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 4-6 - ONSITE METALS CONCENTRATIONS IN SURFACE WATER AND SEDIMENT.MXD CBOWMAN 10/17/2011 3:27:27 PM




| Metal | SD-WD-20 12/7/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 11.7 J |
| Cd | 0.018 | 0.01 | 7.9 |
| Cu | 0.006 J | 0.025 U | 186 J+ |
| Pb | 0.009 J | 0.01 U | 703 |
| Mn | 0.307 | 0.292 | 453 |
| Zn | 3.77 | 3.58 | 5100 |

| Metal | SD-WD-21 12/7/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 9.4 J |
| Cd | 0.018 | 0.01 | 3.4 |
| Cu | 0.004 J | 0.025 U | 70.8 |
| Pb | 0.005 J | 0.01 U | 229 |
| Mn | 0.309 | 0.288 | 326 |
| Zn | 3.79 | 3.65 | 3570 |

| Metal | SW-WD-PN 3/10/2003 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.0081 U | NA | NA |
| Cd | 0.087 | NA | NA |
| Cu | 0.0023 | NA | NA |
| Pb | 0.0032 | NA | NA |
| Mn | 0.3 | NA | NA |
| Zn | 16 | NA | NA |

| Metal | SD-WD-22 12/3/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | NA |
| Cd | 0.117 | 0.112 | NA |
| Cu | 0.012 J | 0.009 J | NA |
| Pb | 0.006 J | 0.005 J | NA |
| Mn | 0.533 | 0.519 | NA |
| Zn | 5.52 | 5.37 | NA |

| Metal | SD-ED-12 07/09/2002 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | NA | NA | 2.4 J |
| Cd | NA | NA | 2.4 |
| Cu | NA | NA | 8.9 |
| Pb | NA | NA | 25 |
| Mn | NA | NA | 70 |
| Zn | NA | NA | 830 J |

| Metal | SD-ED-28 12/5/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 4.9 J |
| Cd | 0.002 J | 0.001 J | 9 |
| Cu | 0.025 U | 0.025 U | 90.8 J |
| Pb | 0.01 U | 0.01 U | 138 J |
| Mn | 0.008 J | 0.007 J | 239 J+ |
| Zn | 1.48 | 1.38 | 18800 J |

| Metal | SD-ED-13 12/1/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 11 J |
| Cd | 0.003 J | 0.0025 J | 8.7 J |
| Cu | 0.004 J | 0.0036 J | 184 J |
| Pb | 0.01 U | 0.01 U | 319 |
| Mn | 1.1 | 1.09 | 336 J |
| Zn | 4.13 | 4.01 | 4170 J |

| Metal | SD-ED-30 12/6/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 10.2 J |
| Cd | 0.005 U | 0.005 U | 4 |
| Cu | 0.004 J | 0.025 U | 29.2 |
| Pb | 0.01 U | 0.01 U | 50.8 |
| Mn | 0.017 | 0.016 | 672 |
| Zn | 0.404 | 0.284 | 4150 J |

| Metal | SD-WD-19 12/7/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | NA |
| Cd | 0.017 | 0.0097 | NA |
| Cu | 0.004 J | 0.003 J | NA |
| Pb | 0.01 U | 0.01 U | NA |
| Mn | 0.3 | 0.285 | NA |
| Zn | 3.72 | 3.7 J | NA |

| Metal | SD-ED-29 12/5/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 3.4 J |
| Cd | 0.005 U | 0.005 U | 0.55 U |
| Cu | 0.025 U | 0.025 U | 12.5 J |
| Pb | 0.01 U | 0.01 U | 13.4 J |
| Mn | 0.01 J | 0.009 J | 134 J |
| Zn | 0.35 | 0.301 | 241 J |

| Metal | SD-WD-17 12/4/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 13.4 J |
| Cd | 0.018 | 0.011 | 34.7 |
| Cu | 0.004 J | 0.003 J | 165 J+ |
| Pb | 0.004 J | 0.01 U | 1070 J |
| Mn | 0.271 | 0.26 | 715 J |
| Zn | 3.71 | 3.7 | 9970 J |

| Metal | SD-ED-27 12/5/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 7.6 J |
| Cd | 0.001 J | 0.001 J | 2.3 |
| Cu | 0.025 U | 0.025 U | 55.1 J |
| Pb | 0.01 U | 0.01 U | 45.7 J |
| Mn | 0.008 J | 0.006 J | 441 J |
| Zn | 1.45 | 1.3 | 12100 J |

| Metal | SW-WD-PS 3/10/2003 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.0081 U | NA | NA |
| Cd | 0.069 | NA | NA |
| Cu | 0.0017 | NA | NA |
| Pb | 0.0022 | NA | NA |
| Mn | 0.27 | NA | NA |
| Zn | 14 | NA | NA |

| Metal | SD-ED-26 12/4/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 14.3 J |
| Cd | 0.008 | 0.007 | 46.3 |
| Cu | 0.025 U | 0.025 U | 812 J+ |
| Pb | 0.026 | 0.01 U | 917 J |
| Mn | 0.015 U | 0.015 U | 650 J |
| Zn | 4.85 | 4.41 | 245000 J |

| Metal | SD-ED-25 12/3/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 2.2 J |
| Cd | 0.005 U | 0.005 U | 57.8 |
| Cu | 0.025 U | 0.025 U | 18.1 J |
| Pb | 0.01 U | 0.01 U | 66.8 J |
| Mn | 0.015 U | 0.015 U | 36.1 J |
| Zn | 0.179 | 0.155 | 2380 J |

| Metal | SD-WD-18 12/7/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | NA |
| Cd | 0.017 | 0.01 | NA |
| Cu | 0.004 J | 0.025 U | NA |
| Pb | 0.004 J | 0.01 U | NA |
| Mn | 0.3 | 0.293 | NA |
| Zn | 3.65 | 3.61 | NA |

| Metal | SD-WD-10 12/2/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 4.4 J |
| Cd | 0.053 | 0.052 | 5.6 |
| Cu | 0.008 J | 0.025 U | 23.6 J |
| Pb | 0.04 | 0.004 J | 243 J |
| Mn | 0.156 | 0.114 | 104 J |
| Zn | 8.66 | 8.14 | 819 J |

| Metal | SD-WD-09 12/2/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 7.5 J |
| Cd | 0.035 | 0.0258 | 2.7 |
| Cu | 0.025 U | 0.025 U | 54.4 J |
| Pb | 0.01 U | 0.01 U | 222 J |
| Mn | 0.1 | 0.0923 | 384 J |
| Zn | 7.5 | 7.8 | 1930 J |

| Metal | SD-WD-23 12/3/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | NA |
| Cd | 0.106 | 0.0537 | NA |
| Cu | 0.033 | 0.0041 J | NA |
| Pb | 0.027 | 0.01 U | NA |
| Mn | 0.447 | 0.0549 | NA |
| Zn | 7.64 | 3.29 | NA |

| Metal | SD-ED-24 12/3/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 5.2 J |
| Cd | 0.005 U | 0.005 U | 15.9 |
| Cu | 0.025 U | 0.025 U | 204 J+ |
| Pb | 0.01 U | 0.01 U | 297 J |
| Mn | 0.015 U | 0.015 U | 73.6 J |
| Zn | 0.206 | 0.159 | 24000 J |

**Legend**

- Surface Water and Sediment Location
- Fence
- Flow Direction
- Drainage Ditch/Ephemeral Stream
- Railroad Spars
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

As = Arsenic
Cd = Cadmium
Cu = Copper
Pb = Lead
Mn = Manganese
Zn = Zinc

Notes:
Surface water concentrations and screening criteria are presented in units of milligrams per liter (mg/L)
Sediment concentrations and screening criteria are presented in units of milligrams per kilogram (mg/kg)
Concentration exceedes the most stringent screening criteria
Detected concentrations are **bolded.**
- = Screening criteria not available
NA = Not reported or analyzed
J = Estimated detection
U = Result not detected
UJ = Estimated result not detected
J+ = Estimated detection, biased high

| Metal | Suface Water Screening Criteria[1]: Illinois Regs. Subpart B General Use Water Quality Standard[1] | Illinois Regs. Subpart D Secondary Contact and Indigenous Aquatic Life | National Recommended Water Quality Criteria (Freshwater) | Sediment Screening Criteria: Ecological Screening Level |
|---|---|---|---|---|
| As | 0.19 | 1.0 | 0.15 | 9.79 |
| Cd | 0.0012 | 0.2 | 0.00025 | 0.99 |
| Cu | 0.0134 | 1.0 | - | 31.6 |
| Pb | 0.0195 | 0.1 | 0.0025 | 35.8 |
| Mn | - | 1.0 | - | 460 |
| Zn | 0.0254 | 1.0 | 0.12 | 121 |

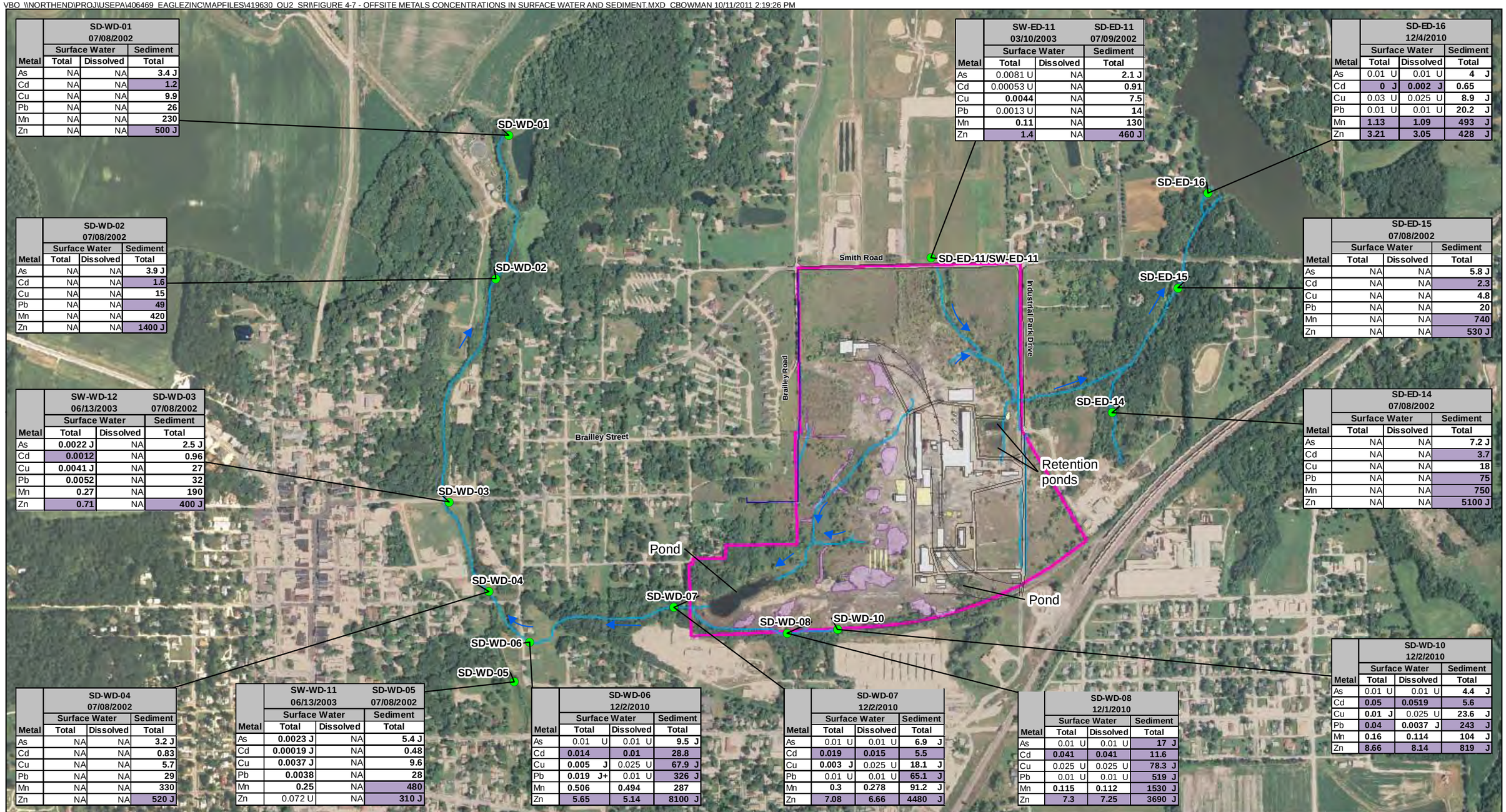
[1]Most stringent criteria shaded

N
W E
S

0 375 750 1,500
Feet

Figure 4-6
Onsite Metal Concentrations in Surface Water and Sediment
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL




| Metal | SD-WD-01 07/08/2002 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | NA | NA | 3.4 J |
| Cd | NA | NA | 1.2 |
| Cu | NA | NA | 9.9 |
| Pb | NA | NA | 26 |
| Mn | NA | NA | 230 |
| Zn | NA | NA | 500 J |

| Metal | SD-WD-02 07/08/2002 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | NA | NA | 3.9 J |
| Cd | NA | NA | 1.6 |
| Cu | NA | NA | 15 |
| Pb | NA | NA | 49 |
| Mn | NA | NA | 420 |
| Zn | NA | NA | 1400 J |

| Metal | SW-WD-12 06/13/2003 Surface Water Total | Surface Water Dissolved | SD-WD-03 07/08/2002 Sediment Total |
|---|---|---|---|
| As | 0.0022 J | NA | 2.5 J |
| Cd | 0.0012 | NA | 0.96 |
| Cu | 0.0041 J | NA | 27 |
| Pb | 0.0052 | NA | 32 |
| Mn | 0.27 | NA | 190 |
| Zn | 0.71 | NA | 400 J |

| Metal | SD-WD-04 07/08/2002 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | NA | NA | 3.2 J |
| Cd | NA | NA | 0.83 |
| Cu | NA | NA | 5.7 |
| Pb | NA | NA | 29 |
| Mn | NA | NA | 330 |
| Zn | NA | NA | 520 J |

| Metal | SW-WD-11 06/13/2003 Surface Water Total | Surface Water Dissolved | SD-WD-05 07/08/2002 Sediment Total |
|---|---|---|---|
| As | 0.0023 J | NA | 5.4 J |
| Cd | 0.00019 J | NA | 0.48 |
| Cu | 0.0037 J | NA | 9.6 |
| Pb | 0.0038 | NA | 28 |
| Mn | 0.25 | NA | 480 |
| Zn | 0.072 U | NA | 310 J |

| Metal | SD-WD-06 12/2/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 9.5 J |
| Cd | 0.014 | 0.01 | 28.8 |
| Cu | 0.005 J | 0.025 U | 67.9 J |
| Pb | 0.019 J+ | 0.01 U | 326 J |
| Mn | 0.506 | 0.494 | 287 |
| Zn | 5.65 | 5.14 | 8100 J |

| Metal | SD-WD-07 12/2/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 6.9 J |
| Cd | 0.019 | 0.015 | 5.5 |
| Cu | 0.003 J | 0.025 U | 18.1 J |
| Pb | 0.01 U | 0.01 U | 65.1 J |
| Mn | 0.3 | 0.278 | 91.2 J |
| Zn | 7.08 | 6.66 | 4480 J |

| Metal | SD-WD-08 12/1/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 17 J |
| Cd | 0.041 | 0.041 | 11.6 |
| Cu | 0.025 U | 0.025 U | 78.3 J |
| Pb | 0.01 U | 0.01 U | 519 J |
| Mn | 0.115 | 0.112 | 1530 J |
| Zn | 7.3 | 7.25 | 3690 J |

| Metal | SW-ED-11 03/10/2003 Surface Water Total | Surface Water Dissolved | SD-ED-11 07/09/2002 Sediment Total |
|---|---|---|---|
| As | 0.0081 U | NA | 2.1 J |
| Cd | 0.00053 U | NA | 0.91 |
| Cu | 0.0044 | NA | 7.5 |
| Pb | 0.0013 U | NA | 14 |
| Mn | 0.11 | NA | 130 |
| Zn | 1.4 | NA | 460 J |

| Metal | SD-ED-16 12/4/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 4 J |
| Cd | 0 J | 0.002 J | 0.65 |
| Cu | 0.03 U | 0.025 U | 8.9 J |
| Pb | 0.01 U | 0.01 U | 20.2 J |
| Mn | 1.13 | 1.09 | 493 J |
| Zn | 3.21 | 3.05 | 428 J |

| Metal | SD-ED-15 07/08/2002 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | NA | NA | 5.8 J |
| Cd | NA | NA | 2.3 |
| Cu | NA | NA | 4.8 |
| Pb | NA | NA | 20 |
| Mn | NA | NA | 740 |
| Zn | NA | NA | 530 J |

| Metal | SD-ED-14 07/08/2002 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | NA | NA | 7.2 J |
| Cd | NA | NA | 3.7 |
| Cu | NA | NA | 18 |
| Pb | NA | NA | 75 |
| Mn | NA | NA | 750 |
| Zn | NA | NA | 5100 J |

| Metal | SD-WD-10 12/2/2010 Surface Water Total | Surface Water Dissolved | Sediment Total |
|---|---|---|---|
| As | 0.01 U | 0.01 U | 4.4 J |
| Cd | 0.05 | 0.0519 | 5.6 |
| Cu | 0.01 J | 0.025 U | 23.6 J |
| Pb | 0.04 | 0.0037 J | 243 J |
| Mn | 0.16 | 0.114 | 104 J |
| Zn | 8.66 | 8.14 | 819 J |

**Legend**

- Surface Water and Sediment Location
- Fence
- Flow Direction
- Drainage Ditch/Ephemeral Stream
- Railroad Spars
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert

As = Arsenic
Cd = Cadmium
Cu = Copper
Pb = Lead
Mn = Manganese
Zn = Zinc

Notes:
Surface water concentrations and screening criteria are presented in units of milligrams per liter (mg/L)
Sediment concentrations and screening criteria are presented in units of milligrams per kilogram (mg/kg)
Concentration exceedes the most stringent screening criteria
Detected concentrations are **bolded.**
- = Screening criteria not available
NA = Not reported or analyzed
J = Estimated detection
U = Result not detected
UJ = Estimated result not detected
J+ = Estimated detection, biased high

| Metal | *Suface Water Screening Criteria* [1] Illinois Regs. Subpart B General Use Water Quality Standard* | Illinois Regs. Subpart D Secondary Contact and Indigenous Aquatic Life | National Recommended Water Quality Criteria (Freshwater) | *Sediment Screening Criteria* Ecological Screening Level |
|---|---|---|---|---|
| As | 0.19 | 1.0 | 0.15 | 9.79 |
| Cd | 0.0012 | 0.2 | 0.00025 | 0.99 |
| Cu | 0.0134 | 1.0 | - | 31.6 |
| Pb | 0.0195 | 0.1 | 0.0025 | 35.8 |
| Mn | - | 1.0 | - | 460 |
| Zn | 0.0254 | 1.0 | 0.12 | 121 |

[1]Most stringent surface water criteria shaded

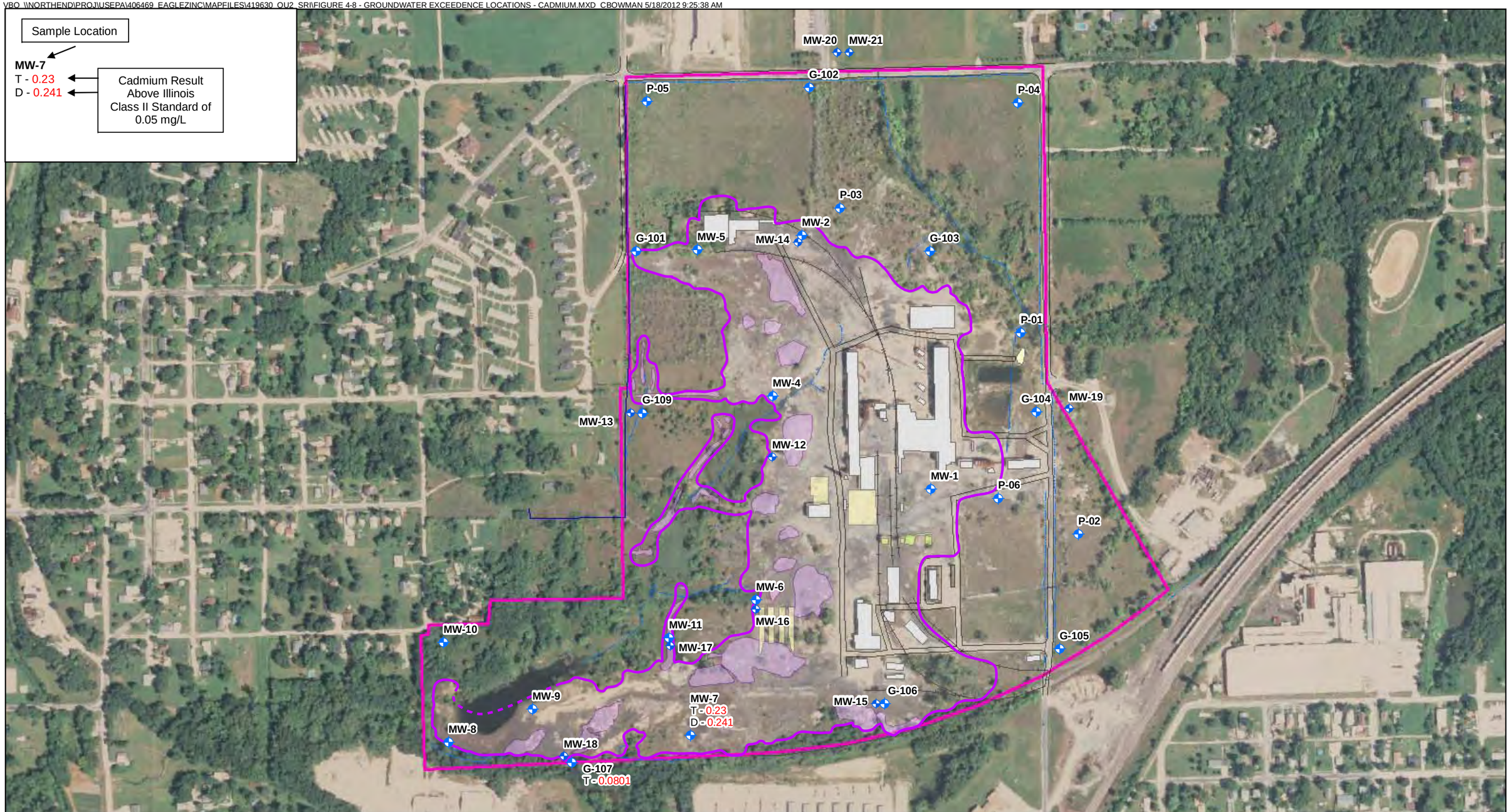
Figure 4-7
Offsite Metal Concentrations in Surface Water and Sediment
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

N W E S

0 375 750 1,500 Feet

CH2MHILL

VBO \\NORTHEND\PROJ\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 4-8 - GROUNDWATER EXCEEDENCE LOCATIONS - CADMIUM.MXD CBOWMAN 5/18/2012 9:25:38 AM




**Legend**

- Monitoring Well
- Fence
- Ditch
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert
- Residue Visible at Surface

Notes:
T = Total cadmium
D = Dissolved cadmium

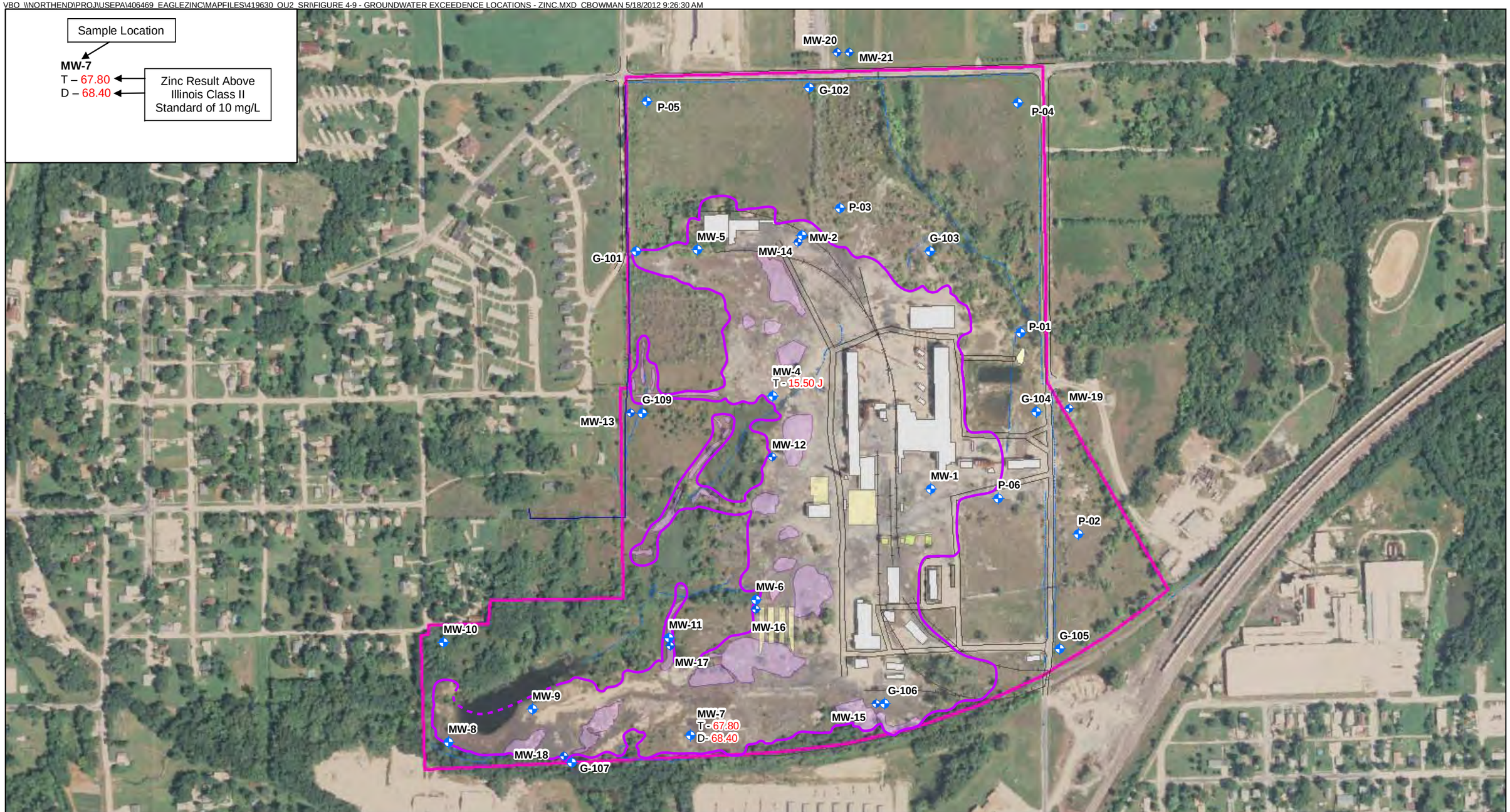
N
W E
S

0 200 400 800
Feet

Figure 4-8
2010 Cadmium Concentrations Above Class II Standards
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

CH2MHILL

VBO \\NORTHEND\PROJ\USEPA\406469_EAGLEZINC\MAPFILES\419630_OU2_SRI\FIGURE 4-9 - GROUNDWATER EXCEEDENCE LOCATIONS - ZINC.MXD CBOWMAN 5/18/2012 9:26:30 AM




**Legend**

- Monitoring Well
- Fence
- Ditch
- Railroad
- Site Boundary
- Tank
- Foundation
- Building
- Residue Pile
- Rip Rap
- Culvert
- Residue Visible at Surface

Notes:
T = Total Zinc
D = Dissolved Zinc

N
W E
S

0 200 400 800
Feet

Figure 4-9
2010 Zinc Concentrations Above Class II Standards
OU2 Supplemental Remedial Investigation
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

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# Appendix A
# Soil Boring Logs and Well Construction Diagrams

# DPT Logs

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-01 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 629 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 11/30/10 14:10
END : 11/30/10 14:20
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1' - Residue | | Collect sample @ 14:20<br>Sample ID: EZ-RS01-1 |
| | | | | | 1-2' - Silt (ML), 7.5YR: 4/1, dark gray, dry, firm. | | |
| | | 4.6 | DPT-1 | | 2-5' - Lean Clay (CL), 10YR: 5/1, gray, moist, firm. | | Collect sample @ 14:25<br>Sample ID: EZ-RSB01-2 |
| 5 | 5.0 | | | | 5-10' - Lean Clay (CL), 7.5YR: 5/1, brown, dry, firm. | | |
| | | 4.6 | DPT-2 | | | | |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 11/30/10 14:20 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-02 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

ELEVATION : Approximately 633 ft amsl DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez

DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT ORIENTATION : Vertical

WATER LEVELS : Not Applicable START : 11/30/10 14:50 END : 11/30/10 15:05 LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.8' - Residue | | Collect sample @ 15:05<br>Sample ID: EZ-RS02-1 |
| | | | | | 0.8-2' - Silt (ML), 10YR: 4/2, dark grayish-brown, dry, stiff. | | |
| | | | | | 2-5' - Lean Clay (CL), 7.5YR: 5/3, brown, dry. | | |
| | | 5.0 | DPT-1 | | | | Collect sample @ 15:10<br>Sample ID: EZ-RSB02-2 |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 11/30/10 15:05 | | |

| PROJECT NUMBER: | BORING NUMBER: |
|---|---|
| 419630 | RS-03 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 633 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 11/30/10 15:25
END : 11/30/10 15:35
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1' - Residue | | Collect sample @ 15:30<br>Sample ID: EZ-RS03-1 |
| | | | | | 1-5' - Silt (ML), 7.5YR: 4/1, dark gray, dry, soft. | | |
| | | 4.0 | DPT-1 | | | | Collect sample @ 15:35<br>Sample ID: EZ-RSB03-2 |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 11/30/10 15:35 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-04 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

ELEVATION : Approximately 630 ft amsl DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez

DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT ORIENTATION : Vertical

WATER LEVELS : Not Applicable START : 12/1/10 08:10 END : 12/1/10 08:40 LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.4' - Residue | | Collect sample @ 08:20<br>Sample ID: EZ-RS04-1 |
| | | | | | 0.4-5' - Lean Clay (CL), 7.5YR: 6/3, light brown, dry, firm. | | Collect sample @ 08:25<br>Sample ID: EZ-RSB04-2 |
| | | 4.6 | DPT-1 | | | | |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/1/10 08:40 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-05 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 628 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/1/10 08:40
END : 12/1/10 09:00
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-3.5' - Residue | | Collect sample @ 08:45<br>Sample ID: EZ-RS05-1 |
| | | 4.0 | DPT-1 | | | | |
| | | | | | 3.5-5' - Lean CLay (CL), 10YR: 5/3, brown, moist, soft. | | |
| 5 | 5.0 | | | | 5-10' - Lean Clay (CL), 7.5YR: 4/4, brown, dry, firm. | | Collect sample @ 08:50<br>Sample ID: EZ-RSB05-2 |
| | | 4.3 | DPT-2 | | | | |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 12/1/10 09:00 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-06 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 629 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/1/10 09:20
END : 12/1/10 10:14
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.4' - Residue | | Collect sample @ 09:40<br>Sample ID: EZ-RS06-1 |
| | | | | | 0.4-5' - Lean Clay (CL), 7.5YR: 6/3, light brown, dry, firm. | | Collect sample @ 09:42<br>Sample ID: EZ-RS06-1FD |
| | | | | | | | Collect sample @ 09:45<br>Sample ID: EZ-RSB06-2 |
| | | 4.8 | DPT-1 | | | | |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/1/10 10:14 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-07 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 628 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/1/10 09:07
END : 12/1/10 09:15
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.6' - Residue | | Collect sample @ 08:15<br>Sample ID: EZ-RS07-1 |
| | | | | | 0.6-5' - Lean Clay (CL), 7.5YR: 5/4, brown, dry, firm. | | Collect sample @ 09:20<br>Sample ID: EZ-RSB07-2 |
| | | 4.2 | DPT-1 | | | | |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/1/10 09:15 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-08 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 629 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/1/10 10:19
END : 12/1/10 10:32
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1.5' - Residue | | Collect sample @ 10:25<br>Sample ID: EZ-RS08-1 |
| | | 1.7 | DPT-1 | | 1.5-5' - Lean Clay (CL), 7.5YR: 2.3/1, black, wet, soft. | | |
| 5 | 5.0 | | | | 5-10' - Lean Clay (CL), 7.5YR: 2.3/1, black, wet, soft. | | Collect sample @ 10:30<br>Sample ID: EZ-RSB08-2<br><br>Collect sample @ 10:32<br>Sample ID: EZ-RSB08-2FD |
| 10 | | | | | Bottom of Boring at 10.0 ft bgs on 12/1/10 10:32 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-09 | SHEET 1 OF 1 |
|---|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 627 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/1/10 11:00
END : 12/1/10 11:25
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-2.3' - Residue | | Collect sample @ 11:05<br>Sample ID: EZ-RS09-1 |
| | | 4.5 | DPT-1 | | 2.3-5' - Lean Clay (CL), 7.5YR: 5/3, brown, firm, dry. | | Collect sample @ 11:10<br>Sample ID: EZ-RSB09-2 |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/1/10 11:25 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-10 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 633 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/1/10 13:02
END : 12/1/10 13:10
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.8' - Residue | | Collect sample @ 13:10<br>Sample ID: EZ-RS10-1<br>Collect sample @ 13:12<br>Sample ID: EZ-RS10-1FD |
| | | | | | 0.8-3' - Silt (ML), 7.5YR: 5/1, gray, dry, firm. | | |
| | | 4.7 | DPT-1 | | | | Collect sample @ 13:15<br>Sample ID: EZ-RSB10-2 |
| | | | | | 3-5' - Lean Clay (CL), 7.5YR: 4/4, brown, dry, firm. | | |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/1/10 13:10 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-11 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 634 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/1/10 12:35
END : 12/1/10 12:45
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-2.5' - Residue | | Collect samples @ 12:40<br>Sample ID: EZ-RS11-1 |
| | | 40.8 | DPT-1 | | 2.5-5' - Lean Clay (CL), 7.5YR: 5/1, gray, dry, firm. | | |
| 5 | 5.0 | | | | 5-10' - Lean Clay (CL), 7.5YR: 5/1, gray, dry, firm. | | Collect samples @ 12:45<br>Sample ID: EZ-RSB11-2 |
| | | 51.6 | DTP-2 | | | | |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 12/1/10 12:45 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-12 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 634 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/1/10 13:27
END : 12/1/10 13:35
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-2.6' - Residue | | Collect sample @ 13:35<br>Sample ID: EZ-RS12-1 |
| | | 48.0 | DPT-1 | | 2.6-5' - Lean Clay (CL), 7.5YR: 5/3, brown, dry, firm. | | Collect sample @ 13:40<br>Sample ID: EZ-RSB12-2 |
| 5 | 5.0 | | | | 5-10' - Lean Clay (CL), 7.5YR: 5/3, brown, dry, firm. | | |
| | | 54.0 | DPT-2 | | | | |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 12/1/10 13:35 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-13 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 634 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/1/10 14:49
END : 12/1/10 15:10
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-2' - Residue | | Collect sample @ 14:55<br>Sample ID: EZ-RS13-1 |
| | | 2.8 | DPT-1 | | 2-5' - Brick | | |
| 5 | 5.0 | | | | 5-7' - Brick | | |
| | | 2.0 | DPT-2 | | | | Hit refusal at 7 ft. bgs |
| | 7.0 | | | | Bottom of Boring at 7.0 ft bgs on 12/1/10 15:10 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-14 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 630 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/1/10 14:07
END : 12/1/10 14:15
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-3.5' - Residue | | Collect sample @ 14:15<br>Sample ID: EZ-RS14-1 |
| | | 3.9 | DPT-1 | | | | |
| | | | | | 3.5-5' - Lean Clay (CL), 7.5YR: 5/4, brown, moist, soft. | | |
| 5 | 5.0 | | | | 5-10' - Lean Clay (CL), 7.5YR: 5/4, brown, moist, firm. | | Collect sample @ 14:20<br>Sample ID: EZ-RSB14-2 (MS/MSD) |
| | | 4.8 | DPT-2 | | | | |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 12/1/10 14:15 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-15 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 630 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/1/10 15:16
END : 12/1/10 15:30
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.2' - Residue | | |
| | | | | | 0.2-5' - Lean Clay (CL), 7.5YR: 4/4, dry, firm. | | Collect sample @ 15:25<br>Sample ID: EZ-RS15-1 |
| | | | | | | | Collect sample @ 15:30<br>Sample ID: EZ-RSB15-2 |
| | | 4.3 | DPT-1 | | | | |
| 5 | 5.0 | | | | | | |
| | | | | | Bottom of Boring at 5.0 ft bgs on 12/1/10 15:30 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-16 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 634 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/2/10 08:04
END : 12/2/10 08:15
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-5.8' - Residue | | |
| | | 4.6 | DPT-1 | | | | Collect sample @ 08:10<br>Sample ID: EZ-RS16-1 |
| 5 | 5.0 | | | | | | |
| | | 3.9 | DPT-2 | | 5.8-10' - Lean Clay (CL), 7.5 YR: 4/2, Brown, dry, firm. | | Collect sample @ 08:15<br>Sample ID: EZ-RSB16-2 |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 12/2/10 08:15 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-17 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 636 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/2/10 08:30
END : 12/2/10 08:50
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1.8' - Residue | | Collect sample @ 08:35<br>Sample ID: EZ-RS17-1 |
| | | 4.6 | DPT-1 | | 1.8-5' - Lean Clay (CL), 7.5YR: 4/4, brown, moist, soft. | | Collect sample @ 08:40<br>Sample ID: EZ-RSB17-2 |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/2/10 08:50 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-18 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 620 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/2/10 09:21
END : 12/2/10 09:50
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-5.6' - Residue | | Collect sample @ 09:30<br>Sample ID: EZ-RS18-1 |
| | | 2.4 | DPT-1 | | | | |
| 5 | 5.0 | | | | | | |
| | | | | | 5.6-10' - Lean Clay (CL), 7.5YR: 5/3, brown, moist, soft. | | |
| | | 2.0 | DPT-2 | | | | Collect sample @ 09:35<br>Sample ID: EZ-RSB18-2 |
| 10 | 10.0 | | | | | | |
| | | | | | 10-15' - Lean Clay (CL), 7.5YR: 5/1, gray, moist, soft. | | |
| | | 4.0 | DPT-3 | | | | |
| 15 | 15.0 | | | | | | |
| | | | | | Bottom of Boring at 15.0 ft bgs on 12/2/10 09:50 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-19 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 620 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : ▼ Not Applicable
START : 12/2/10 09:00
END : 12/2/10 09:16
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1.1' - Residue | | Collect sample @ 09:10<br>Sample ID: EZ-RS19-1 |
| | | | | | 1.1-5' - Lean clay (CL), 10YR: 6/6, brownish-yellow, moist, soft. | | |
| | | 3.8 | DPT-1 | | | | Collect sample @ 09:15<br>Sample ID: EZ-RSB19-2<br><br>Collect sample @ 09:17<br>Sample ID: EZ-RSB19-2FD |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/2/10 09:16 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-20 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 633 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/2/10 10:14
END : 12/2/10 10:35
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.4' - Residue | | Collect sample @ 10:20<br>Sample ID: EZ-RS20-1 |
| | | | | | 0.4-0.6' - Brick | | |
| | | | | | 0.6-5' - Fill: Brick with sand. | | |
| | | 2.0 | DPT-1 | | | | |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/2/10 10:35 | | Void from 5'-12.3' with water at 8.2' |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-21 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 633 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/2/10 10:42
END : 12/2/10 10:55
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.7' - Residue | | Collect sample @ 10:50<br>Sample ID: EZ-RS21-1 |
| | | | | | 0.7-5' - Lean Clay (CL), 2.5Y: 5/2, grayish-brown, moist, firm. | | Collect sample @ 10:55<br>Sample ID: EZ-RSB21-2 |
| | | 4.4 | DPT-1 | | | | |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/2/10 10:55 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-22 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 628 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/2/10 11:08
END : 12/2/10 11:20
LOGGER : Jessica Hoffman

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (in) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.7' - Residue | | Collect sample @ 11:15<br>Sample ID: EZ-RS22-1 |
| | | | | | 0.7-1' - Silt (ML), 10YR: 4/1, dark gray, dry, stiff. | | |
| | | | | | 1-5' - Lean Clay (CL), 10YR: 4/2, dark grayish-brown, dry, firm. | | Collect sample @ 11:20<br>Sample ID: EZ-RSB22-2 |
| | | 4.7 | DPT-1 | | | | |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/2/10 11:08 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-23 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 632 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/2/10 12:44
END : 12/2/10 12:55
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.6' - RESIDUE | | Collect sample @ 12:50<br>Sample ID: EZ-RS23-1 |
| | | | | | 0.6-5' - Lean Clay (CL), 7.5YR: 5/4, brown, dry, firm. | | Collect sample @ 12:55<br>Sample ID: EZ-RSB23-2 |
| | | 3.8 | DPT-1 | | | | |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/2/10 12:55 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-24 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 630 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/2/10 13:00
END : 12/2/10 13:10
LOGGER : Jessica Hoffman

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-2' - Residue | | Collect sample @ 13:05<br>Sample ID: EZ-RS24-1 |
| | | 4.2 | DPT-1 | | 2-5' - Lean Clay (CL), 10YR: 4/4, dark yellowish-brown, dry, stiff. | | Collect sample @ 13:10<br>Sample ID: EZ-RSB24-2 |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/2/10 13:10 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-25 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 627 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/2/10 13:20
END : 12/2/10 13:35
LOGGER : Jessica Hoffman

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1.6' - Residue | | Collect sample @ 13:30<br>Sample ID: EZ-RS25-1 |
| | | 3.1 | DPT-1 | | 1.6-5' - Lean Clay (CL), 10YR: 3/2, very dark grayish-brown, moist, soft. | | Collect sample @ 13:35<br>Sample ID: EZ-RSB25-2 |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/2/10 13:35 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-26 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 625 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : ▼ Not Applicable
START : 12/2/10 13:55
END : 12/2/10 14:05
LOGGER : Jessica Hoffman

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.4' - Residue | | Collect sample @ 14:00<br>Sample ID: EZ-RS26-1 |
| | | | | | 0.4-5' - Lean Clay (CL), 10YR: 4/4, dark yellowish-brown, dry, firm. | | Collect sample @ 14:05<br>Sample ID: EZ-RSB26-2 |
| | | 2.4 | DPT-1 | | | | |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/2/10 14:05 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-27 | SHEET 1 OF 1 |
|---|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 620 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/2/10 14:20
END : 12/2/10 14:30
LOGGER : Jessica Hoffman

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.5' - Lean Clay (CL), 10YR: 4/4, dark yellowish-brown, moist, soft, trace coarse sand to fine gravel. | | |
| | | | | | 0.5-2' - Lean Clay (CL), 10YR: 4/4, dark yellowish-brown, moist, soft. | | Collect sample @ 14:25<br>Sample ID: EZ-RS27-1 |
| | | 4.8 | DPT-1 | | 2-5' - Silt with Sand (ML), 10YR: 5/1, gray, dry, stiff. | | Collect sample @ 14:30<br>Sample ID: EZ-RSB27-2 |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/2/10 14:30 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-28 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 618 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/2/10 14:50
END : 12/2/10 15:05
LOGGER : Jessica Hoffman

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1' - Lean Clay (CL), 10YR: 4/4, dark yellowish-brown, moist, soft. | | |
| | | | | | 1-5' - Lean Clay (CL), 10YR: 4/4, dark yellowish-brown, moist, stiff. | | Collect sample @ 15:00<br>Sample ID: EZ-RS28-1 |
| | | 4.9 | DPT-1 | | | | |
| | | | | | | | Collect sample @ 15:05<br>Sample ID: EZ-RSB28-2 |
| 5 | 5.0 | | | | | | |
| | | | | | Bottom of Boring at 5.0 ft bgs on 12/2/10 15:05 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-29 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 615 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/3/10 08:15
END : 12/2/10 08:32
LOGGER : Jessica Hoffman

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-5.5' - Residue | | |
| | | 3.3 | DPT-1 | | | | Collect sample @ 08:25<br>Sample ID: EZ-RS29-1 |
| 5 | 5.0 | | | | | | |
| | | | | | 5.5-6.5' - Lean Clay (CL), 10YR: 3/2, very dark grayish-brown, moist, soft. | | |
| | | | | | 6.5-7.5' - Lean Clay (CL), 10YR: 4/4, dark yellowish-brown, moist, soft, trace coarse sand. | | Collect sample @ 08:30<br>Sample ID: EZ-RSB29-2 |
| | | 4.0 | DPT-2 | | 7.5-10' - Lean Clay (CL), 10YR: 4/4, dark yellowish-brown, moist, soft, trace coarse gravel. | | Collect sample @ 08:32<br>Sample ID: EZ-RSB29-2FD |
| 10 | 10.0 | | | | | | |
| | | | | | Bottom of Boring at 10.0 ft bgs on 12/2/10 08:32 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-30 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 610 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/3/10 09:00
END : 12/3/10 09:25
LOGGER : Jessica Hoffman

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-2.3' - Residue | | Collect sample @ 09:10<br>Sample ID: EZ-RS30-1<br><br>Collect sample @ 09:12<br>Sample ID: EZ-RS30-1FD |
| | | 3.0 | DPT-1 | | 2.3-5' - Lean Clay (CL), 10YR: 3/3, dark brown, moist, soft. | | Collect sample @ 09:15<br>Sample ID: EZ-RSB30-2 |
| 5 | 5.0 | | | | 5-10' - Lean Clay (CL), 10YR: 3/3, dark brown, moist, soft with trace fine to coarse gravel. | | |
| | | 3.0 | DPT-2 | | | | |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 12/3/10 09:25 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-31 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 625 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/3/10 09:45
END : 12/3/10 10:00
LOGGER : Jessica Hoffman

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1.4' - Residue | | Collect sample @ 09:50<br>Sample ID: EZ-RS31-1 |
| | | 4.6 | DPT-1 | | 1.4-3' - Lean Clay (CL), 10YR: 3/2, very dark grayish-brown, moist, soft. | | |
| | | | | | 3-5' - Lean Clay (CL), 10YR: 4/3, brown, dry, stiff. | | Collect sample @ 09:55<br>Sample ID: EZ-RSB31-2 |
| 5 | 5.0 | | | | Bottom of Boring at 5.0 ft bgs on 12/3/10 10:00 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: RS-32 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 634 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 12/3/10 10:20
END : 12/3/10 10:35
LOGGER : Jessica Hoffman

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-5.4' - Residue | | Collect sample @ 10:30<br>Sample ID: EZ-RS32-1 |
| | | 4.4 | DPT-1 | | | | |
| 5 | 5.0 | | | | | | |
| | | | | | 5.4-6.8' - Lean Clay (CL), 10YR: 4/2, dark grayish-brown, moist, firm. | | |
| | | | | | 6.8-10' - Lean Clay (CL), 25Y: 5/1, gray, dry, stiff. | | Collect sample @ 10:35<br>Sample ID: EZ-RSB32-2 (MS/MSD) |
| | | 4.6 | DPT-2 | | | | |
| 10 | 10.0 | | | | | | |
| | | | | | Bottom of Boring at 10.0 ft bgs on 12/3/10 10:35 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: SB-01 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 633 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 11/29/10 15:18
END : 11/29/10 15:30
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.8' - Topsoil | | |
| | | 4.8 | DPT-1 | | 0.8-3' - Lean Clay (CL), 7.5YR: 6/6, reddish-yellow, moist, firm. | | Collect sample @ 15:25<br>Sample ID: EZ-SB01-1 |
| | | | | | 3-5' - Lean Clay (CL), 7.5YR: 6/3, light-brown, moist, soft. | | Collect sample @ 15:30<br>Sample ID: EZ-SB01-2 |
| 5 | 5.0 | | | | 5-7' - Lean Clay (CL), 7.5YR: 6/3, light-brown, moist, soft. | | |
| | | 4.5 | DPT-2 | | 7-10' - Lean Clay (CL), 7.5YR: 6/3, light-brown, moist, soft, stiff, trace dry stiff coarse sand and gravel. | | Collect sample @ 15:35<br>Sample ID: EZ-SB01-3 |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 11/29/10 15:30 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: SB-02 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 634 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 11/30/10 12:50
END : 11/30/10 13:05
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.5' - Topsoil: Lean Clay (CL), 7.5YR 3/2, dark brown, moist, soft. | | |
| | | | | | 0.5-2.5' - Lean Clay (CL), 7.5YR: 4/4, brown, dry, stiff. | | Collect sample @ 13:00<br>Sample ID: EZ-SB02-1 |
| | | 4.7 | DPT-1 | | 2.5-5' - Silt (ML), 7.5YR: 6/3, light brown, dry, firm. | | Collect sample @ 13:05<br>Sample ID: EZ-SB02-2 |
| 5 | 5.0 | | | | 5-7' - Silt (ML) 7.5YR: 6/3, light brown, dry, firm. | | |
| | | 4.2 | DPT-2 | | 7-10' - Silt (ML), 7.5YR: 4/4, brown, dry, firm, trace fine coarse sand and fine gravel. | | Collect sample @ 13:10<br>Sample ID: EZ-SB02-3 |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 11/30/10 13:05 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: SB-03 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 636 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 11/30/10 10:45
END : 11/30/10 10:52
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1' - Topsoil: Lean Clay (CL), 7.5YR: 4/3, brown, moist, soft. | | |
| | | | | | 1-2.5' - Silt (ML), 7.5YR: 4/2, brown, moist, soft. | | Collect sample @ 11:00<br>Sample ID: EZ-SB03-1 |
| | | 4.7 | DPT-1 | | 2.5-3' - Silt (ML), 7.5YR: 5/4, brown, dry, soft. | | |
| | | | | | 3-5' - Lean Clay (CL), 7.5YR: 5/4, brown, dry, firm. | | Collect sample @ 11:05<br>Sample ID: EZ-SB03-2<br>Collect sample @ 11:08<br>Sample ID: EZ-SB03-2FD |
| 5 | 5.0 | | | | 5-6' - Lean Clay (CL), 7.5YR: 5/4, brown, dry, firm | | |
| | | | | | 6-7' - Silt (ML), 7.5YR: 5/4, brown, dry, firm. | | |
| | | 4.6 | DPT-2 | | 7-10' - Silt (ML), 7.5YR: 5/4, brown, dry, firm, trace fine gravel. | | Collect sample @ 11:10<br>Sample ID: EZ-SB03-3 |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 11/30/10 10:52 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: SB-04 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 637 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 11/30/10 10:10
END : 11/30/10 10:30
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.2' - Topsoil | | |
| | | | | | 0.2-2.5' - Silt (ML), 7.5YR: 6/3, light brown, dry, firm. | | Collect sample @ 10:20<br>Sample ID: EZ-SB04-1 |
| | | 4.8 | DPT-1 | | 2.5-5' - Lean Clay (CL), 7.5YR: 5/3, brown, moist, soft. | | Collect sample @ 10:25<br>Sample ID: EZ-SB04-2 (MS/MSD) |
| 5 | 5.0 | | | | 5-7' - Silt (ML), 7.5YR: 4/4, brown, moist, soft. | | |
| | | 4.0 | DPT-2 | | 7-10' - Silt (ML), 7.5YR: 4/4, brown, moist, soft, trace of coarse sand and fine gravel. | | Collect sample @ 10:30<br>Sample ID: EZ-SB04-3 |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 11/30/10 10:30 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: SB-05 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

ELEVATION : Approximately 638 ft amsl DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez

DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT ORIENTATION : Vertical

WATER LEVELS : Not Applicable START : 11/30/10 08:30 END : 11/30/10 08:40 LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1' - Topsoil: Lean Clay (CL), 7.5YR: 4/3, brown, moist, soft, trace fine gravel. | | |
| | | 5.0 | DPT-1 | | 1-4' - Lean Clay (CL), 7.5YR: 6/4, light brown, dry, stiff. | | Collect sample @ 08:40<br>Sample ID: EZ-SB05-1 |
| 5 | 5.0 | | | | 4-5' - Silt (ML), 7.5 YR: 5/3, brown, dry, soft, moist at 4.5'. | | Collect sample @ 08:45<br>Sample ID: EZ-SB05-2<br>Collect sample @ 08:48<br>Sample ID: EZ-SB05-2FD |
| | | 4.4 | DPT-2 | | 5-6' - Lean Clay (CL), 7.5YR: 4/4, brown, moist, soft. | | |
| | | | | | 6-10' - Silt (ML), 7.4YR: 5/3, brown, moist, soft. At 7.5', some dry, firm, coarse sand and fine gravel. | | Collect sample @ 08:50<br>Sample ID: EZ-SB05-3 |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 11/30/10 08:40 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: SB-06 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 635 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 11/30/10 09:07
END : 11/30/10 09:30
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.8' - Topsoil: Lean Clay (CL), 7.5YR: 4/2, brown, wet, soft. | | |
| | | | | | 0.8-2.5' - Lean Clay (CL), 7.5YR: 5/4, brown, moist, firm. | | Collect sample @ 09:15<br>Sample ID: EZ-SB06-1 |
| | | 4.8 | DPT-1 | | 2.5-3' - Silt (ML), 7.5YR: 6/3, light brown, moist, soft. | | |
| | | | | | 3-5' - Silt (ML), 7.5YR: 6/3, light brown, moist, soft. | | Collect sample @ 09:20<br>Sample ID: EZ-SB06-2 |
| 5 | 5.0 | | | | 5-7' - Silt (ML), 7.5YR: 6/3, light brown, moist, firm, trace fine gravel. | | |
| | | 4.7 | DPT-2 | | 7-9' - Silt (ML), 5YR: 3/4, brown, dry, firm, trace fine gravel. | | Collect sample @ 09:25<br>Sample ID: EZ-SB06-3<br>Collect sample @ 09:28<br>Sample ID: EZ-SB06-3FD |
| 10 | 10.0 | | | | 9-10' - Silt (ML), 5YR: 3/4, brown, dry, firm, trace fine gravel, little fine medium sand. | | |
| | | | | | Bottom of Boring at 10.0 ft bgs on 11/30/10 09:30 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: SB-07 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 628 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 11/29/10 14:05
END : 11/29/10 14:18
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.3' - Topsoil | | |
| | | | | | 0.3-3' - Lean Clay (CL), 7.5YR: 5/3, brown, moist, stiff. | | Collect sample @ 14:10<br>Sample ID: EZ-SB07-1 |
| | | 4.7 | DPT-1 | | | | |
| | | | | | 3-5' - Lean Clay (CL), 7.5YR: 5/3, brown, moist, stiff, trace coarse sand and small gravel. | | Collect sample @ 14:15<br>Sample ID: EZ-SB07-2 |
| 5 | 5.0 | | | | | | |
| | | | | | 5-7.5' - Sandy Lean Clay (CL), 7.5YR: 4/6, strong brown, moist, firm, some medium coarse sand and fine gravel. | | |
| | | 4.5 | DPT-2 | | 7.5-10' - Sandy Silt (ML), 7.5YR: 4/6, strong brown, moist, soft. | | Collect sample @ 14:20<br>Sample ID: EZ-SB07-3 |
| 10 | 10.0 | | | | | | |
| | | | | | Bottom of Boring at 10.0 ft bgs on 11/29/10 14:18 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: SB-08 SHEET 1 OF 1 |
|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

ELEVATION : Approximately 623 ft amsl DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez

DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT ORIENTATION : Vertical

WATER LEVELS : Not Applicable START : 11/29/10 12:17 END : 11/29/10 12:30 LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.5' - Topsoil: Lean Clay (CL), 7.5YR: 3/1, very dark brown, moist, soft. | | |
| | | | | | 0.5-2' - Lean Clay (CL), 7.5YR: 4/2, brown, moist, soft. | | Collect sample @ 12:25<br>Sample ID: EZ-SB08-1 |
| | | 4.6 | DPT-1 | | 2-5' - Lean Clay (CL), 7.5YR: 4/2, brown, moist, soft, firm, trace coarse sand and fine gravel. | | Collect sample @ 12:30<br>Sample ID: EZ-SB08-2 |
| 5 | 5.0 | | | | 5-10' - Lean Clay (CL), 7.5YR: 4/2, brown, moist, soft, firm, trace coarse sand and fine gravel. | | |
| | | 4.2 | DPT-2 | | | | Collect sample @ 12:35<br>Sample ID: EZ-SB08-3 |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 11/29/10 12:30 | | |

| PROJECT NUMBER: 419630 | BORING NUMBER: SB-09 | SHEET 1 OF 1 |
|---|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : Approximately 625 ft amsl
DRILLING CONTRACTOR : CS Drilling Inc., Driller-Augustin Mendez
DRILLING EQUIPMENT AND METHOD : DPT, Geoprobe-6620DT
ORIENTATION : Vertical
WATER LEVELS : Not Applicable
START : 11/29/10 11:35
END : 11/29/10 11:50
LOGGER : Laura Crause

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (ft) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1.3' - Topsoil: Lean Clay (CL) 5YR: 3/1, very dark gray, moist, soft. | | Collect sample @ 11:40<br>Sample ID: EZ-SB09-1 |
| | | 4.3 | DPT-1 | | 1.3-5' - Lean Clay (CL), 7.5YR: 4/2, brown, moist, firm. | | Collect sample @ 11:45<br>Sample ID: EZ-SB09-2 |
| 5 | 5.0 | | | | 5-8' - Lean Clay (CL), 7.5YR: 6/3, light brown, moist, firm. | | |
| | | 2.9 | DPT-2 | | 8-10' - Lean Clay (CL), 7.5YR: 6/1, light brown, moist, firm, trace coarse sand less than 5%. | | Collect sample @ 11:50<br>Sample ID: EZ-SB09-3 |
| 10 | 10.0 | | | | Bottom of Boring at 10.0 ft bgs on 11/29/10 11:50 | | |

# Sonic Logs

| PROJECT NUMBER: | BORING NUMBER: |
|---|---|
| 406469 | MW-12 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : 631.78 ft amsl (ground)
DRILLING CONTRACTOR : Boart Longyear, Driller-Jason Drabek
DRILLING EQUIPMENT AND METHOD : Minisonic, Drill Rig
WATER LEVELS : 10.22 ft btoc (01/04/10)
START : 11/15/10 13:00
END : 11/15/10 15:00
LOGGER : Wayne Conway

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (in) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | 36.0 | Sonic 1 | | 0-2 FILL: Silty Sand with Gravel, Black, dry, loose.<br>2-5 FILL: Lean Clay with brick and Sand (CL), Brown, moist, medium stiff. | | |
| 5 | 5.0 | 60.0 | Sonic 2 | | 5-10 Lean clay (CL), Brown and Gray, moist, stiff. | | |
| 10 | 10.0 | 24.0 | Sonic 3 | | 10-25 Coarse Sandy Lean to Fat Clay (CL-CH), Reddish-Yellow 7/5YR: 7/6, dry, very hard. | | |
| 15 | 15.0 | 24.0 | Sonic 4 | | | | |
| 20 | 20.0 | 60.0 | Sonic 5 | | | | |
| 25 | 25.0 | 60.0 | Sonic 6 | | 25-30 Fine Sandy Lean Clay (CL), 7.5YR: 3/3, Dark Brown, dry, very hard. | | |
| 30 | 30.0 | 60.0 | Sonic 7 | | 30-35 Clayey fine Sand with fine Gravel (SC), 7.5YR: 4/1, Dark Gray, dry, hard, well rounded gravel. | | |
| 35 | 35.0 | 60.0 | Sonic 8 | | 35-36 Poorly Graded fine Sand (SP), 7.5YR: 4/1, Dark Gray, moist, dense.<br>36-60 Clayey fine Sand with fine Gravel (SC), 7.5YR: 4/1, dark Gray, dry to moist. | | |
| 40 | 40.0 | 60.0 | Sonic 9 | | | | |
| 45 | 45.0 | 60.0 | Sonic 10 | | | | |
| 50 | 50.0 | 60.0 | Sonic 11 | | | | |
| 55 | 55.0 | 60.0 | Sonic 12 | | | | |
| 60 | 60.0 | | | | Bottom of Boring at 60.0 ft bgs on 11/15/10 15:00 | | |

| PROJECT NUMBER: | BORING NUMBER: |
|---|---|
| 406469 | MW-13 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

ELEVATION : 630.24 ft amsl (ground) DRILLING CONTRACTOR : Boart Longyear, Driller-Jason Drabek

DRILLING EQUIPMENT AND METHOD : Minisonic, Drill Rig

WATER LEVELS : 4.5 ft btoc (01/04/11) START : 11/16/10 09:30 END : 11/16/10 11:30 LOGGER : Wayne Conway

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (in) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-0.8 Silty Gravel, 7.5YR: 3/2, Dark Brown, moist, loose, angular. | | |
| | | 60.0 | Sonic 1 | | 0.8-1.3 Lean Clay (CL), 7.5YR: 5/3, Brown, moist, medium stiff with angular gravel. | | |
| | | | | | 1.3-9 Lean Clay (CL), 7.5YR: 5/6, Strong Brown, moist, stiff | | |
| 5 | 5.0 | | | | at 5' bgs, soft, trace coarse sand. | | |
| | | 60.0 | Sonic 2 | | | | |
| 10 | 10.0 | | | | 9-10 Lean Clay (CL), 10YR: 5/8, Yellowish-Brown, moist, very stiff. | | |
| | | | | | 10-13 Lean Clay (CL), 10YR: 5/8, Yellowish-Brown, moist to wet, soft, trace coarse sand. | | |
| | | 60.0 | Sonic 3 | | | | |
| | | | | | 13-14.5 Lean Clay (CL), Brown, moist, stiff with Black angular gravel. | | |
| 15 | 15.0 | | | | 14.5-22 Lean Clay (CL), 2.5Y: 4/3, Olive-Brown, moist, stiff, trace subrounded fine gravel with fine sand. | | |
| | | 60.0 | Sonic 4 | | | | |
| 20 | 20.0 | | | | | | |
| | | 60.0 | Sonic 5 | | 22-24 Poorly Graded fine Sand (SP), 10YR: 5/3, Brown, moist, medium dense with silt and trace well rounded fine gravel. | | |
| 25 | 25.0 | | | | 24-25 Lean clay (CL), 10YR: 5/1, Grey, very stiff, moist, some fine gravel, well rounded. | | |
| | | | | | 25-27 Silt (ML), 2.5YR: 5/1, Gray, hard, moist, trace subangular fine gravel. | | |
| | | 60.0 | Sonic 6 | | 27-30 Clayey medium Sand (SC), 10YR: 3/2, Very Dark Greyish-Brown, wet, dense, trace well rounded fine gravel. | | |
| 30 | 30.0 | | | | 30-33 Fine Sandy Clay (CL), 10YR: 4/1, Dark Gray, moist, stiff, trace fine gravel. | | Few course sand bands |
| | | 60.0 | Sonic 7 | | 33-40 Lean Clay (CL), 10YR: 4/1, Dark Gray, moist, stiff with sand. | | |
| 35 | 35.0 | | | | | | |
| | | 60.0 | Sonic 8 | | | | |
| 40 | 40.0 | | | | | | |
| | | | | | Bottom of Boring at 40.0 ft bgs on 11/16/10 11:30 | | |

| PROJECT NUMBER: | BORING NUMBER: |
|---|---|
| 406469 | MW-14 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

ELEVATION : 630.46 ft amsl (ground) DRILLING CONTRACTOR : Boart Longyear, Driller-Jason Drabek

DRILLING EQUIPMENT AND METHOD : Minisonic, Drill Rig

WATER LEVELS : 4.97 ft btoc (01/04/11) START : 11/16/10 12:55 END : 11/16/10 14:25 LOGGER : Wayne Conway

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (in) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1 Silty Gravel, 10YR: 2/1, Black, moist, loose. | | |
| | | 36.0 | Sonic 1 | | 1-7 Lean Clay (CL), 10YR: 3/3, Dark Brown, moist, medium stiff. | | |
| 5 | 5.0 | | | | | | |
| | | 60.0 | Sonic 2 | | 7-12 Lean Clay (CL), 10YR: 4/2, Dark Grayish-Brown, moist, very stiff with coarse sand. | | |
| 10 | 10.0 | | | | | | |
| | | | | | 12-16 Silty Sand (SM), 10YR: 6/8, Brownish-Yellow, moist to wet, medium dense, with well rounded gravel. | | |
| 15 | | 96.0 | Sonic 3 | | | | |
| | | | | | 16-27 Lean Clay (CL), 10YR: 4/1, Dark Gray, moist, very stiff, some very fine sand, trace gravel. | | |
| 20 | 20.0 | | | | | | |
| | | 60.0 | Sonic 4 | | | | |
| 25 | 25.0 | | | | | | |
| | | 60.0 | Sonic 5 | | 27-28 Silty fine Sand (SM), 10YR: 6/2, Light Brownish-Gray, moist, stiff. | | |
| | | | | | 28-35 Lean Clay (CL), 10YR: 4/2, Dark Grayish-Brown, moist, very stiff, some very fine gravel with wet seams. | | |
| 30 | 30.0 | | | | | | |
| | | 60.0 | Sonic 6 | | | | |
| 35 | 35.0 | | | | | | |
| | | | | | Bottom of Boring at 35.0 ft bgs on 11/16/10 14:25 | | |

| PROJECT NUMBER: | BORING NUMBER: |
|---|---|
| 406469 | MW-15 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

ELEVATION : 626.83 ft amsl (ground) DRILLING CONTRACTOR : Boart Longyear, Driller-Jason Drabek

DRILLING EQUIPMENT AND METHOD : Minisonic, Drill Rig

WATER LEVELS : ▼ 7.35 ft btoc (01/04/11) START : 11/17/10 08:00 END : 11/17/10 11:10 LOGGER : Wayne Conway

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (in) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | 36.0 | Sonic 1 | | 0-0.5 Lean Clay (CL), 10YR: 5/1, Gray, moist, stiff.<br>0.5-5 Silty fine Gravel, 10YR: 2/1, Black, wet, loose. | | |
| 5 | 5.0 | 36.0 | Sonic 2 | | 5-10 Lean Clay (CL), 10YR: 5/2, Grayish-Brown, moist, medium stiff. | | |
| 10 | 10.0 | 60.0 | Sonic 3 | | 10-12 Clayey fine Sand (SC), 10YR: 6/6, Brownish-Yellow, wet, very loose, trace well rounded fine gravel.<br>12-14.5 Clayey fine Sand (SC), 10YR: 6/6, Brownish-Yellow, moist, dense. | | |
| 15 | 15.0 | 60.0 | Sonic 4 | | 14.5-15 Clayey fine Sand (SC), 10YR: 5/1, Gray, wet, very loose, trace well rounded fine sand.<br>15-22 Silt (ML), 10YR: 5/2, Grayish-Brown, moist to dry, hard, some medium sand. | | |
| 20 | 20.0 | 60.0 | Sonic 5 | | 22-24 Very fine sandy Silt (ML), 10YR: 5/1, Gray, moist to wet, soft.<br>24-31 Silt (ML), 10YR: 5/2, Grayish-Brown, moist to dry, hard, some medium sand. | | |
| 25 | 25.0 | 60.0 | Sonic 6 | | | | |
| 30 | 30.0 | 12.0 | Sonic 7 | | | | |
| | 31.0 | | | | Bottom of Boring at 31.0 ft bgs on 11/17/10 11:10 | | |

| PROJECT NUMBER: | BORING NUMBER: |
|---|---|
| 406469 | MW-16 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

ELEVATION : 625.43 ft amsl (ground) DRILLING CONTRACTOR : Boart Longyear, Driller-Jason Drabek

DRILLING EQUIPMENT AND METHOD : Minisonic, Drill Rig

WATER LEVELS : ▼ 5.19 ft btoc (01/04/11) START : 11/17/10 11:40 END : 11/17/10 15:15 LOGGER : Wayne Conway

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (in) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | 60.0 | Sonic 1 | | 0-2.5 Silty fine Gravel, 10YR: 2/1, Black, wet, loose. | | |
| 5 | 5.0 | 60.0 | Sonic 2 | | 2.5-6 Lean Clay (CL), 10YR: 5/4, Yellowish-Brown, moist, medium stiff. | | |
| 10 | 10.0 | 36.0 | Sonic 3 | | 6-10 Lean Clay (CL), 10YR: 5/2, Grayish-Brown, moist, stiff with sand (fine and coarse). | | |
| 15 | 15.0 | 60.0 | Sonic 4 | | 10-20 Sandy Lean Clay (CL), 7.5YR: 5/6, Strong Brown, moist, stiff to very stiff, with fine gravel. 7.5YR: 5/4, Brown at 15 ft. bgs. | | From 15 ft bgs. sample heated during drilling |
| 20 | 20.0 | 60.0 | Sonic 5 | | 20-25 Silty fine Sand (SM), 10YR: 4/3, Brown, moist, dense. | | |
| 25 | 25.0 | 60.0 | Sonic 6 | | 25-30 Well Graded fine Sand (SW), 2.5Y: 5/2, Grayish-Brown, moist to wet, dense, trace fine gravel, subrounded. | | |
| 30 | 30.0 | 60.0 | Sonic 7 | | 30-35 Sandy Lean Clay (CL), 2.5Y: 4/1, Dark Gray, moist, hard, with fine gravel. | | |
| 35 | 35.0 | | | | Bottom of Boring at 35.0 ft bgs on 11/17/10 15:15 | | |

| PROJECT NUMBER: | BORING NUMBER: |
|---|---|
| 406469 | MW-17 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

ELEVATION : 619.30 ft amsl (ground) DRILLING CONTRACTOR : Boart Longyear, Driller-Jason Drabek

DRILLING EQUIPMENT AND METHOD : Minisonic, Drill Rig

WATER LEVELS : --- START : 11/18/10 08:00 END : 11/18/10 14:13 LOGGER : Wayne Conway

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (in) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | 36.0 | Sonic 1 | | 0-6 Silty Gravel, 10YR: 2/1, Black, moist, loose. | | |
| 5 | 5.0 | 60.0 | Sonic 2 | | 6-10 Coarse Sandy Clay (CL), 7.5YR: 5/6, Strong Brown, moist, stiff, trace fine gravel. | | |
| 10 | 10.0 | 36.0 | Sonic 3 | | 10-16 Clayey fine Sand (SC), 10YR: 7/6, Yellow, moist, medium dense, trace fine gravel, subrounded. | | |
| 15 | 15.0 | 60.0 | Sonic 4 | | 16-18 Sandy Silt (ML), 10YR: 5/3, Brown, moist to wet, stiff. | | |
| 20 | 20.0 | | | | 18-22 Clayey fine sand (SC), 10YR: 5/3, Brown, moist, medium dense, trace fine gravel, subrounded. | | |
| 25 | 25.0 | 60.0 | Sonic 5 | | 22-25 Clayey fine Sand (SC), 10YR: 4/3, Brown, dry to moist, hard. | | |
| 30 | 30.0 | 60.0 | Sonic 6 | | 25-27 Silt (ML), 10YR: 5/3, Brown, wet, soft. | | |
| | | | | | 27-28 Well Graded medium Sand (SW), 10YR: 5/3, Brown, wet, very loose, trace silt. | | |
| | | | | | 28-35 Sandy Clay (CL), 10YR: 3/2, Very Dark Grayish-Brown, wet, dense, stiff, trace fine gravel. | | |
| 35 | 35.0 | 60.0 | Sonic 7 | | | | |
| | | | | | Bottom of Boring at 35.0 ft bgs on 11/18/10 14:13 | | |

| PROJECT NUMBER: | BORING NUMBER: |
|---|---|
| 406469 | MW-18 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

ELEVATION : 605.47 ft amsl (ground) DRILLING CONTRACTOR : Boart Longyear, Driller-Jason Drabek

DRILLING EQUIPMENT AND METHOD : Minisonic, Drill Rig

WATER LEVELS : ▼ 13.58 ft btoc (01/04/11) START : 11/18/10 11:14 END : 11/18/10 16:00 LOGGER : Wayne Conway

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (in) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | 60.0 | Sonic 1 | | 0-5 Poorly Graded medium Sand, moist, loose, 10YR: 3/2, Very Dark Grayish-Brown. | | |
| 5 | 5.0 | 60.0 | Sonic 2 | | 5-8 Clayey fine Sand, 10YR: 4/2, Dark Grayish-Brown, wet, soft. | | |
| 10 | 10.0 | 54.0 | Sonic 3 | | 8-22 Sandy Clay (CL), 10YR: 6/6, Brownish-Yellow, dry, hard, trace fine gravel, subrounded. | | |
| 15 | 15.0 | 60.0 | Sonic 4 | | | | |
| 20 | 20.0 | 60.0 | Sonic 5 | | 22-40 Fat Clay (CH), Gley I: 10GY: 5/1, Greenish-Gray, moist, very stiff, trace sand and fine gravel. | | |
| 25 | 25.0 | 60.0 | Sonic 6 | | | | |
| 30 | 30.0 | 144.0 | Sonic 7 | | | | |
| 35 | | | | | | | |
| 40 | 40.0 | 84.0 | Sonic 8 | | 40-52 Sandy Lean Clay (CL), 7.5YR: 5/3, Brown, moist, stiff, trace fine gravel. | | |
| 45 | 47.0 | 84.0 | Sonic 9 | | | | |
| 50 | | | | | 52-54 Silt (ML), 7.5YR: 5/1, Gray, moist, very stiff. | | |
| 55 | 55.0 | 60.0 | Sonic 10 | | 54-55 Clayey Silt with Sand (ML), 7.5YR: 5/2, Brown, dry, hard. | | |
| | | | | | 55-58 Limestone boulder, hard. | | |
| 60 | 60.0 | 60.0 | Sonic 11 | | 58-60 Silty very fine Sand (SM), 7.5YR: 3/1, Very Dark Gray, moist to wet, dense. | | |
| | | | | | 60-63 Sandy Lean Clay (CL), 2.5Y: 3/2, Very Dark Grayish- Brown, moist, hard, trace fine gravel. | | |
| 65 | 65.0 | | | | 63-65 Sandy Fat Clay (CH), Gley I: 10GY: 4/1, Dark Greenish-Gray, moist to wet, very stiff. | | |
| | | | | | Bottom of Boring at 65.0 ft bgs on 11/18/10 16:00 | | |

| PROJECT NUMBER: 406469 | BORING NUMBER: MW-19 | SHEET 1 OF 1 |
|---|---|---|

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : 623.06 ft amsl (ground)
DRILLING CONTRACTOR : Boart Longyear, Driller-Jason Drabek
DRILLING EQUIPMENT AND METHOD : Minisonic, Drill Rig
WATER LEVELS : 3.60 ft btoc (01/04/11)
START : 11/19/10 09:00
END : 11/19/10 10:00
LOGGER : Wayne Conway

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (in) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | 0.0 | | | | 0-1 Lean Clay (CL), 5YR: 3/4, Dark Reddish-Brown, moist, stiff. | | |
| | | 0.0 | Hand Auger 1 | | 1-3 Poorly Graded medium Sand (SP), 5YR: 5/8, Yellowish Red, moist to wet, with clay. | | |
| | | | | | 3-5 Silt (ML) 2.5Y: 6/4, Light Yellowish-Brown, wet, medium stiff. | | |
| 5 | 5.0 | | | | 5-7 Clayey medium Sand (SC), 7.5YR: 5/6, Strong Brown, moist to wet, dense. | | |
| | | 60.0 | Sonic 2 | | 7-10 Fine sandy Silt (ML), 2.5Y: 6/2, Light Brownish-Gray, dry, hard. | | |
| 10 | 10.0 | | | | 10-12 Silty fine Sand (SM), 2.5Y: 5/1, Gray, dry, dense. | | |
| | | 60.0 | Sonic 3 | | 12-15 Fine sandy Clay (CL), 2.5Y: 4/2, Dark Grayish-Brown, moist, stiff. | | |
| 15 | 15.0 | | | | Bottom of Boring at 15.0 ft bgs on 11/19/10 10:00 | | |

| PROJECT NUMBER: | BORING NUMBER: |
|---|---|
| 406469 | MW-20 SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT : Eagle Zinc Supplemental Remedial Investigation
LOCATION : Hillsboro, Montgomery County, IL
ELEVATION : 627.25 ft amsl (ground)
DRILLING CONTRACTOR : Boart Longyear, Driller-Jason Drabek
DRILLING EQUIPMENT AND METHOD : Minisonic, Drill Rig
WATER LEVELS : 1.71 ft btoc (01/04/11)
START : 11/19/10 14:20
END : 11/19/10 16:30
LOGGER : Wayne Conway

| DEPTH BELOW EXISTING GRADE (ft) | INTERVAL (ft) | RECOVERY (in) | #TYPE | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | SYMBOLIC LOG | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION |
|---|---|---|---|---|---|---|---|
| | | | | | 0-2 Silt (ML), 10YR: 7/2, Ligh Gray, dry, very stiff. | | |
| | | | | | 2-5 Lean Clay (CL), 10YR: 6/4, Light Yellowish-Brown, moist, stiff. | | |
| 5 | | | | | 5-7 Sandy Lean Clay (CL), 10YR: 5/2, Grayish-Brown, moist to wet, soft. | | |
| | | | | | 7-12 Sandy Fat Clay (CH), 10YR: 6/1, Gray with iron stained, moist to wet, medium stiff. | | |
| 10 | | | | | | | |
| | | | | | 12-15 Well Graded medium Sand (SW), 10YR: 4/4, Dark Yellowish-Brown, moist to wet, very loose, with clay. | | |
| 15 | | | | | 15-20 Well Graded course Sand (SW), 10YR: 6/3, Pale Brown, wet, very loose, trace of silt. | | |
| 20 | | | | | 20-26.5 Sandy Silt (ML), 10YR: 5/2, Grayish-Brown, moist, stiff, trace fine gravel. | | |
| 25 | | | | | | | |
| | | | | | 26.5-27 Clayey medium Sand (SC), 10YR: 5/2, Grayish-Brown, wet, loose. | | |
| 30 | | | | | 27-30 Clayey medium Sand (SC), 10YR: 5/2, Grayish-Brown, dry, loose. | | |
| | | | | | 30-45 Clayey fine Sand (SC), 10YR: 5/2, Grayish-Brown, dry, hard, trace fine gravel, few wet sand bands less than 2" thick. | | |
| 35 | | | | | | | |
| 40 | | | | | | | |
| 45 | | | | | | | |
| | | | | | 45-47 Sandy Lean to Fat Clay (CL), Gley I: 5GY, 5/1, Greenish-Gray, moist, stiff. | | |
| | | | | | 47-57 Fine sandy Silt (ML), 10YR: 5/2, Grayish-Brown, dry, stiff, trace fine gravel, some coarse sand. | | |
| 50 | | | | | | | |
| 55 | | | | | | | |
| | | | | | 57-60 Silt (ML), 10YR: 4/2, Dark Grayish-Brown, moist, soft. | | |
| 60 | | | | | | | |
| | | | | | Bottom of Boring at 60.0 ft bgs on 11/19/10 16:30 | | |

# Well Completion Forms

| PROJECT NUMBER | WELL NUMBER | |
|---|---|---|
| 406469 | MW-03 | SHEET 1 OF 1 |

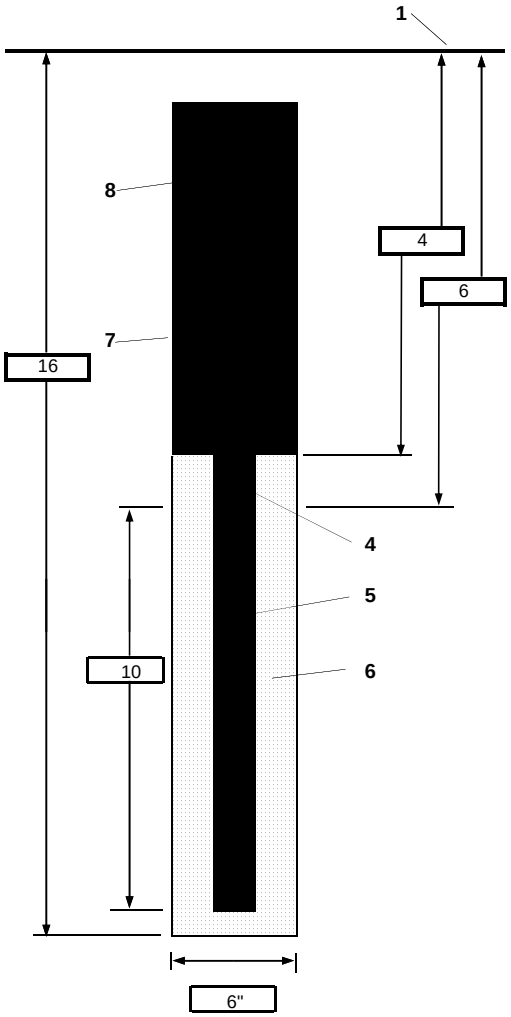
# WELL ABANDONMENT FORM

PROJECT: Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

DRILLING CONTRACTOR : Boart Longyear

DRILLING METHOD AND EQUIPMENT USED : Mini-Sonic Rig

WATER LEVELS: N/A START : 11/15/10 - 1245 END : 11/15/10 - 1330 LOGGER : Wayne Conway




| | |
|---|---|
| 1- Ground elevation at well | Not Applicable |
| 2- Top of casing elevation | Not Applicable |
| | Not Applicable |
| 3- Wellhead protection cover type | Not Applicable |
| a) drain tube? | Not Applicable |
| b) concrete pad dimensions | Not Applicable |
| 4- Dia./type of well riser | 2" I.D. Schedule 40 PVC Casing |
| | from 0.0 to 6.0 ft bgs. |
| 5- Type/slot size of screen | 0.010" Slotted Sch. 40 PVC Well Screen |
| | from 6.0 to 16.0 ft bgs. |
| 6- Type screen filter | 20/40 Filter Sand from 4.0 to 16.0 ft bgs. |
| a) Quantity used | Not Provided. |
| 7- Type of seal | 1/4" Pellets from 0.0 to 4.0 ft bgs. |
| a) Quantity used | Not Provided. |
| 8- Grout | |
| a) Grout mix used | Not Applicable |
| b) Method of placement | Not Applicable |
| c) Vol. of well casing grout | Not Applicable |
| Development method | Not Applicable |
| Development time | Not Applicable |
| Estimated purge volume | Not Applicable |

Comments PVC cut off approximately 2.5 ft bgs; monitoring well filled with Bentonite chips from 2.5 to 16.0 ft bgs; concrete pad and surface stick-up removed; and surface backfilled with site soil.

| PROJECT NUMBER | WELL NUMBER | |
|---|---|---|
| 406469 | MW-12 | SHEET 1 OF 1 |

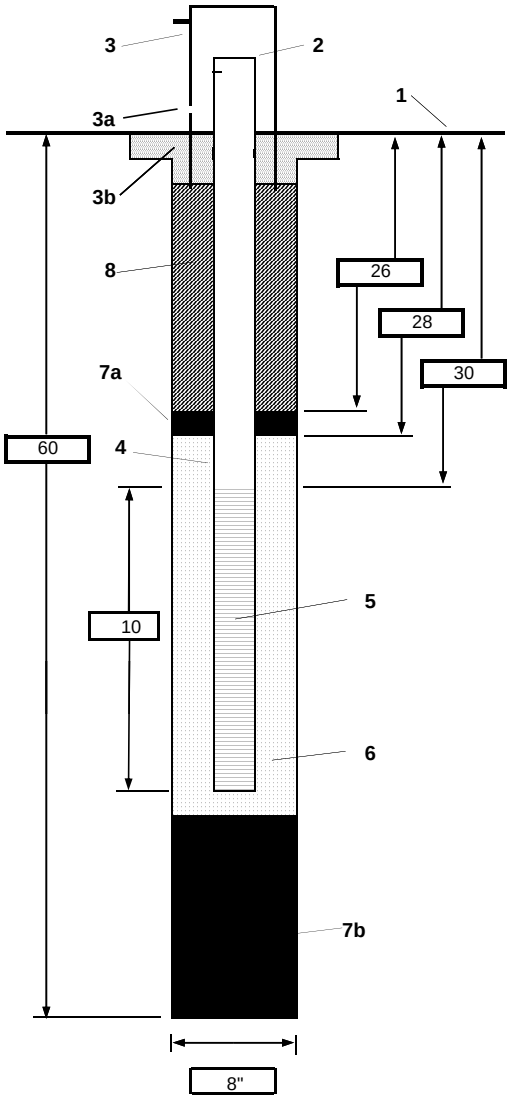
# WELL COMPLETION DIAGRAM

PROJECT: Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

DRILLING CONTRACTOR : Boart Longyear

DRILLING METHOD AND EQUIPMENT USED : Mini-Sonic Rig

WATER LEVELS: 10.22 ft btoc (01/04/11) START : 11/16/10 - 0800 END : 11/16/10 - 0900 LOGGER : Wayne Conway




| | |
|---|---|
| 1- Ground elevation at well | 631.78 ft amsl |
| 2- Top of casing elevation | 633.89 ft amsl |
| 3- Wellhead protection cover type | 5' Long Square Steel Casing Cover. |
| a) drain tube? | Present. |
| b) concrete pad dimensions | 2' x 2' Concrete Pad with Bollards. |
| 4- Dia./type of well riser | 2" I.D. Schedule 40 PVC Casing from 0.0 to 30.0 ft bgs. |
| 5- Type/slot size of screen | 0.010" Slotted Sch. 40 PVC Well Screen from 30.0 to 40.0 ft bgs. |
| 6- Type screen filter | 20/40 Filter Sand from 28.0 to 41.0 ft bgs. |
| a) Quantity used | Driller used 4.0 bags of 20/40 Filter Sand. |
| 7- Type of seal | 1/4" Pellets from 26.0 to 28.0 ft bgs. |
| a) Quantity used | Driller used 2/3 bag of Bentoninte Pellets. |
| 7- Type of seal | 1/4" Pellets from 41.0 to 60.0 ft bgs. |
| b) Quantity used | Driller used 4 bag of Bentoninte Pellets. |
| 8- Grout | Type II Portland Cement (94lbs Bags) |
| a) Grout mix used | For Every Bag Added to Electric Grout Mixer the Driller Added 6 Galllons of Water. |
| b) Method of placement | Positive Displacement Method (Tremie Pipe). |
| c) Vol. of well casing grout | 50 Gallons |
| Development method | Surge and pump |
| Development time | Approximately 3.25 hour. |
| Estimated purge volume | Approximately 48 gallons. |

Comments Bottom of borehole was backfilled with Bentonite Pellets. Please see section 7b for additional details.

| CH2MHILL | PROJECT NUMBER 406469 | WELL NUMBER MW-13 SHEET 1 OF 1 |
|---|---|---|

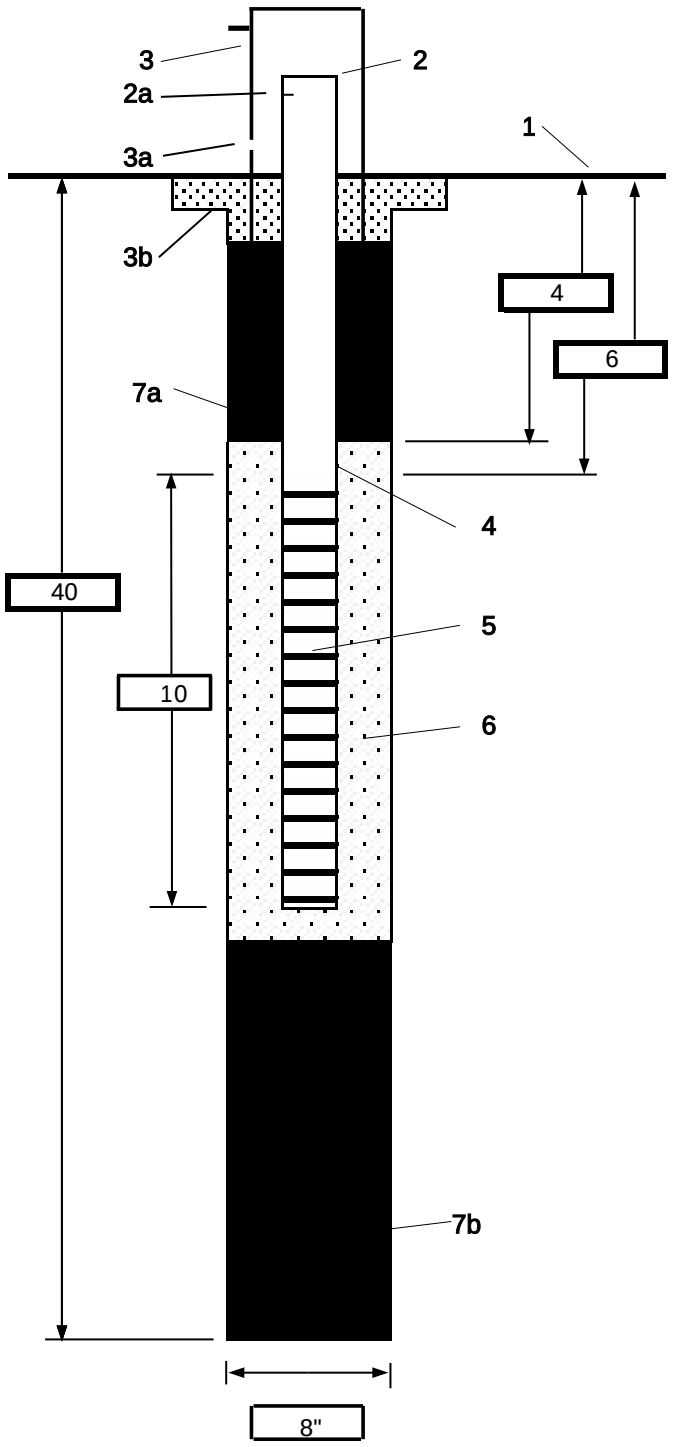
# WELL COMPLETION DIAGRAM

PROJECT: Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

DRILLING CONTRACTOR : Boart Longyear

DRILLING METHOD AND EQUIPMENT USED : Mini-Sonic Rig

WATER LEVELS: 4.54 ft btoc (01/04/11) START : 11/16/10 - 1130 END : 11/16/10 - 1150 LOGGER : Wayne Conway




| | | |
|---|---|---|
| 1- | Ground elevation at well | 630.24 ft amsl |
| 2- | Top of casing elevation | 632.62 ft amsl |
| 3- | Wellhead protection cover type | 5' Long Square Steel Casing Cover. |
| | a) drain tube? | Present. |
| | b) concrete pad dimensions | 2' x 2' Concrete Pad with Bollards. |
| 4- | Dia./type of well riser | 2" I.D. Schedule 40 PVC Casing from 0.0 to 6.0 ft bgs. |
| 5- | Type/slot size of screen | 0.010" Slotted Sch. 40 PVC Well Screen from 6.0 to 16.0 ft bgs. |
| 6- | Type screen filter | 20/40 Filter Sand from 4.0 to 17.0 ft bgs. |
| | a) Quantity used | Driller used 4.0 bags of 20/40 Filter Sand. |
| 7- | Type of seal | 1/4" Pellets from 0.0 to 4.0 ft bgs. |
| | a) Quantity used | Driller used 2/3 bag of Bentoninte Pellets. |
| 7- | Type of seal | 1/4" Pellets from 17.0 to 40.0 ft bgs. |
| | b) Quantity used | Driller used 3.25 bag of Bentoninte Pellets. |
| 8- | Grout | Not Applicable |
| | a) Grout mix used | Not Applicable |
| | | Not Applicable |
| | b) Method of placement | Not Applicable |
| | c) Vol. of well casing grout | Not Applicable |
| | Development method | Surge and pump |
| | Development time | Approximately 4 hour. |
| | Estimated purge volume | Approximately 85 gallons. |

Comments Bottom of borehole was backfilled with Bentonite Pellets. Please see section 7b for additional details.

| CH2MHILL | PROJECT NUMBER 406469 | WELL NUMBER MW-14 SHEET 1 OF 1 |
|---|---|---|

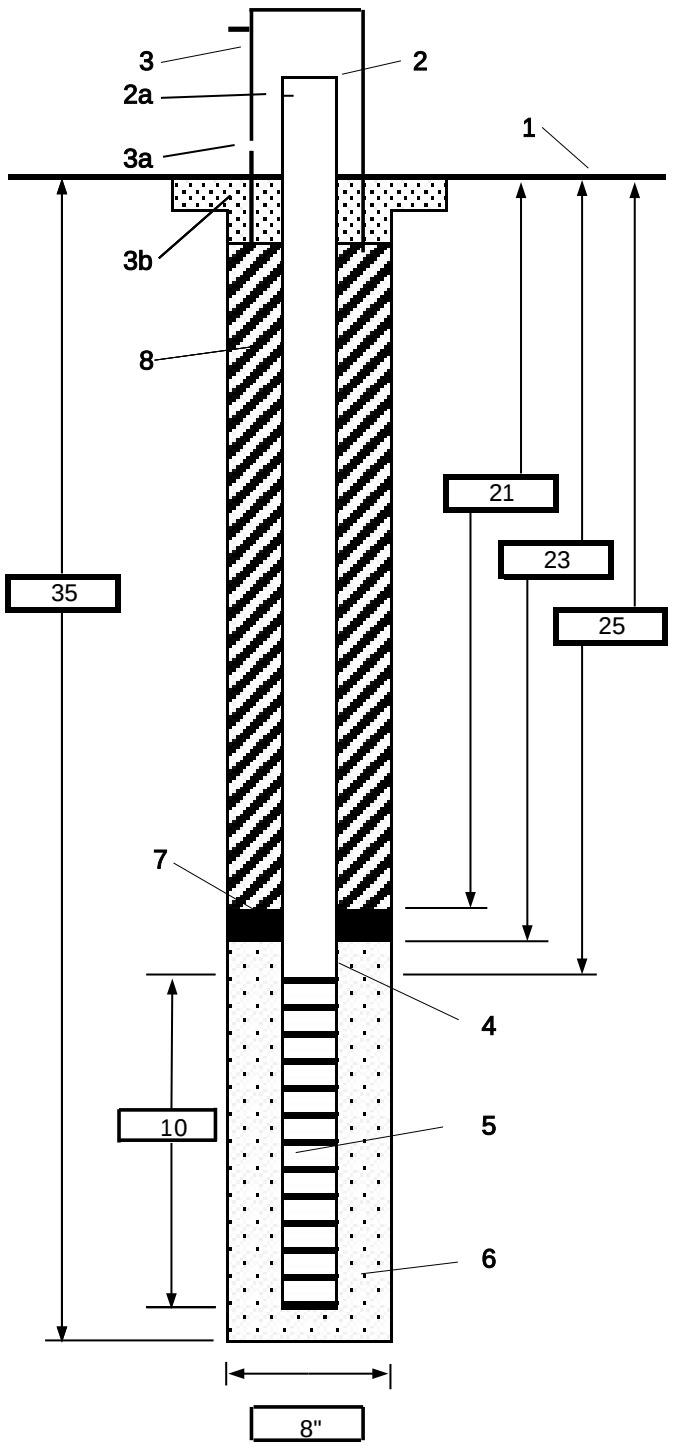
# WELL COMPLETION DIAGRAM

PROJECT: Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

DRILLING CONTRACTOR : Boart Longyear

DRILLING METHOD AND EQUIPMENT USED : Mini-Sonic Rig

WATER LEVELS: 4.97 ft btoc (01/04/11) START : 11/16/10 - 1425 END : 11/16/10 - 1605 LOGGER : Wayne Conway




| | | |
|---|---|---|
| 1- | Ground elevation at well | 630.46 ft amsl |
| 2- | Top of casing elevation | 633.05 ft amsl |
| | a) vent hole? | J-Plug Present |
| 3- | Wellhead protection cover type | 5' Long Square Steel Casing Cover. |
| | a) weep hole? | Present. |
| | b) concrete pad dimensions | 2' x 2' Concrete Pad with Bollards. |
| 4- | Dia./type of well casing | 2" I.D. Schedule 40 PVC Casing from 0.0 to 25.0 ft bgs. |
| 5- | Type/slot size of screen | 0.010" Slotted Sch. 40 PVC Well Screen from 25.0 to 35.0 ft bgs. |
| 6- | Type screen filter | 20/40 Filter Sand from 23.0 to 35.0 ft bgs. |
| | a) Quantity used | Driller used 3.5 bags of 20/40 Filter Sand. |
| 7- | Type of seal | 1/4" Pellets from 21.0 to 23.0 ft bgs. |
| | a) Quantity used | Driller used 2/3 bag of Bentoninte Pellets. |
| 8- | Grout | Type II Portland Cement (94lbs Bags) |
| | a) Grout mix used | For Every Bag Added to Electric Grout |
| | b) Method of placement | Mixer the Driller Added 6 Galllons of Water. |
| | c) Vol. of well casing grout | Positive Displacement Method (Tremie Pipe). 40 Gallons |
| | Development method | Surge and pump |
| | Development time | Approximately 3.75 hour. |
| | Estimated purge volume | Approximately 47.0 gallons. |

Comments

| CH2MHILL | PROJECT NUMBER 406469 | WELL NUMBER MW-15 SHEET 1 OF 1 |
|---|---|---|

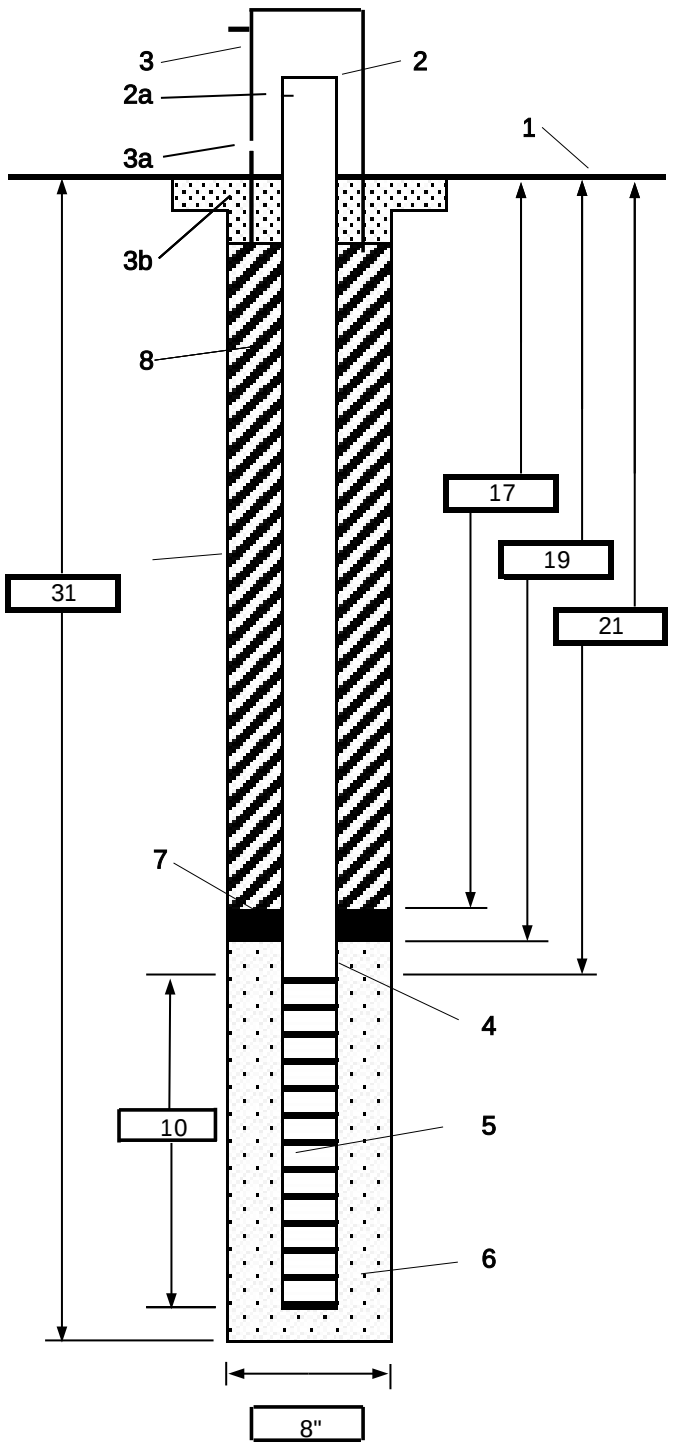
# WELL COMPLETION DIAGRAM

PROJECT: Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

DRILLING CONTRACTOR : Boart Longyear

DRILLING METHOD AND EQUIPMENT USED : Mini-Sonic Rig

WATER LEVELS: 7.35 ft btoc (01/04/11) START : 11/17/10 - 0910 END : 11/17/10 - 1120 LOGGER : Wayne Conway




| | | |
|---|---|---|
| 1- | Ground elevation at well | 626.83 ft amsl |
| 2- | Top of casing elevation | 628.85 ft amsl |
| | a) vent hole? | J-Plug Present |
| 3- | Wellhead protection cover type | 5' Long Square Steel Casing Cover. |
| | a) weep hole? | Present. |
| | b) concrete pad dimensions | 2' x 2' Concrete Pad with Bollards. |
| 4- | Dia./type of well casing | 2" I.D. Schedule 40 PVC Casing from 0.0 to 21.0 ft bgs. |
| 5- | Type/slot size of screen | 0.010" Slotted Sch. 40 PVC Well Screen from 21.0 to 31.0 ft bgs. |
| 6- | Type screen filter | 20/40 Filter Sand from 19.0 to 31.0 ft bgs. |
| | a) Quantity used | Driller used 4.0 bags of 20/40 Filter Sand. |
| 7- | Type of seal | 1/4" Pellets from 17.0 to 19.0 ft bgs. |
| | a) Quantity used | Driller used 2/3 bag of Bentoninte Pellets. |
| 8- | Grout | Type II Portland Cement (94lbs Bags) |
| | a) Grout mix used | For Every Bag Added to Electric Grout Mixer the Driller Added 6 Galllons of Water. |
| | b) Method of placement | Positive Displacement Method (Tremie Pipe). |
| | c) Vol. of well casing grout | 40 Gallons |
| | Development method | Surge and pump |
| | Development time | Approximately 3.5 hour. |
| | Estimated purge volume | Approximately 30.0 gallons. |

Comments

| CH2MHILL | PROJECT NUMBER 406469 | WELL NUMBER MW-16 SHEET 1 OF 1 |
|---|---|---|

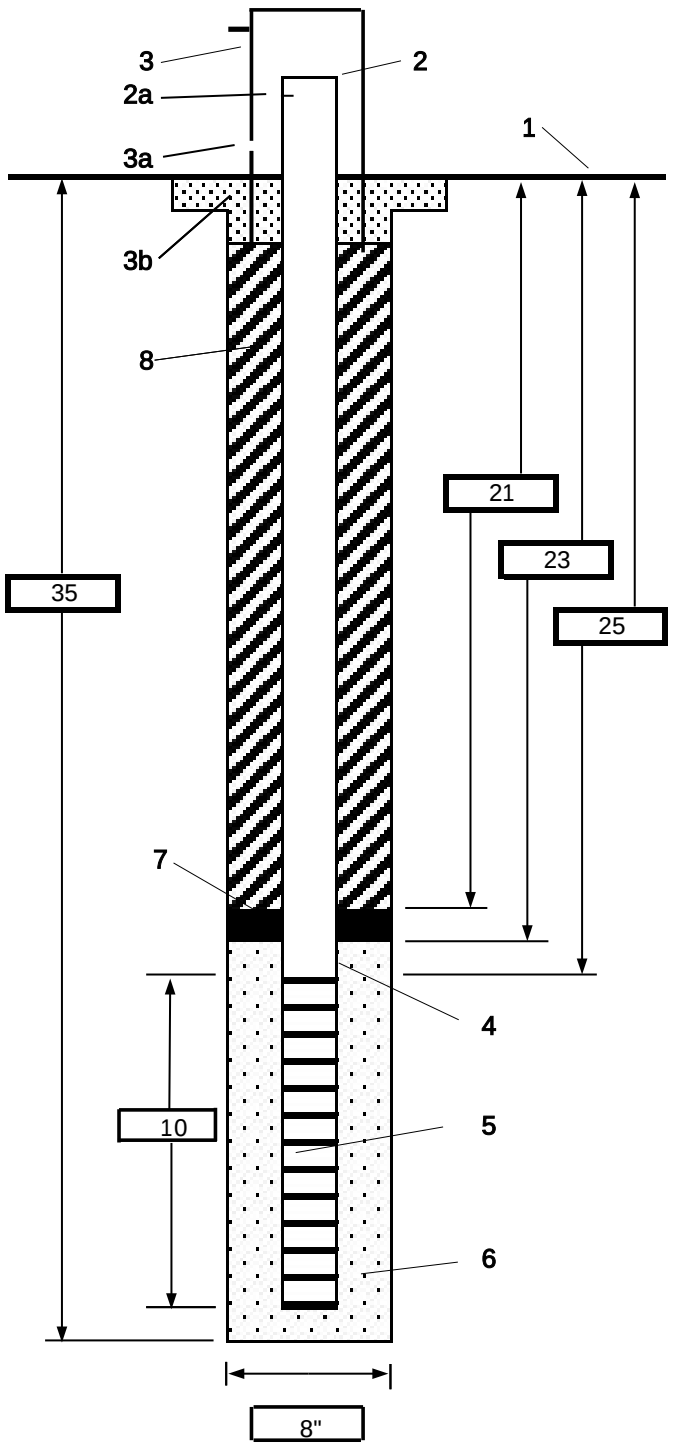
# WELL COMPLETION DIAGRAM

PROJECT: Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

DRILLING CONTRACTOR : Boart Longyear

DRILLING METHOD AND EQUIPMENT USED : Mini-Sonic Rig

WATER LEVELS: 5.19 ft btoc (01/04/11) START : 11/17/10 - 1300 END : 11/17/10 - 1445 LOGGER : Wayne Conway




| | | |
|---|---|---|
| 1- | Ground elevation at well | 625.43 ft amsl |
| 2- | Top of casing elevation | 628.00 ft amsl |
| | a) vent hole? | J-Plug Present |
| 3- | Wellhead protection cover type | 5' Long Square Steel Casing Cover. |
| | a) weep hole? | Present. |
| | b) concrete pad dimensions | 2' x 2' Concrete Pad with Bollards. |
| 4- | Dia./type of well casing | 2" I.D. Schedule 40 PVC Casing from 0.0 to 25.0 ft bgs. |
| 5- | Type/slot size of screen | 0.010" Slotted Sch. 40 PVC Well Screen from 25.0 to 35.0 ft bgs. |
| 6- | Type screen filter | 20/40 Filter Sand from 23.0 to 35.0 ft bgs. |
| | a) Quantity used | Driller used 4.5 bags of 20/40 Filter Sand. |
| 7- | Type of seal | 1/4" Pellets from 21.0 to 23.0 ft bgs. |
| | a) Quantity used | Driller used 1 bag of Bentoninte Pellets. |
| 8- | Grout | Type II Portland Cement (94lbs Bags) |
| | a) Grout mix used | For Every Bag Added to Electric Grout Mixer the Driller Added 6 Galllons of Water. |
| | b) Method of placement | Positive Displacement Method (Tremie Pipe). |
| | c) Vol. of well casing grout | 40 Gallons |
| | Development method | Surge and pump |
| | Development time | Approximately 2.0 hour. |
| | Estimated purge volume | Approximately 38.0 gallons. |

Comments

| CH2MHILL | PROJECT NUMBER 406469 | WELL NUMBER MW-17 SHEET 1 OF 1 |
|---|---|---|

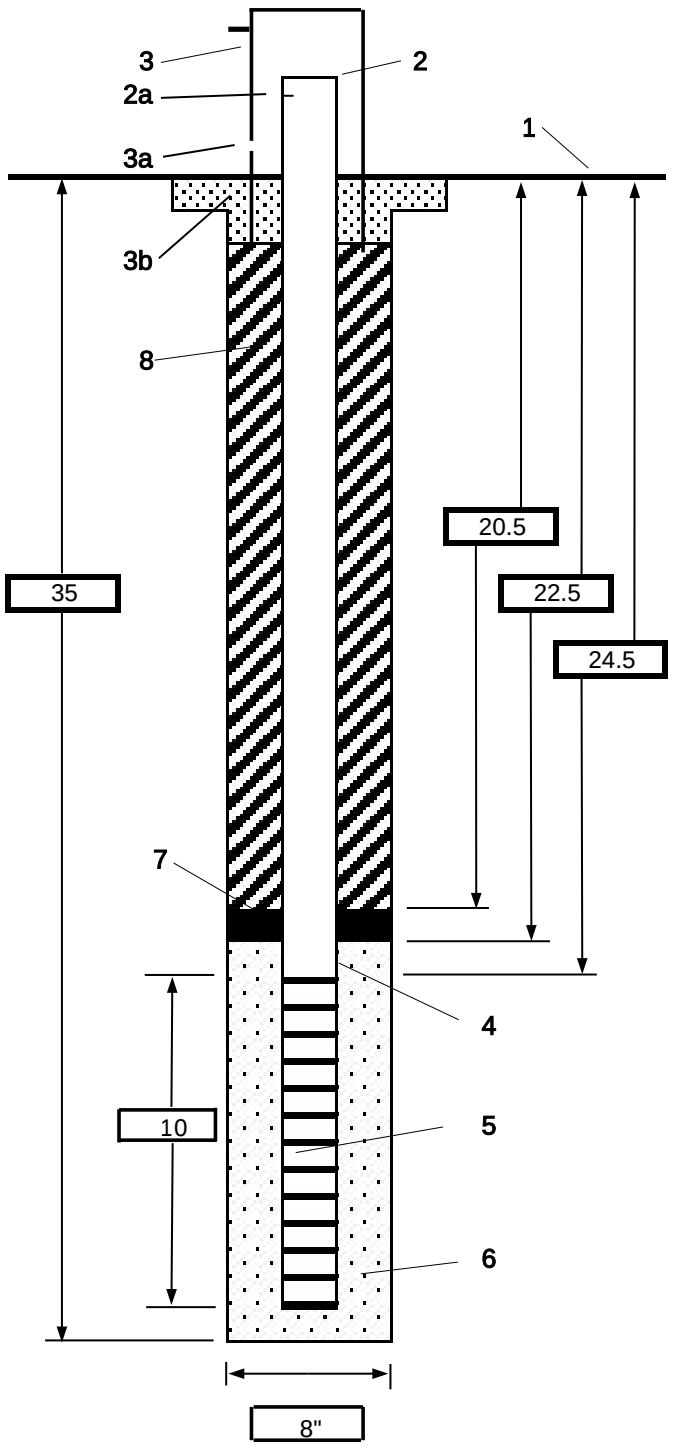
# WELL COMPLETION DIAGRAM

PROJECT: Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

DRILLING CONTRACTOR : Boart Longyear

DRILLING METHOD AND EQUIPMENT USED : Mini-Sonic Rig

WATER LEVELS: 6.68 ft btoc (01/04/11) START : 11/18/10 - 0830 END : 11/18/10 - 1000 LOGGER : Wayne Conway




| | | |
|---|---|---|
| 1- | Ground elevation at well | 619.30 ft amsl |
| 2- | Top of casing elevation | 621.67 ft amsl |
| | a) vent hole? | J-Plug Present |
| 3- | Wellhead protection cover type | 5' Long Square Steel Casing Cover. |
| | a) weep hole? | Present. |
| | b) concrete pad dimensions | 2' x 2' Concrete Pad with Bollards. |
| 4- | Dia./type of well casing | 2" I.D. Schedule 40 PVC Casing from 0.0 to 24.5 ft bgs. |
| 5- | Type/slot size of screen | 0.010" Slotted Sch. 40 PVC Well Screen from 24.5 to 34.5 ft bgs. |
| 6- | Type screen filter | 20/40 Filter Sand from 22.5 to 35.0 ft bgs. |
| | a) Quantity used | Driller used 4.0 bags of 20/40 Filter Sand. |
| 7- | Type of seal | 1/4" Pellets from 20.5 to 22.5 ft bgs. |
| | a) Quantity used | Driller used 1 bag of Bentoninte Pellets. |
| 8- | Grout | Type II Portland Cement (94lbs Bags) |
| | a) Grout mix used | For Every Bag Added to Electric Grout Mixer the Driller Added 6 Galllons of Water. |
| | b) Method of placement | Positive Displacement Method (Tremie Pipe). |
| | c) Vol. of well casing grout | 50 Gallons |
| | Development method | Surge and pump |
| | Development time | Approximately 4.25 hour. |
| | Estimated purge volume | Approximately 39.55 gallons. |

Comments

| CH2MHILL | PROJECT NUMBER 406469 | WELL NUMBER MW-18 SHEET 1 OF 1 |
|---|---|---|

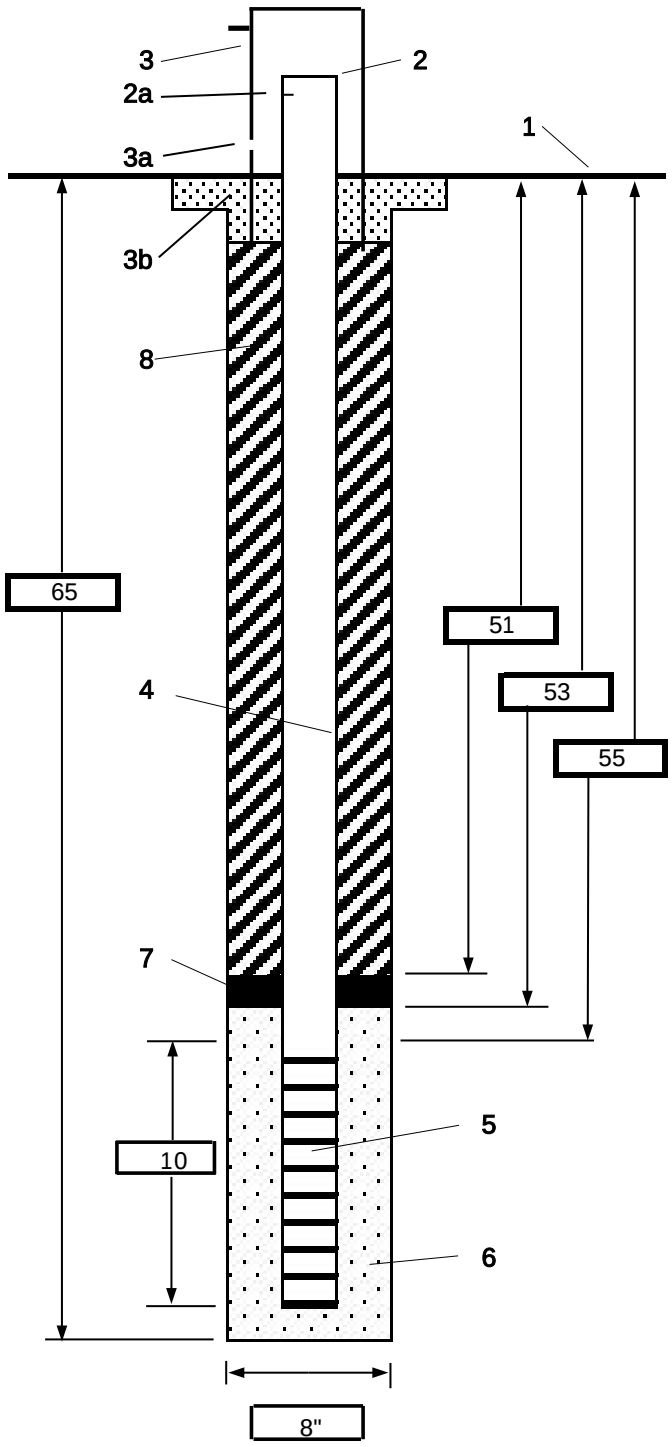
# WELL COMPLETION DIAGRAM

PROJECT: Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

DRILLING CONTRACTOR : Boart Longyear

DRILLING METHOD AND EQUIPMENT USED : Mini-Sonic Rig

WATER LEVELS: 13.58 ft btoc (01/04/11) START : 11/18/10 - 1600 END : 11/18/10 - 1730 LOGGER : Wayne Conway




| | |
|---|---|
| 1- Ground elevation at well | 605.47 ft amsl |
| 2- Top of casing elevation | 607.26 ft amsl |
| a) vent hole? | J-Plug Present |
| 3- Wellhead protection cover type | 5' Long Square Steel Casing Cover. |
| a) weep hole? | Present. |
| b) concrete pad dimensions | 2' x 2' Concrete Pad with Bollards. |
| 4- Dia./type of well casing | 2" I.D. Schedule 40 PVC Casing from 0.0 to 55.0 ft bgs. |
| 5- Type/slot size of screen | 0.010" Slotted Sch. 40 PVC Well Screen from 55.0 to 65.0 ft bgs. |
| 6- Type screen filter | 20/40 Filter Sand from 53.0 to 65.0 ft bgs. |
| a) Quantity used | Driller used 4.0 bags of 20/40 Filter Sand. |
| 7- Type of seal | 1/4" Pellets from 51.0 to 53.0 ft bgs. |
| a) Quantity used | Driller used 1 bag of Bentoninte Pellets. |
| 8- Grout | Type II Portland Cement (94lbs Bags) |
| a) Grout mix used | For Every Bag Added to Electric Grout Mixer the Driller Added 6 Galllons of Water. |
| b) Method of placement | Positive Displacement Method (Tremie Pipe). |
| c) Vol. of well casing grout | 80 Gallons |
| Development method | Surge and pump |
| Development time | Approximately 2 hour. |
| Estimated purge volume | Approximately 39 gallons. |

Comments

| PROJECT NUMBER | WELL NUMBER |
|---|---|
| 406469 | MW-19 SHEET 1 OF 1 |

CH2MHILL

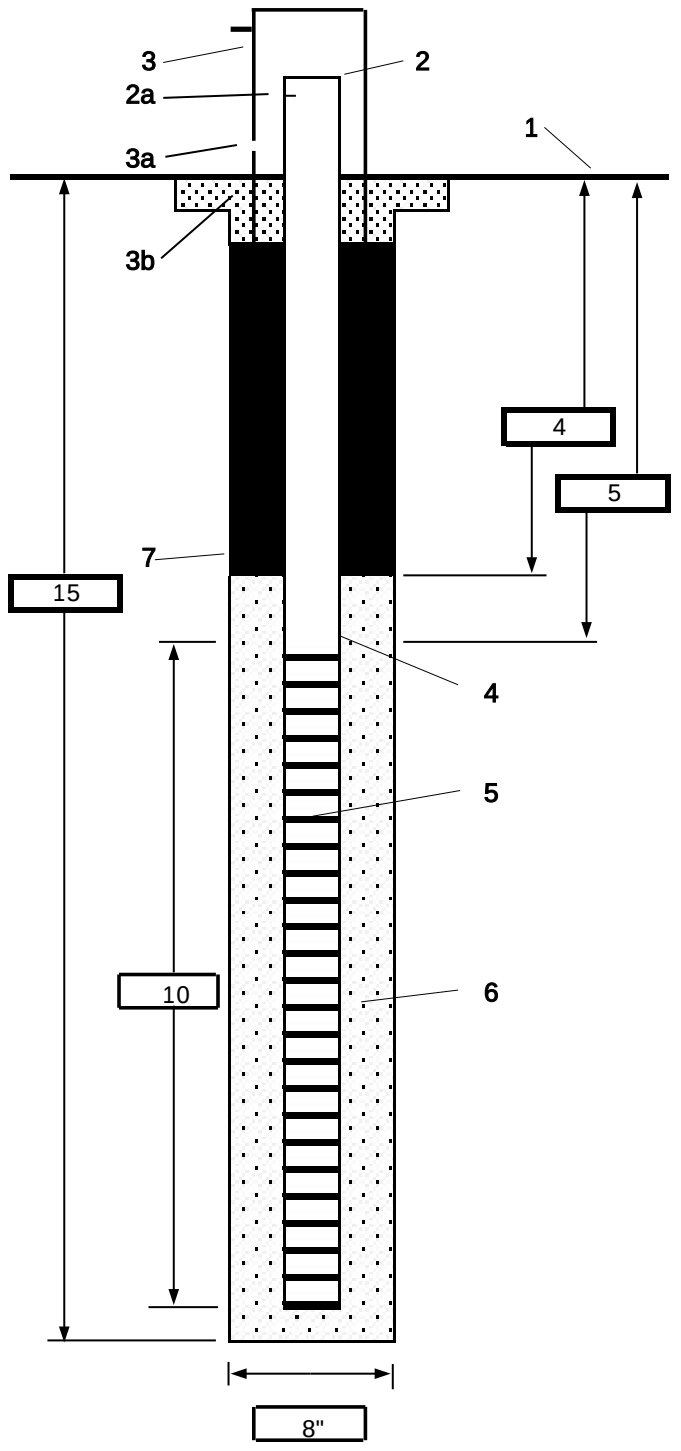
# WELL COMPLETION DIAGRAM

PROJECT: Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

DRILLING CONTRACTOR : Boart Longyear

DRILLING METHOD AND EQUIPMENT USED : Mini-Sonic Rig

WATER LEVELS: 3.60 ft btoc (01/04/11) START : 11/19/10 - 1015 END : 11/19/10 - 1145 LOGGER : Wayne Conway




| | | |
|---|---|---|
| 1- | Ground elevation at well | 623.06 ft amsl |
| 2- | Top of casing elevation | 625.48 ft amsl |
| | a) vent hole? | J-Plug Present |
| 3- | Wellhead protection cover ty | 5' Long Square Steel Casing Cover. |
| | a) weep hole? | Present. |
| | b) concrete pad dimensions | 2' x 2' Concrete Pad with Bollards. |
| 4- | Dia./type of well casing | 2" I.D. Schedule 40 PVC Casing from 0 to 15.0 ft bgs. |
| 5- | Type/slot size of screen | 0.010" Slotted Sch. 40 PVC Well Screen from 5.0 to 15.0 ft bgs. |
| 6- | Type screen filter | 20/40 Filter Sand from 4.0 to 15.0 ft bgs. |
| | a) Quantity used | Driller used 4.5 bags of 20/40 Filter Sand. |
| 7- | Type of seal | 1/4" Pellets from 0.0 to 4.0 ft bgs. |
| | a) Quantity used | Driller used 1 bag of Bentoninte Pellets. |
| 8- | Grout | |
| | a) Grout mix used | Not Applicable |
| | b) Method of placement | Not Applicable |
| | c) Vol. of well casing grout | Not Applicable |
| | Development method | Surge and Pump |
| | Development time | Approximately 2 hours. |
| | Estimated purge volume | Approximately 30 gallons. |

Comments

| CH2MHILL | PROJECT NUMBER 406469 | WELL NUMBER MW-20 SHEET 1 OF 1 |
|---|---|---|

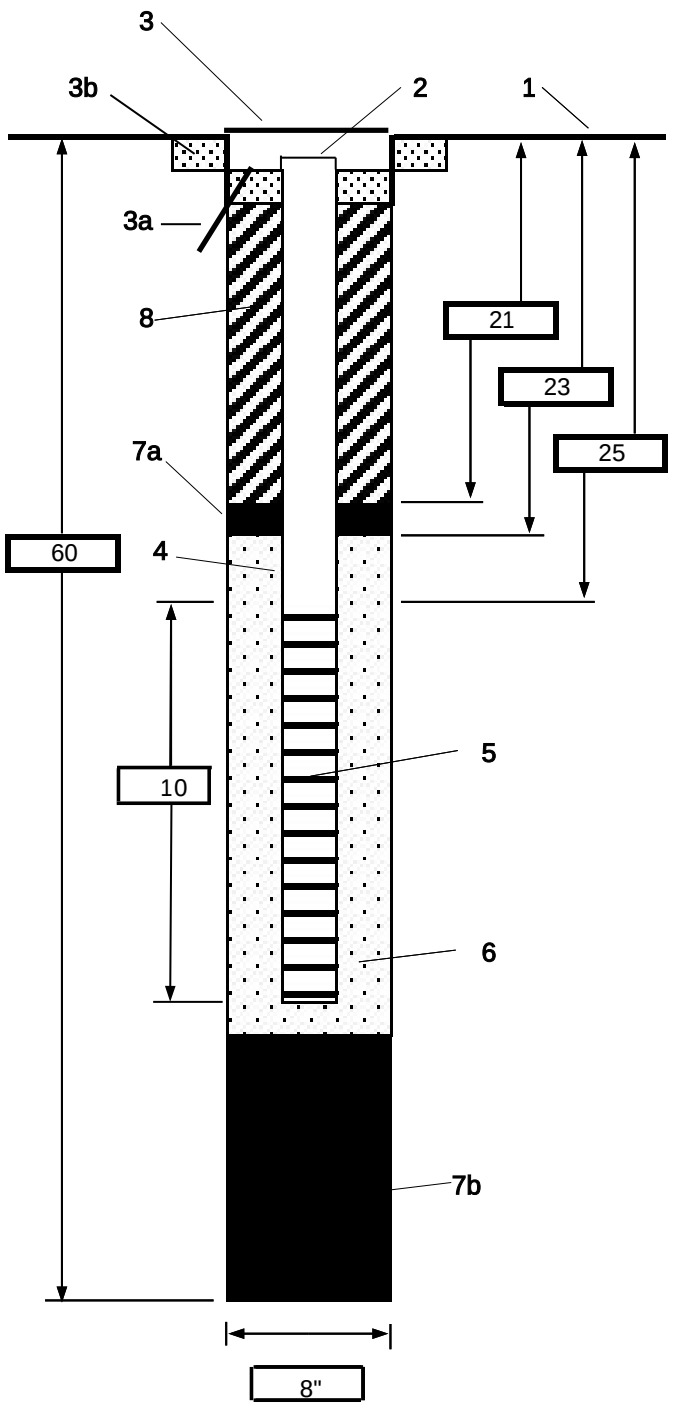
# WELL COMPLETION DIAGRAM

PROJECT: Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

DRILLING CONTRACTOR : Boart Longyear

DRILLING METHOD AND EQUIPMENT USED : Mini-Sonic Rig

WATER LEVELS: 1.71 ft btoc (01/04/11) START : 11/19/10 - 1420 END : 11/19/10 - 1630 LOGGER : Wayne Conway




| | |
|---|---|
| 1- Ground elevation at well | 627.25 ft amsl |
| 2- Top of casing elevation | 626.98 ft amsl |
| 3- Wellhead protection cover type | 8" Circular Steel Vault. |
| a) drain tube? | Present. |
| b) concrete pad dimensions | 2' x 2' Concrete Pad. |
| 4- Dia./type of well riser | 2" I.D. Schedule 40 PVC Casing from 0.0 to 35.0 ft bgs. |
| 5- Type/slot size of screen | 0.010" Slotted Sch. 40 PVC Well Screen from 25.0 to 35.0 ft bgs. |
| 6- Type screen filter | 20/40 Filter Sand from 23.0 to 36.0 ft bgs. |
| a) Quantity used | Driller used 4.5 bags of 20/40 Filter Sand. |
| 7- Type of seal | 1/4" Pellets from 21.0 to 23.0 ft bgs. |
| a) Quantity used | Driller used 1 bag of Bentoninte Pellets. |
| 7- Type of seal | 1/4" Pellets from 36.0 to 60.0 ft bgs. |
| b) Quantity used | Driller used 12 bag of Bentoninte Pellets. |
| 8- Grout | Type II Portland Cement (94lbs Bags) |
| a) Grout mix used | For Every Bag Added to Electric Grout Mixer the Driller Added 6 Galllons of Water. |
| b) Method of placement | Positive Displacement Method (Tremie Pipe). |
| c) Vol. of well casing grout | 20 Gallons |
| Development method | Surge and pump |
| Development time | Approximately 1 hour. |
| Estimated purge volume | Approximately 33 gallons. |

Comments Bottom of borehole backfilled with Bentonite Pellets. Please see section 7b for additional details.

| PROJECT NUMBER | WELL NUMBER | |
|---|---|---|
| 406469 | MW-21 | SHEET 1 OF 1 |

CH2MHILL

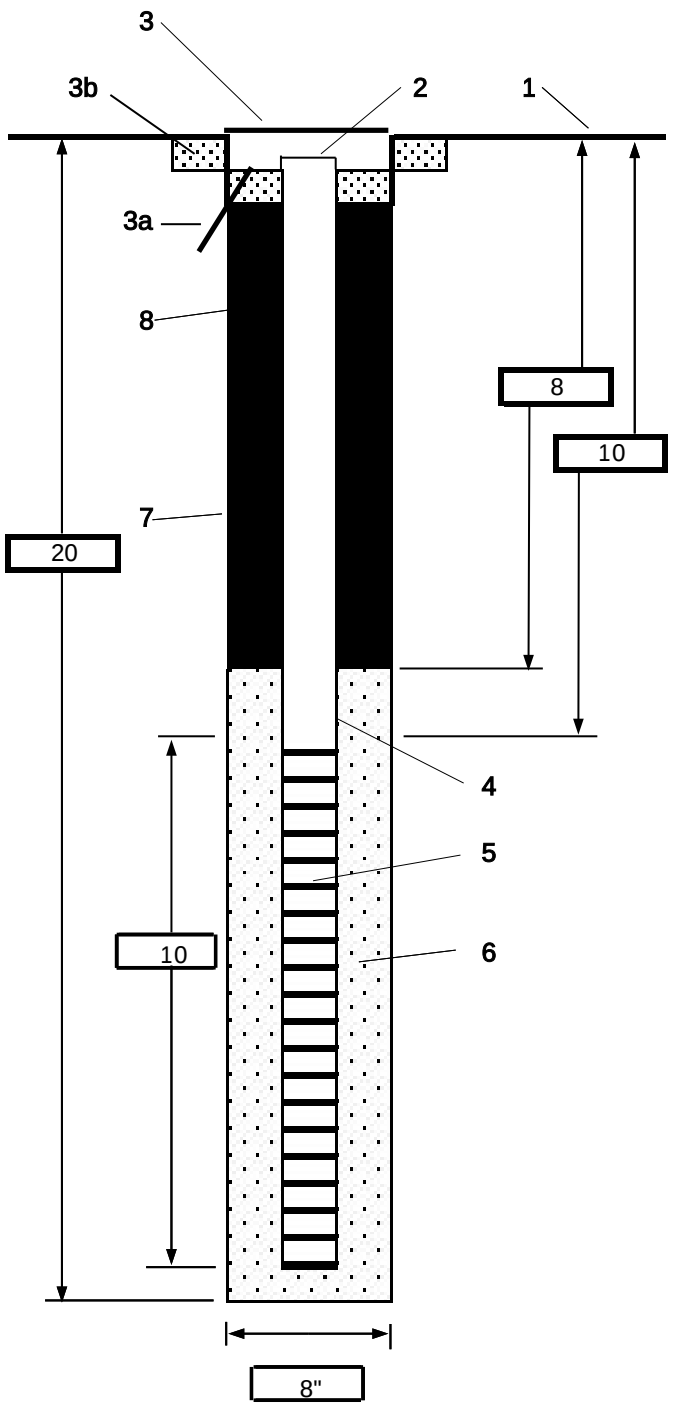
# WELL COMPLETION DIAGRAM

PROJECT: Eagle Zinc Supplemental Remedial Investigation LOCATION : Hillsboro, Montgomery County, IL

DRILLING CONTRACTOR : Boart Longyear

DRILLING METHOD AND EQUIPMENT USED : Mini-Sonic Rig

WATER LEVELS: 2.00 ft btoc (01/04/11) START : 11/20/10 - 0855 END : 11/20/10 - 1000 LOGGER : Wayne Conway




| | |
|---|---|
| 1- Ground elevation at well | 627.23 ft amsl |
| 2- Top of casing elevation | 627.07 ft amsl |
| | J-Plug Present |
| 3- Wellhead protection cover type | 8" Circular Steel Vault. |
| a) drain tube? | Present. |
| b) concrete pad dimensions | 2' x 2' Concrete Pad. |
| 4- Dia./type of well riser | 2" I.D. Schedule 40 PVC Casing |
| | from 0.0 to 10.0 ft bgs. |
| 5- Type/slot size of screen | 0.010" Slotted Sch. 40 PVC Well Screen |
| | from 10.0 to 20.0 ft bgs. |
| 6- Type screen filter | 20/40 Filter Sand from 8.0 to 20.0 ft bgs. |
| a) Quantity used | Driller used 4.0 bags of 20/40 Filter Sand. |
| 7- Type of seal | 1/4" Pellets from 0.0 to 8.0 ft bgs. |
| a) Quantity used | Driller used 1.5 bag of Bentoninte Pellets. |
| 8- Grout | |
| a) Grout mix used | Not Applicable |
| b) Method of placement | Not Applicable |
| c) Vol. of well casing grout | Not Applicable |
| Development method | Surge and Pump |
| Development time | Approximately 45 minutes. |
| Estimated purge volume | Approximately 33 gallons. |

Comments

# Appendix B
# Sample Collection Forms

# Groundwater Sampling Forms

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-01 | Date: | 12/6/2010 | | |
| Weather Conditions: | Cold, Cloudy, 20$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Shawn Boyles | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1358 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini-Monsoon | Water Level at time $T_o$: | 3.36 |
| Well Depth: | 15.03 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1445 |
| Static Water Level: | 3.36 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 3.90 |
| Water Column: | 11.67 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 14.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1403 | 0.26 | 6.4 | 0.800 | 10.50 | 95.3 | 3.87 | 7.51 | 86.00 | 100 | Clear |
| 1408 | 0.53 | 6.4 | 0.820 | 11.70 | 102.5 | 3.88 | 7.35 | 92.00 | 100 | Clear |
| 1413 | 0.79 | 6.4 | 0.840 | 11.30 | 109.7 | 3.89 | 6.98 | 99.00 | 100 | Clear |
| 1418 | 1.19 | 6.4 | 0.870 | 13.00 | 111.9 | 3.90 | 6.41 | 59.00 | 100 | Clear |
| 1423 | 1.45 | 6.4 | 0.850 | 13.20 | 114.2 | 3.90 | 6.40 | 41.00 | 100 | Clear |
| 1428 | 1.72 | 6.4 | 0.860 | 13.10 | 116.3 | 3.90 | 6.58 | 32.00 | 100 | Clear |
| 1433 | 1.98 | 6.4 | 0.870 | 12.80 | 119.6 | 3.90 | 6.44 | 33.00 | 100 | Clear |
| 1438 | 2.25 | 6.4 | 0.860 | 13.60 | 120.5 | 3.90 | 6.54 | 23.00 | 100 | Clear |
| 1445 | 2.91 | --- | --- | --- | --- | 3.90 | --- | --- | --- | --- |
| | | | | | | | | | | |
| | | | | | | | | | | |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW01-GW-1 |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/6/2010 |
| Time: | 1445 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks : | All Parameters are stable. Chain of Custody indicates monitoring well was sampled on 12/7/2010 at 1445. Well was actually sampled on 12/6/2010 at 1445. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-02 | Date: | Purged 12/15/2010; Sampled 12/16/2010 | | |
| Weather Conditions: | Cloudy, Freezing Drizzle, 31° | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | | |
|---|---|---|---|---|---|---|
| Well Datum: | TOC | | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1007 |
| Well Diameter & Type: | 2" Schedule 40 PVC | | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 6.00 |
| Well Depth: | 14.70 | (ft) | | Horiba Meter | Time Purging ends ($T_1$): | 1040 |
| Static Water Level: | 6.00 | (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 14.70 |
| Water Column: | 8.70 | (ft) | | Water Level Meter | | |
| System Volume: | 0.26 | (gal) | | | | |
| Pump intake: | 14.50 | (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1012 | 0.3 | 6.38 | 1.030 | 11.00 | --- | 8.96 | --- | 7.41 | --- | Clear |
| 1016 | 0.5 | 6.39 | 1.040 | 10.90 | --- | 10.02 | --- | 5.08 | --- | Clear |
| 1020 | 0.8 | 6.29 | 1.060 | 12.20 | --- | 10.94 | --- | 13.00 | --- | Clear |
| 1024 | 1.1 | 6.29 | 1.060 | 12.50 | --- | 11.81 | --- | 18.40 | --- | Clear |
| 1026 | 1.2 | 6.31 | 1.020 | 12.50 | --- | 12.12 | --- | 24.10 | --- | Clear |
| 1028 | 1.3 | 6.34 | 1.060 | 12.60 | --- | 12.53 | --- | 37.80 | --- | Clear |
| 1030 | 1.5 | 6.36 | 1.090 | 12.50 | --- | 12.96 | --- | 45.10 | --- | Clear |
| 1031 | 1.6 | 6.40 | 1.080 | 12.70 | --- | 13.34 | --- | 29.10 | --- | Clear |
| 1033 | 1.7 | 6.42 | 1.080 | 13.00 | --- | 13.76 | --- | 70.70 | --- | Clear |
| 1034 | 1.8 | 6.45 | 1.100 | 13.10 | --- | 14.11 | --- | 115.00 | --- | Light Brown |
| 1040 | 2.1 | --- | --- | --- | --- | 14.70 | --- | --- | --- | Well Dry |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW02-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/16/2010 |
| Time: | 840 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. ORP and DO measurements were not recorded because field team used a Horiba U-10. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-04 | Date: | Purged 12/15/2010; Sampled 12/16/2010 | | |
| Weather Conditions: | Cloudy, Freezing Drizzle, 31° | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1101 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 4.79 |
| Well Depth: | 13.95 (ft) | | Horiba Meter | Time Purging ends ($T_1$): | 1118 |
| Static Water Level: | 4.79 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 13.95 |
| Water Column: | 9.16 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 13.8 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1105 | 0.3 | 6.80 | 0.351 | 10.50 | --- | 7.47 | --- | 25.10 | --- | Clear |
| 1109 | 0.5 | 6.74 | 0.348 | 10.20 | --- | 8.65 | --- | 26.80 | --- | Clear |
| 1112 | 0.8 | 6.65 | 0.372 | 11.50 | --- | 10.32 | --- | 84.00 | --- | Clear |
| 1114 | 0.9 | 6.67 | 0.385 | 11.60 | --- | 11.54 | --- | 457.00 | --- | Cloudy |
| 1116 | 1.1 | 6.67 | 0.385 | 11.90 | --- | 12.31 | --- | 500.00 | --- | Cloudy |
| 1118 | 1.3 | --- | --- | --- | --- | 13.95 | --- | --- | --- | Well Dry |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW04-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/16/2010 |
| Time: | 1000 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. ORP and DO measurements were not recorded because field team used a Horiba U-10. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-05 | Date: | 12/7/2010 | | |
| Weather Conditions: | Clear, Sunny, 16$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Laura Crause | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 900 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 8.88 |
| Well Depth: | 18.72 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 935 |
| Static Water Level: | 8.78 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 8.90 |
| Water Column: | 9.94 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 14.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 900 | 0.00 | 5.48 | 0.638 | 9.50 | 174.2 | 8.88 | 2.33 | 78.60 | 140 | Clear |
| 905 | 0.18 | 5.61 | 0.674 | 10.53 | 147.0 | 8.88 | 1.30 | 87.40 | 140 | Clear |
| 910 | 0.37 | 5.73 | 0.735 | 11.31 | 65.1 | 8.89 | 0.77 | 67.80 | 140 | Clear |
| 915 | 0.53 | 5.73 | 0.744 | 11.88 | 57.6 | 8.90 | 0.67 | 56.70 | 130 | Clear |
| 920 | 0.71 | 5.77 | 0.757 | 12.13 | 50.2 | 8.90 | 0.64 | 43.00 | 130 | Clear |
| 925 | 0.87 | 5.80 | 0.765 | 12.00 | 38.6 | 8.90 | 0.58 | 39.50 | 130 | Clear |
| 930 | 1.06 | 5.80 | 0.770 | 11.98 | 36.2 | 8.90 | 0.54 | 24.40 | 130 | Clear |
| 935 | 1.22 | 5.81 | 0.771 | 11.95 | 33.9 | 8.90 | 0.55 | 20.10 | 130 | Clear |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW05-GW-1 |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/7/2010 |
| Time: | 940 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-06 | Date: | 12/7/2010 | | |
| Weather Conditions: | Clear, Sunny, 16$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Laura Crause | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1008 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 5.79 |
| Well Depth: | 17.99 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1048 |
| Static Water Level: | 5.75 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 5.79 |
| Water Column: | 12.24 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 13.6 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1008 | 0.00 | --- | 2.292 | 10.74 | 15.7 | 5.79 | 2.04 | 463.00 | 170 | Cloudy |
| 1013 | 0.22 | --- | 2.289 | 11.32 | 26.5 | 5.79 | 0.98 | 331.00 | 190 | Cloudy |
| 1018 | 0.48 | --- | 2.293 | 11.71 | 44.1 | 5.79 | 0.64 | 211.00 | 190 | Cloudy |
| 1023 | 0.71 | --- | 2.295 | 11.72 | 56.7 | 5.79 | 0.47 | 128.00 | 190 | Clear |
| 1028 | 0.98 | --- | 2.287 | 11.88 | 62.6 | 5.79 | 0.40 | 84.50 | 190 | Clear |
| 1033 | 1.22 | 6.99 | 2.280 | 11.99 | 87.3 | 5.79 | 0.38 | 50.10 | 190 | Clear |
| 1038 | 1.48 | 7.01 | 2.281 | 12.07 | 71.1 | 5.79 | 0.32 | 28.90 | 190 | Clear |
| 1043 | 1.72 | 7.00 | 2.273 | 12.18 | 73.9 | 5.79 | 0.34 | 13.50 | 190 | Clear |
| 1048 | 1.98 | 7.01 | 2.271 | 12.13 | 75.3 | 5.79 | 0.33 | 12.40 | 190 | Clear |
| | | | | | | | | | | |
| | | | | | | | | | | |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW06-GW-1, EZ-MW06-GWFD |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/7/2010 |
| Time: | 1050, 1055 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | All Parameters are stable. Field team forgot to collect pH readings for the first 5 measurements. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-07 | Date: | 12/14/2010 | | |
| Weather Conditions: | Cold, Cloudy, 15$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Shawn Boyles | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1500 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini-Monsoon | Water Level at time $T_o$: | 8.31 |
| Well Depth: | 18.98 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1605 |
| Static Water Level: | 8.31 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 8.70 |
| Water Column: | 10.67 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 17.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1505 | 0.26 | 7.17 | 0.855 | 12.36 | 207.8 | 8.42 | 2.71 | 36.90 | 200 | Clear |
| 1510 | 0.53 | 7.08 | 0.861 | 12.65 | 205.7 | 8.61 | 2.34 | 28.80 | 200 | Clear |
| 1515 | 0.79 | 6.98 | 0.919 | 12.70 | 203.8 | 8.63 | 1.66 | 21.80 | 200 | Clear |
| 1520 | 1.06 | 6.87 | 0.971 | 12.58 | 204.3 | 8.65 | 1.49 | 18.10 | 200 | Clear |
| 1525 | 1.32 | 6.79 | 1.009 | 12.32 | 204.7 | 8.65 | 1.19 | 14.50 | 200 | Clear |
| 1530 | 1.58 | 6.73 | 1.027 | 12.55 | 202.9 | 8.66 | 1.00 | 10.50 | 200 | Clear |
| 1535 | 1.85 | 6.71 | 1.039 | 12.38 | 202.2 | 8.67 | 0.95 | 8.01 | 200 | Clear |
| 1540 | 2.11 | 6.69 | 1.049 | 12.41 | 201.7 | 8.67 | 0.89 | 6.64 | 200 | Clear |
| 1545 | 2.38 | 6.67 | 1.059 | 12.51 | 201.8 | 8.68 | 0.81 | 6.46 | 200 | Clear |
| 1550 | 2.64 | 6.66 | 1.067 | 12.46 | 201.4 | 8.69 | 0.76 | 4.07 | 200 | Clear |
| 1555 | 2.91 | 6.62 | 1.077 | 12.46 | 202.3 | 8.70 | 0.65 | 3.72 | 200 | Clear |
| 1600 | 3.17 | 6.62 | 1.083 | 12.21 | 200.7 | 8.70 | 0.64 | 3.25 | 200 | Clear |
| | | | | | | | | | | |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW07-GW-1, EZ-MW07-GWFD |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/14/2010 |
| Time: | 1605 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks : | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-08 | Date: | 12/15/2010 | | |
| Weather Conditions: | Cold, Freezing Drizzle, 31° | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Shawn Boyles | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1141 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini-Monsoon | Water Level at time $T_o$: | 19.68 |
| Well Depth: | 24.88 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1310 |
| Static Water Level: | 19.68 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 19.68 |
| Water Column: | 5.20 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 24.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1206 | 1.32 | 6.77 | 0.959 | 14.49 | 6.0 | 19.68 | 1.78 | 8.21 | 150 | Clear |
| 1211 | 1.59 | 6.73 | 0.959 | 14.43 | 9.7 | 19.68 | 1.94 | 6.54 | 150 | Clear |
| 1216 | 1.85 | 6.71 | 0.957 | 14.44 | 11.4 | 19.68 | 1.92 | 4.44 | 150 | Clear |
| 1221 | 2.11 | 6.69 | 0.958 | 14.36 | 12.2 | 19.68 | 2.13 | 3.49 | 150 | Clear |
| 1226 | 2.38 | 6.68 | 0.957 | 14.35 | 13.4 | 19.68 | 2.31 | 3.31 | 150 | Clear |
| 1231 | 2.64 | 6.63 | 0.956 | 14.49 | 16.9 | 19.68 | 2.36 | 2.24 | 150 | Clear |
| 1236 | 2.91 | 6.64 | 0.955 | 14.49 | 17.2 | 19.68 | 2.37 | 2.18 | 150 | Clear |
| 1241 | 3.17 | 6.63 | 0.955 | 14.49 | 17.9 | 19.68 | 2.23 | 1.74 | 150 | Clear |
| 1246 | 3.43 | 6.59 | 0.956 | 14.44 | 20.8 | 19.68 | 2.66 | 1.82 | 150 | Clear |
| 1251 | 3.70 | 6.61 | 0.956 | 14.41 | 20.9 | 19.68 | 2.83 | 2.34 | 150 | Clear |
| 1256 | 3.96 | 6.60 | 0.955 | 14.47 | 23.4 | 19.68 | 3.04 | 2.59 | 150 | Clear |
| 1301 | 4.23 | 6.59 | 0.955 | 14.47 | 23.7 | 19.68 | 3.09 | 2.49 | 150 | Clear |
| 1306 | 4.49 | 6.59 | 0.955 | 14.40 | 24.9 | 19.68 | 3.10 | 2.51 | 150 | Clear |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW08-GW-1, EZ-MW08-GWFD |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/15/2010 |
| Time: | 1310, 1315 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks : | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-09 | Date: | 12/15/2010 | | |
| Weather Conditions: | Cloudy, Freezing Drizzle, 31$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1530 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 10.82 |
| Well Depth: | 23.59 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1603 |
| Static Water Level: | 10.82 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 15.96 |
| Water Column: | 12.77 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 22.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1533 | 0.13 | 7.13 | 3.610 | 9.44 | 328.3 | 15.55 | 10.57 | 7.65 | 100 | Clear |
| 1538 | 0.40 | 6.84 | 3.679 | 9.27 | 325.3 | 15.60 | 10.22 | 7.15 | 100 | Clear |
| 1543 | 0.66 | 6.89 | 3.673 | 9.54 | 323.6 | 15.65 | 10.04 | 7.05 | 100 | Clear |
| 1548 | 0.92 | 6.75 | 3.728 | 9.54 | 325.9 | 15.70 | 10.00 | 6.59 | 100 | Clear |
| 1553 | 1.19 | 6.72 | 3.736 | 10.04 | 330.0 | 15.81 | 9.99 | 6.56 | 100 | Clear |
| 1558 | 1.45 | 6.71 | 3.774 | 10.34 | 327.8 | 15.91 | 10.02 | 4.89 | 100 | Clear |
| 1603 | 1.72 | 6.75 | 3.790 | 10.50 | 323.0 | 15.96 | 9.99 | 4.45 | 100 | Clear |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW09-GW-1, EZ-MW09-GWFD |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/15/2010 |
| Time: | 1605 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-10 | Date: | Purged 12/16/2010; Sampled 12/17/2010 | | |
| Weather Conditions: | Cloudy, Cold, 23$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Jessica Hoffman, Jayson Burkard | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1053 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 5.48 |
| Well Depth: | 17.35 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1606 |
| Static Water Level: | 5.48 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 16.42 |
| Water Column: | 11.87 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 17.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1406 | 0.20 | 5.60 | 0.094 | 9.22 | --- | 12.08 | --- | 90.20 | 50.0 | Cloudy |
| 1416 | 0.29 | 5.41 | 0.092 | 9.24 | --- | 12.12 | --- | 76.40 | 50.0 | Cloudy |
| 1426 | 0.34 | 5.38 | 0.089 | 8.84 | --- | 12.12 | --- | 83.80 | 50.0 | Cloudy |
| 1436 | 0.40 | 5.26 | 0.088 | 8.45 | --- | 12.08 | --- | 75.00 | 50.0 | Cloudy |
| 1446 | 0.48 | 5.18 | 0.089 | 8.51 | --- | 12.13 | --- | 68.40 | 50.0 | Cloudy |
| 1456 | 0.55 | 5.23 | 0.088 | 8.50 | --- | 12.16 | --- | 63.60 | 50.0 | Slightly Cloudy |
| 1506 | 0.63 | 5.17 | 0.089 | 8.43 | --- | 12.18 | --- | 61.10 | 50.0 | Slightly Cloudy |
| 1516 | 0.73 | 5.09 | 0.087 | 8.75 | --- | 12.23 | --- | 57.20 | 50.0 | Clearing |
| 1526 | 0.82 | 5.13 | 0.087 | 8.77 | --- | 12.31 | --- | 56.60 | 50.0 | Clear |
| 1536 | 0.88 | 4.98 | 0.086 | 9.14 | --- | 12.49 | --- | 54.40 | 100.0 | Clear |
| 1546 | 1.06 | 5.09 | 0.086 | 10.48 | --- | 12.95 | --- | 62.50 | 100.00 | Cloudy |
| 1556 | 1.72 | 5.30 | 0.086 | 12.40 | --- | 14.36 | --- | 99.00 | 1000.00 | Cloudy |
| 1606 | 1.98 | 5.57 | 0.100 | 12.62 | --- | 16.42 | --- | 127.00 | 1000.00 | Well Dry |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW10-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/17/2010 |
| Time: | 1055 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-11 | Date: | Purged 12/15/2010; Sampled 16/16/2010 | | |
| Weather Conditions: | Cold, Freezing Drizzle, 31° | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Shawn Boyles | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_0$): | 1443 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini-Monsoon | Water Level at time $T_0$: | 6.55 |
| Well Depth: | 13.96 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1650 |
| Static Water Level: | 6.55 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 13.96 |
| Water Column: | 7.41 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 13.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1543 | 3.17 | 7.43 | 1.115 | 8.87 | 93.2 | 8.75 | 3.16 | 178.00 | 150 | Light Brown |
| 1548 | 3.43 | 7.44 | 1.120 | 8.57 | 94.1 | 8.80 | 3.17 | 143.00 | 125 | Light Brown |
| 1553 | 3.70 | 7.45 | 1.123 | 8.19 | 94.2 | 8.95 | 3.30 | 143.00 | 125 | Light Brown |
| 1558 | 3.96 | 7.47 | 1.120 | 8.30 | 93.9 | 9.00 | 3.35 | 80.40 | 125 | Light Brown |
| 1603 | 4.23 | 7.49 | 1.120 | 8.11 | 93.7 | 9.11 | 3.52 | 51.70 | 125 | Light Brown |
| 1608 | 4.49 | 7.5 | 1.116 | 8.07 | 93.6 | 9.16 | 3.42 | 42.10 | 125 | Light Brown |
| 1613 | 4.75 | 7.52 | 1.115 | 7.88 | 92.9 | 9.20 | 3.40 | 39.30 | 125 | Light Brown |
| 1618 | 5.02 | 7.53 | 1.119 | 7.87 | 93.2 | 9.28 | 3.40 | 35.80 | 125 | Light Brown |
| 1623 | 5.28 | 7.53 | 1.115 | 8.04 | 93.3 | 9.30 | 3.15 | 31.80 | 125 | Light Brown |
| 1628 | 5.55 | 7.54 | 1.117 | 7.93 | 93.1 | 9.34 | 3.05 | 25.20 | 125 | Light Brown |
| 1633 | 5.73 | 7.54 | 1.118 | 7.83 | 93.7 | 9.37 | 2.88 | 24.00 | 125 | Light Brown |
| 1638 | 5.94 | 7.53 | 1.115 | 7.59 | 93.4 | 9.39 | 2.83 | 22.40 | 125 | Light Brown |
| 1650 | 10.94 | --- | --- | --- | --- | 13.96 | --- | --- | --- | Well Dry |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW11-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/16/2010 |
| Time: | 920 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-12 | Date: | Purged 12/17/2010; Sampled 12/18/2010 | | |
| Weather Conditions: | Cloudy, Cold, 23$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Jessica Hoffman | | | | |

## Well Stabilization Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Well Datum: | TOC | | Purge Method: | Low Flow | | Time Purging begins ($T_o$): | 1045 |
| Well Diameter & Type: | 2" Schedule 40 PVC | | Equipment: | Mini-Monsoon | | Water Level at time $T_o$: | 11.27 |
| Well Depth: | 41.97 | (ft) | | YSI Meter | | Time Purging ends ($T_1$): | 1125 |
| Static Water Level: | 11.27 | (ft) | | Hach Turbidity Meter | | Water Level at time $T_1$: | 41.00 |
| Water Column: | 30.70 | (ft) | | Water Level Meter | | | |
| System Volume: | 0.26 | (gal) | | | | | |
| Pump intake: | 40.00 | (ft bgs) | PID Reading: | N/A | | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1050 | 0.40 | 6.26 | 1.724 | 12.73 | 156.1 | 12.62 | 2.60 | 999 | --- | Very Cloudy |
| 1055 | 0.60 | 6.29 | 1.723 | 12.20 | 151.7 | 13.68 | 2.33 | 999.00 | --- | Light Brown |
| 1100 | 1.00 | 6.29 | 1.705 | 13.38 | 144.9 | 15.47 | 1.61 | 999 | --- | Light Brown |
| 1105 | 1.60 | 6.27 | 1.685 | 14.13 | 139.9 | 18.27 | 1.48 | 647 | --- | Cloudy |
| 1110 | 2.25 | 6.26 | 1.660 | 13.72 | 137.2 | 20.67 | 1.45 | 191 | --- | Cloudy |
| 1115 | 4.50 | 6.29 | 1.632 | 15.19 | 133.1 | 32.74 | 2.41 | 145 | --- | Cloudy |
| 1125 | 5.00 | --- | --- | --- | --- | --- | --- | ---- | --- | Well Dry |
| | | | | | | | | | | |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW12-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/18/2010 |
| Time: | 1005 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-13 | Date: | 12/6/2010 | | |
| Weather Conditions: | Cold, Cloudy, 20$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Shawn Boyles | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1257 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini-Monsoon | Water Level at time $T_o$: | 4.44 |
| Well Depth: | 18.39 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1330 |
| Static Water Level: | 4.44 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 5.26 |
| Water Column: | 13.95 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 17.25 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1302 | 0.53 | 7.7 | 0.280 | 11.00 | 49.3 | 5.11 | 7.30 | 9.2 | 100 | Clear |
| 1307 | 0.79 | 7.5 | 0.280 | 10.60 | 49.6 | 5.18 | 6.47 | 5.80 | 100 | Clear |
| 1312 | 1.06 | 7.5 | 0.280 | 10.10 | 49.5 | 5.22 | 5.97 | 3.2 | 100 | Clear |
| 1317 | 1.32 | 7.5 | 0.280 | 11.30 | 50.0 | 5.24 | 6.17 | 5.8 | 100 | Clear |
| 1322 | 1.59 | 7.5 | 0.290 | 11.00 | 49.8 | 5.25 | 5.89 | 5.8 | 100 | Clear |
| 1327 | 1.85 | 7.5 | 0.290 | 11.30 | 50.1 | 5.26 | 6.03 | 5.2 | 100 | Clear |
| | | | | | | | | | | |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW13-GW-1 |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/6/2010 |
| Time: | 1330 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks : | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-14 | Date: | Purged 12/17/2010; Sampled 12/18/2010 | | |
| Weather Conditions: | Cloudy, Cold, 23$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Jessica Hoffman | | | | |

## Well Stabilization Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Well Datum: | TOC | | Purge Method: | Low Flow | | Time Purging begins ($T_o$): | 925 |
| Well Diameter & Type: | 2' Schedule 40 PVC | | Equipment: | Mini-Monsoon | | Water Level at time $T_o$: | 5.34 |
| Well Depth: | 37.60 | (ft) | | Horiba Meter | | Time Purging ends ($T_1$): | 1012 |
| Static Water Level: | 5.34 | (ft) | | Hach Turbidity Meter | | Water Level at time $T_1$: | 37.55 |
| Water Column: | 32.26 | (ft) | | Water Level Meter | | | |
| System Volume: | 0.26 | (gal) | | | | | |
| Pump intake: | 35.00 | (ft bgs) | PID Reading: | N/A | | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 930 | 0.25 | 7.66 | 1.028 | 7.43 | --- | 5.46 | --- | 53.10 | --- | Clear |
| 935 | 0.40 | 7.46 | 0.977 | 8.84 | --- | 6.08 | --- | 184.00 | --- | Cloudy |
| 940 | 0.50 | 7.35 | 0.984 | 9.92 | --- | 6.97 | --- | 999.00 | --- | Light Brown |
| 945 | 0.75 | 7.36 | 0.983 | 10.40 | --- | 8.11 | --- | 999.00 | --- | Light Brown |
| 950 | 1.10 | 7.38 | 0.981 | 12.69 | --- | 10.02 | --- | 438.00 | --- | Cloudy |
| 955 | 2.50 | 7.45 | 0.980 | 14.46 | --- | 16.51 | --- | 157.00 | --- | Cloudy |
| 1000 | 4.50 | 7.46 | 0.980 | 14.04 | --- | 26.25 | --- | 42.60 | --- | Clear |
| 1005 | 6.00 | 7.38 | 0.974 | 14.25 | --- | 30.30 | --- | 32.70 | --- | Clear |
| 1010 | 7.75 | 7.31 | 0.964 | 14.11 | --- | 33.98 | --- | --- | --- | --- |
| 1012 | 8.00 | --- | ---- | --- | --- | 37.55 | --- | --- | --- | Well Dry |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW14-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/18/2010 |
| Time: | 935 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. ORP and DO measurements were not recorded because field team used a Horiba U-10. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-15 | Date: | Purged 12/17/2010; Sampled 12/18/2010 | | |
| Weather Conditions: | Cloudy, Cold, 23$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Jessica Hoffman | | | | |

## Well Stabilization Data

| | | | | | | |
|---|---|---|---|---|---|---|
| Well Datum: | TOC | | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1206 |
| Well Diameter & Type: | 2" Schedule 40 PVC | | Equipment: | Mini-Monsoon | Water Level at time $T_o$: | 8.48 |
| Well Depth: | 32.88 | (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1214 |
| Static Water Level: | 8.48 | (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 32.00 |
| Water Column: | 24.40 | (ft) | | Water Level Meter | | |
| System Volume: | 0.26 | (gal) | | | | |
| Pump intake: | 32.00 | (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1208 | 1.50 | 6.95 | 1.104 | 15.30 | 104.2 | 15.20 | 2.75 | 645 | ---- | Cloudy |
| 1210 | 2.25 | 6.94 | 1.107 | 14.75 | 104.7 | 20.00 | 2.65 | 185.00 | ---- | Cloudy |
| 1213 | 5.00 | 6.81 | 1.109 | 14.21 | 87.1 | 25.00 | 2.30 | 268 | ---- | Cloudy |
| 1214 | --- | ---- | --- | --- | --- | 32.00 | --- | --- | ---- | Well Dry |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW15-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/18/2010 |
| Time: | 1025 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-16 | Date: | Purged 12/17/2010; Sampled 12/18/2010 | | |
| Weather Conditions: | Cloudy, Cold, 23$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Jessica Hoffman | | | | |

## Well Stabilization Data

| | | | | | | |
|---|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1333 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini-Monsoon | Water Level at time $T_o$: | 6.39 |
| Well Depth: | 37.45 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1356 |
| Static Water Level: | 6.39 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 36.00 |
| Water Column: | 31.06 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 36.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1335 | 0.75 | 6.52 | 1.342 | 13.44 | 55.2 | 10.00 | 4.69 | 999 | ---- | Brown |
| 1338 | 1.75 | 6.51 | 1.329 | 13.79 | 52.8 | 15.00 | 5.31 | 999 | ---- | Light Brown |
| 1341 | 2.75 | 6.47 | 1.328 | 13.74 | 53.7 | 20.00 | 5.05 | 999 | ---- | Light Brown |
| 1344 | 4.00 | 6.42 | 1.326 | 13.33 | 54.9 | 25.00 | 4.69 | 999 | ---- | Light Brown |
| 1347 | 6.00 | 6.37 | 1.319 | 13.75 | 41.2 | 30.00 | 3.90 | 332 | ---- | Cloudy |
| 1353 | 8.00 | 6.29 | 1.317 | 14.14 | 28.8 | 35.00 | 3.05 | 999 | ---- | Cloudy |
| 1356 | 10.00 | --- | --- | --- | --- | 36.00 | --- | --- | ---- | Well Dry |
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## Sample Information

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|---|---|
| Sample ID: | EZ-MW16-GW-1, EZ-MW16-GWMS, EZMW16-GWMSD |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/18/2010 |
| Time: | 1040 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-17 | Date: | 12/17/2010 | | |
| Weather Conditions: | Cloudy, Cold, 23$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Jessica Hoffman | | | | |

## Well Stabilization Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Well Datum: | TOC | | Purge Method: | Low Flow | | Time Purging begins ($T_o$): | 1433 |
| Well Diameter & Type: | 2" Schedule 40 PVC | | Equipment: | Mini-Monsoon | | Water Level at time $T_o$: | 7.24 |
| Well Depth: | 37.16 | (ft) | | YSI Meter | | Time Purging ends ($T_1$): | 1520 |
| Static Water Level: | 7.24 | (ft) | | Hach Turbidity Meter | | Water Level at time $T_1$: | 25.79 |
| Water Column: | 29.92 | (ft) | | Water Level Meter | | | |
| System Volume: | 0.26 | (gal) | | | | | |
| Pump intake: | 36.00 | (ft bgs) | PID Reading: | N/A | | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1434 | 0.26 | 6.36 | 1.493 | 13.99 | 3.0 | 10.00 | 8.94 | 999.00 | ---- | Cloudy |
| 1438 | 0.53 | 6.28 | 1.515 | 14.57 | -10.2 | 15.00 | 7.73 | 249.00 | ---- | Cloudy |
| 1442 | 1.85 | 6.38 | 1.549 | 14.45 | -31.3 | 20.00 | 5.74 | 224.00 | ---- | Cloudy |
| 1447 | 3.30 | 6.34 | 1.556 | 14.51 | -32.9 | 25.00 | 4.35 | 146.00 | ---- | Cloudy |
| 1453 | 4.23 | 6.32 | 1.556 | 14.59 | -37.2 | 27.55 | 0.28 | 999.00 | ---- | Cloudy |
| 1458 | 4.49 | 6.24 | 1.601 | 14.39 | -39.5 | 27.04 | 0.21 | 259.00 | ---- | Cloudy |
| 1503 | 4.76 | 6.22 | 1.606 | 14.40 | -38.6 | 26.11 | 0.21 | 138.00 | ---- | Cloudy |
| 1508 | 5.02 | 6.21 | 1.609 | 14.32 | -41.3 | 26.10 | 0.20 | 74.70 | ---- | Cloudy |
| 1513 | 5.28 | 6.10 | 1.605 | 14.24 | -40.4 | 25.81 | 0.20 | 72.20 | ---- | Cloudy |
| 1518 | 5.55 | 6.18 | 1.608 | 14.27 | -39.7 | 25.79 | 0.19 | 62.10 | ---- | Slightly Cloudy |
| | | | | | | | | | | |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW17-GW-1, EZ-MW17-GWMS, EZMW17-GWMSD |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/17/2010 |
| Time: | 1520 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | All Parameters are stable except turbidity, just above 50 NTUs. Sampling team calls Field Team Leader to discuss turbidity numbers; Field Team Leader gives okay to collect groundwater sample from P-05 under the condition that all other parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-18 | Date: | Purged 12/17/2010; Sampled 12/18/2010 | | |
| Weather Conditions: | Cloudy, Cold, 23$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Jessica Hoffman | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1554 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini-Monsoon | Water Level at time $T_o$: | 19.48 |
| Well Depth: | 67.20 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1615 |
| Static Water Level: | 19.48 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 66.00 |
| Water Column: | 47.72 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 66.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1556 | 1.00 | 7.13 | 0.820 | 13.37 | 8.0 | 25.00 | 9.38 | 999 | ---- | Dark Brown |
| 1557 | 1.75 | 7.11 | 0.818 | 13.32 | -2.1 | 30.00 | 8.18 | 999 | ---- | Dark Brown |
| 1558 | 2.50 | 7.25 | 0.812 | 13.28 | -15.8 | 35.00 | 7.46 | 999 | ---- | Dark Brown |
| 1559 | 3.00 | 7.35 | 0.807 | 13.25 | -21.8 | 40.00 | 7.23 | 999 | ---- | Dark Brown |
| 1603 | 4.00 | 8.88 | 0.743 | 13.43 | -55.4 | 45.00 | 6.98 | 332 | ---- | Dark Brown |
| 1605 | 5.00 | 10.26 | 0.850 | 13.48 | -62.1 | 50.00 | 6.77 | 999 | ---- | Light Brown |
| 1608 | 6.00 | 10.92 | 1.096 | 13.63 | -56.3 | 55.00 | 6.47 | 999 | ---- | Cloudy |
| 1611 | 7.00 | 10.87 | 1.048 | 13.73 | -50.4 | 60.00 | 6.13 | 685 | ---- | Cloudy |
| 1613 | 8.00 | 10.75 | 0.994 | 13.71 | -47.8 | 65.00 | 5.96 | 652 | ---- | Cloudy |
| 1615 | 8.50 | --- | --- | --- | --- | 66.00 | --- | --- | ---- | Well Dry |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW18-GW-01 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/18/2010 |
| Time: | 1110 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-19 | Date: | 12/14/2010 | | |
| Weather Conditions: | Cold, Cloudy, 15$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Shawn Boyles | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1247 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini-Monsoon | Water Level at time $T_o$: | 3.71 |
| Well Depth: | 18.02 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1352 |
| Static Water Level: | 3.71 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 5.31 |
| Water Column: | 14.31 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 17.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1252 | 0.26 | 7.58 | 0.865 | 11.29 | 214.7 | 4.58 | 1.75 | 41.90 | 200 | Clear |
| 1257 | 0.53 | 7.61 | 0.877 | 11.42 | 211.3 | 4.88 | 1.96 | 23.00 | 200 | Clear |
| 1302 | 0.79 | 7.60 | 0.881 | 10.99 | 210.9 | 5.00 | 2.07 | 18.90 | 200 | Clear |
| 1307 | 1.06 | 7.57 | 0.879 | 10.98 | 210.5 | 5.10 | 2.15 | 13.70 | 200 | Clear |
| 1312 | 1.32 | 7.52 | 0.880 | 10.74 | 211.6 | 5.15 | 2.14 | 20.30 | 200 | Clear |
| 1317 | 1.59 | 7.52 | 0.880 | 10.56 | 210.0 | 5.19 | 2.09 | 17.40 | 200 | Clear |
| 1322 | 1.85 | 7.50 | 0.877 | 10.34 | 209.2 | 5.21 | 1.98 | 13.60 | 200 | Clear |
| 1327 | 2.11 | 7.54 | 0.875 | 10.54 | 205.9 | 5.22 | 1.91 | 11.10 | 200 | Clear |
| 1332 | 2.38 | 7.54 | 0.877 | 10.49 | 204.4 | 5.22 | 1.77 | 8.62 | 200 | Clear |
| 1337 | 2.64 | 7.54 | 0.875 | 10.53 | 203.9 | 5.24 | 1.72 | 7.63 | 200 | Clear |
| 1342 | 2.91 | 7.53 | 0.875 | 10.44 | 203.7 | 5.25 | 1.68 | 6.95 | 200 | Clear |
| 1347 | 3.17 | 7.53 | 0.874 | 10.59 | 202.4 | 5.26 | 1.61 | 6.46 | 200 | Clear |
| | | | | | | | | | | |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW19-GW-1 |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/14/2010 |
| Time: | 1352 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks : | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-20 | Date: | 12/6/2010 | | |
| Weather Conditions: | Cold, Cloudy, 20$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Shawn Boyles | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 930 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini-Monsoon | Water Level at time $T_o$: | 2.18 |
| Well Depth: | 35.08 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1034 |
| Static Water Level: | 2.18 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 4.51 |
| Water Column: | 32.90 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 31.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 935 | 0.01 | 7.1 | 1.150 | 7.80 | 226.3 | 3.55 | 7.30 | 7.55 | 100 | Clear |
| 940 | 0.26 | 7.1 | 0.520 | 9.00 | 75.8 | 3.65 | 5.03 | 7.57 | 100 | Clear |
| 945 | 0.53 | 7.1 | 0.970 | 10.30 | 65.0 | 3.55 | 6.41 | 10.00 | 100 | Clear |
| 950 | 0.66 | 7.1 | 0.960 | 10.30 | -16.0 | 4.05 | 6.49 | 11.10 | 100 | Clear |
| 955 | 0.79 | 7.1 | 0.960 | 10.00 | -21.8 | 4.15 | 6.86 | 7.47 | 100 | Clear |
| 1000 | 1.06 | 7.2 | 0.950 | 10.80 | -25.2 | 4.20 | 6.32 | 7.28 | 100 | Clear |
| 1005 | 1.32 | 7.3 | 0.950 | 11.20 | -34.9 | 4.28 | 8.40 | 7.38 | 100 | Clear |
| 1010 | 1.59 | 7.4 | 0.950 | 10.50 | -37.1 | 4.30 | 5.55 | 3.88 | 100 | Clear |
| 1015 | 1.85 | 7.4 | 0.930 | 10.30 | -35.5 | 4.35 | 6.78 | 3.48 | 100 | Clear |
| 1020 | 2.11 | 7.4 | 0.940 | 10.40 | -37.6 | 4.38 | 6.27 | 2.58 | 100 | Clear |
| 1025 | 2.38 | 7.4 | 0.950 | 11.20 | -37.5 | 4.42 | 6.36 | 2.39 | 100 | Clear |
| 1030 | 2.64 | 7.3 | 0.950 | 10.80 | -36.7 | 4.46 | 6.35 | 2.33 | 100 | Clear |
| | | | | | | | | | | |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW20-GW-1 |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/6/2010 |
| Time: | 1034 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks : | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | MW-21 | Date: | 12/6/2010 | | |
| Weather Conditions: | Cold, Cloudy, 20$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Shawn Boyles | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1049 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini-Monsoon | Water Level at time $T_o$: | 2.51 |
| Well Depth: | 20.21 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1130 |
| Static Water Level: | 2.51 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 2.83 |
| Water Column: | 17.70 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 19.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1054 | 0.26 | 7.3 | 0.880 | 10.90 | -37.6 | 2.80 | 5.12 | 108.00 | 100 | Clear |
| 1059 | 0.53 | 7.3 | 0.880 | 11.60 | -39.9 | 2.80 | 5.30 | 113.00 | 100 | Clear |
| 1104 | 0.79 | 7.2 | 0.950 | 11.60 | -39.3 | 2.83 | 4.58 | 103.00 | 100 | Clear |
| 1109 | 1.05 | 7.2 | 0.970 | 11.70 | -40.4 | 2.83 | 4.78 | 48.00 | 100 | Clear |
| 1114 | 1.32 | 7.2 | 0.970 | 11.50 | -42.5 | 2.82 | 4.73 | 35.00 | 100 | Clear |
| 1119 | 1.59 | 7.2 | 0.980 | 11.30 | -46.1 | 2.83 | 4.55 | 31.00 | 100 | Clear |
| 1124 | 1.85 | 7.2 | 0.970 | 11.10 | -47.2 | 2.83 | 4.63 | 21.00 | 100 | Clear |
| | | | | | | | | | | |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-MW21-GW-1 |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/6/2010 |
| Time: | 1130 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks : | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | P-01 | Date: | 12/5/2010 | | |
| Weather Conditions: | Cloudy, Cold, 25º | | | | |
| Well Condition: | Good Condition | | | | |
| Sample Team: | Laura Crause, Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_0$): | 1001 |
| Well Diameter & Type: | 1" Schedule 40 PVC | Equipment: | Peristaltic Pump | Water Level at time $T_0$: | 6.15 |
| Well Depth: | 16.55 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1049 |
| Static Water Level: | 6.15 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 6.70 |
| Water Column: | 10.40 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 11.50 (ft) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1004 | 0.00 | 6.93 | 0.983 | 10.99 | 214.3 | 6.80 | 8.30 | 51.40 | 250 | Clear |
| 1009 | 0.26 | 6.90 | 0.990 | 12.55 | 217.7 | 6.95 | 1.41 | 31.30 | 250 | Clear |
| 1014 | 0.46 | 6.88 | 0.998 | 12.31 | 191.6 | 6.75 | 1.14 | 25.40 | 150 | Clear |
| 1019 | 0.66 | 6.86 | 0.996 | 12.05 | 186.9 | 6.73 | 0.71 | 21.10 | 150 | Clear |
| 1024 | 0.86 | 6.86 | 0.993 | 11.98 | 178.2 | 6.75 | 0.54 | 12.80 | 150 | Clear |
| 1029 | 1.06 | 6.86 | 0.993 | 11.99 | 172.8 | 6.75 | 0.74 | 10.70 | 150 | Clear |
| 1034 | 1.25 | 6.86 | 0.993 | 11.90 | 170.8 | 6.75 | 0.64 | 8.61 | 150 | Clear |
| 1039 | 1.45 | 6.87 | 0.991 | 12.03 | 171.4 | 6.70 | 0.47 | 5.98 | 150 | Clear |
| 1044 | 1.65 | 6.87 | 0.995 | 12.00 | 171.9 | 6.70 | 0.39 | 5.07 | 150 | Clear |
| 1049 | 1.85 | 6.86 | 0.994 | 12.01 | 171.7 | 6.70 | 0.42 | 4.04 | 150 | Clear |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-P01-GW-1 |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/5/2010 |
| Time: | 1055 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks : | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | P-02 | Date: | 12/5/2010 | | |
| Weather Conditions: | Cloudy, Cold, 25º | | | | |
| Well Condition: | Good Condition | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1248 |
| Well Diameter & Type: | 1" Schedule 40 PVC | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 6.35 |
| Well Depth: | 16.02 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1337 |
| Static Water Level: | 6.35 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 6.70 |
| Water Column: | 9.67 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 11.50 (ft) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1252 | 0.00 | 7.17 | 1.638 | 8.80 | 157.0 | 6.65 | 12.04 | 10.10 | 150 | Clear |
| 1257 | 0.20 | 7.09 | 1.657 | 10.02 | 155.0 | 6.70 | 7.91 | 20.80 | 150 | Clear |
| 1302 | 0.39 | 7.05 | 1.671 | 11.53 | 154.7 | 6.72 | 3.76 | 19.90 | 150 | Clear |
| 1307 | 0.59 | 7.03 | 1.680 | 11.93 | 155.4 | 6.70 | 3.89 | 19.50 | 150 | Clear |
| 1312 | 0.79 | 7.01 | 1.682 | 11.96 | 156.6 | 6.72 | 2.94 | 14.60 | 150 | Clear |
| 1317 | 0.99 | 7.01 | 1.684 | 11.80 | 157.7 | 6.72 | 2.16 | 10.60 | 150 | Clear |
| 1322 | 1.19 | 7.00 | 1.683 | 11.80 | 158.2 | 6.72 | 1.89 | 9.80 | 150 | Clear |
| 1327 | 1.39 | 7.00 | 1.685 | 11.93 | 157.7 | 6.70 | 2.05 | 6.45 | 150 | Clear |
| 1332 | 1.59 | 7.00 | 1.687 | 11.96 | 157.0 | 6.70 | 1.98 | 5.44 | 150 | Clear |
| 1337 | 1.78 | 7.00 | 1.688 | 11.94 | 157.3 | 6.70 | 1.92 | 10.38 | 150 | Clear |
| | | | | | | | | | | |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-P02-GW-01 |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/5/2010 |
| Time: | 1340 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks : | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | P-03 | Date: | Purged 12/15/2010; Sampled 12/16/2010 | | |
| Weather Conditions: | Cloudy, Freezing Drizzle, 31° | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Well Datum: | TOC | | Purge Method: | Low Flow | | Time Purging begins ($T_0$): | 1223 |
| Well Diameter & Type: | 1" Schedule 40 PVC | | Equipment: | Peristaltic Pump | | Water Level at time $T_0$: | 3.65 |
| Well Depth: | 18.10 | (ft) | | Horiba Meter | | Time Purging ends ($T_1$): | 1230 |
| Static Water Level: | 3.65 | (ft) | | Hach Turbidity Meter | | Water Level at time $T_1$: | 18.10 |
| Water Column: | 14.45 | (ft) | | Water Level Meter | | | |
| System Volume: | 0.26 | (gal) | | | | | |
| Pump intake: | 18.00 | (ft bgs) | PID Reading: | N/A | | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1226 | 0.50 | 6.67 | 1.730 | 12.50 | --- | 10.21 | --- | 31.60 | --- | Clear |
| 1228 | 0.75 | 6.58 | 1.670 | 12.00 | --- | 12.94 | --- | 33.00 | --- | Clear |
| 1229 | 1.00 | 6.65 | 1.790 | 13.20 | --- | 17.05 | --- | 999.00 | --- | Brown |
| 1230 | 1.10 | --- | --- | --- | --- | --- | --- | --- | --- | Well Dry |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-P03-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/16/2010 |
| Time: | 1020 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. ORP and DO measurements were not recorded because field team used a Horiba U-10. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | P-04 | Date: | Purged 12/15/2010; Sampled 12/16/2010 | | |
| Weather Conditions: | Cloudy, Freezing Drizzle, 31$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Well Datum: | TOC | | Purge Method: | Low Flow | | Time Purging begins ($T_0$): | 1255 |
| Well Diameter & Type: | 1" Schedule 40 PVC | | Equipment: | Peristaltic Pump | | Water Level at time $T_0$: | 8.30 |
| Well Depth: | 16.18 | (ft) | | Horiba Meter | | Time Purging ends ($T_1$): | 1258 |
| Static Water Level: | 8.30 | (ft) | | Hach Turbidity Meter | | Water Level at time $T_1$: | 16.18 |
| Water Column: | 7.88 | (ft) | | Water Level Meter | | | |
| System Volume: | 0.26 | (gal) | | | | | |
| Pump intake: | 16.00 | (ft bgs) | PID Reading: | N/A | | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1256 | 0.25 | 6.95 | 0.008 | 11.50 | --- | 14.44 | --- | 119 | --- | Cloudy |
| 1258 | 0.50 | --- | --- | --- | --- | 16.18 | --- | --- | --- | Well Dry |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-P04-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/16/2010 |
| Time: | 915 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. ORP and DO measurements were not recorded because field team used a Horiba U-10. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | P-05 | Date: | 12/6/2010 | | |
| Weather Conditions: | Cold, Sunny, Windy, 16º | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 900 |
| Well Diameter & Type: | 1" Schedule 40 PVC | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 8.10 |
| Well Depth: | 17.07 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 955 |
| Static Water Level: | 7.20 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 7.98 |
| Water Column: | 9.87 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 12.50 (ft) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 900 | 0.00 | 7.36 | 0.990 | 8.83 | 231.6 | 8.10 | 7.90 | 16.00 | 150 | Clear |
| 905 | 0.20 | 7.40 | 0.978 | 10.31 | 230.5 | 7.95 | 5.31 | 141.00 | 150 | Cloudy |
| 910 | 0.39 | 7.47 | 1.011 | 10.22 | 225.6 | 7.93 | 1.38 | 333.00 | 150 | Cloudy |
| 915 | 0.59 | 7.46 | 1.013 | 10.25 | 224.8 | 7.95 | 1.21 | 236.00 | 150 | Cloudy |
| 920 | 0.79 | 7.45 | 1.012 | 10.30 | 224.2 | 7.95 | 1.15 | 197.00 | 150 | Cloudy |
| 925 | 0.99 | 7.44 | 1.019 | 10.39 | 222.8 | 7.98 | 1.06 | 123.00 | 150 | Cloudy |
| 930 | 1.19 | 7.45 | 1.018 | 10.53 | 221.1 | 8.00 | 0.99 | 91.60 | 150 | Cloudy |
| 935 | 1.39 | 7.45 | 1.014 | 10.74 | 219.7 | 8.05 | 0.97 | 74.30 | 150 | Cloudy |
| 940 | 1.59 | 7.45 | 1.014 | 10.86 | 218.1 | 8.05 | 0.98 | 62.40 | 150 | Cloudy |
| 945 | 1.75 | 7.44 | 1.014 | 10.70 | 216.9 | 7.93 | 1.15 | 54.60 | 125 | Clear |
| 950 | 1.92 | 7.43 | 1.014 | 10.65 | 215.4 | 7.95 | 1.14 | 56.20 | 125 | Clear |
| 955 | 2.08 | 7.43 | 1.014 | 10.71 | 213.5 | 7.98 | 1.11 | 52.50 | 125 | Clear |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-P05-GW-1 |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/6/2010 |
| Time: | 1000 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | All Parameters are stable except turbidity, just above 50 NTUs. Sampling team calls Field Team Leader to discuss turbidity numbers; Field Team Leader gives okay to collect groundwater sample from P-05 under the condition that all other parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | P-06 | Date: | Purged 12/15/2010; Sampled 12/16/2010 | | |
| Weather Conditions: | Cloudy, Freezing Drizzle, 31° | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_0$): | 1322 |
| Well Diameter & Type: | 1" Schedule 40 PVC | Equipment: | Peristaltic Pump | Water Level at time $T_0$: | 8.30 |
| Well Depth: | 19.24 (ft) | | Horiba Meter | Time Purging ends ($T_1$): | 1327 |
| Static Water Level: | 8.30 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 19.24 |
| Water Column: | 10.94 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 19.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1324 | 0.25 | 6.27 | 1.580 | 12.70 | --- | 10.54 | --- | 5.66 | --- | Clear |
| 1325 | 0.50 | 6.15 | 1.570 | 12.50 | --- | 12.41 | --- | 9.75 | --- | Clear |
| 1326 | 0.75 | 6.01 | 1.570 | 12.80 | --- | 17.90 | --- | 25.40 | --- | Clear |
| 1327 | 0.80 | --- | --- | --- | --- | 19.24 | --- | --- | --- | Well Dry |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-P06-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/16/2010 |
| Time: | 900 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. ORP and DO measurements were not recorded because field team used a Horiba U-10. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | G-101 | Date: | Pumped 12/15/2010; Sampled 12/16/2010 | | |
| Weather Conditions: | Cloudy, Freezing Drizzle, 31° | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | | |
|---|---|---|---|---|---|---|
| Well Datum: | TOC | | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 918 |
| Well Diameter & Type: | 2' Schedule 40 PVC | | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 9.68 |
| Well Depth: | 17.98 | (ft) | | Horiba Meter | Time Purging ends ($T_1$): | 951 |
| Static Water Level: | 9.68 | (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 17.98 |
| Water Column: | 8.30 | (ft) | | Water Level Meter | | |
| System Volume: | 0.26 | (gal) | | | | |
| Pump intake: | 17.80 | (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 918 | 0.50 | 6.44 | 0.712 | 12.8 | --- | 10.32 | --- | 23.30 | --- | Clear |
| 922 | 1.00 | 6.90 | 0.678 | 13.00 | --- | 11.04 | --- | 24.30 | --- | Clear |
| 926 | 1.50 | 6.92 | 0.667 | 12.60 | --- | 11.62 | --- | 37.00 | --- | Clear |
| 929 | 2.00 | 6.87 | 0.683 | 12.90 | --- | 12.29 | --- | 125.00 | --- | Cloudy |
| 932 | 2.50 | 6.89 | 0.687 | 13.00 | --- | 12.90 | --- | 117.00 | --- | Cloudy |
| 935 | 3.00 | 6.90 | 0.694 | 12.90 | --- | 13.30 | --- | 119.00 | --- | Cloudy |
| 938 | 3.50 | 6.97 | 0.660 | 13.30 | --- | 13.94 | --- | 145.00 | --- | Cloudy |
| 940 | 4.00 | 7.07 | 0.642 | 13.30 | --- | 14.59 | --- | 249.00 | --- | Cloudy |
| 942 | 4.50 | 7.03 | 0.639 | 13.30 | --- | 15.12 | --- | 453.00 | --- | Light Brown |
| 945 | 5.00 | 7.05 | 0.653 | 13.40 | --- | 15.83 | --- | 870.00 | --- | Light Brown |
| 947 | 5.50 | 7.01 | 0.672 | 13.00 | --- | 16.36 | --- | 999.00 | --- | Brown |
| 949 | 6.00 | 6.98 | 0.684 | 13.50 | --- | 17.40 | --- | 999.00 | --- | Brown |
| 951 | 6.25 | --- | --- | --- | --- | 17.98 | --- | --- | --- | Well Dry |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-G101-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/16/2010 |
| Time: | 835 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP due extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once the water level has returned to static level. ORP and DO measurements were not recorded because field team used a Horiba U-10. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | G-102 | Date: | 12/6/2010 | | |
| Weather Conditions: | Sunny, Cold, 28$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1257 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 5.05 |
| Well Depth: | 17.67 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1415 |
| Static Water Level: | 4.50 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 7.94 |
| Water Column: | 13.17 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 12.50 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1257 | 0.00 | 7.14 | 0.927 | 9.15 | 218.4 | 5.05 | 8.06 | 8.01 | 140 | Clear |
| 1302 | 0.18 | 7.12 | 0.921 | 9.67 | 218.6 | 5.65 | 8.03 | 5.79 | 120 | Clear |
| 1307 | 0.34 | 7.10 | 0.924 | 9.70 | 218.6 | 6.00 | 7.64 | 4.36 | 120 | Clear |
| 1312 | 0.50 | 7.07 | 0.925 | 9.84 | 217.9 | 6.45 | 7.38 | 4.22 | 120 | Clear |
| 1317 | 0.66 | 7.06 | 0.924 | 9.65 | 217.2 | 6.80 | 7.18 | 3.30 | 120 | Clear |
| 1322 | 0.82 | 7.04 | 0.920 | 9.38 | 216.0 | 7.05 | 7.10 | 2.68 | 120 | Clear |
| 1327 | 0.98 | 7.02 | 0.916 | 9.65 | 214.8 | 7.30 | 6.92 | 1.87 | 120 | Clear |
| 1405 | 1.59 | 7.03 | 0.885 | 9.24 | 190.5 | 7.94 | 6.82 | 9.81 | 100 | Clear |
| 1410 | 1.72 | 7.00 | 0.882 | 9.38 | 190.5 | 7.93 | 6.40 | 5.14 | 100 | Clear |
| 1415 | 1.85 | 6.95 | 0.878 | 9.58 | 192.6 | 7.94 | 6.11 | 3.75 | 100 | Clear |
| | | | | | | | | | | |
| | | | | | | | | | | |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-G102-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/6/2010 |
| Time: | 1235 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | G-103 | Date: | 12/14/2010 | | |
| Weather Conditions: | Clear, Sunny, 18$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Well Datum: | TOC | | Purge Method: | Low Flow | | Time Purging begins ($T_o$): | 1250 |
| Well Diameter & Type: | 2" Schedule 40 PVC | | Equipment: | Peristaltic Pump | | Water Level at time $T_o$: | 6.40 |
| Well Depth: | 17.40 | (ft) | | YSI Meter | | Time Purging ends ($T_1$): | 1315 |
| Static Water Level: | 6.20 | (ft) | | Hach Turbidity Meter | | Water Level at time $T_1$: | 6.45 |
| Water Column: | 11.20 | (ft) | | Water Level Meter | | | |
| System Volume: | 0.26 | (gal) | | | | | |
| Pump intake: | 12.40 | (ft bgs) | PID Reading: | N/A | | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1250 | 0.00 | 7.01 | 1.480 | 11.74 | 169.3 | 6.40 | 5.42 | 9.33 | 150 | Clear |
| 1255 | 0.20 | 7.01 | 1.489 | 11.31 | 165.6 | 6.45 | 4.52 | 10.20 | 150 | Clear |
| 1300 | 0.40 | 6.98 | 1.490 | 11.24 | 163.1 | 6.45 | 3.93 | 8.34 | 150 | Clear |
| 1305 | 0.59 | 6.97 | 1.490 | 10.94 | 161.0 | 6.45 | 3.70 | 5.86 | 150 | Clear |
| 1310 | 0.79 | 6.96 | 1.490 | 10.80 | 159.4 | 6.45 | 3.48 | 4.77 | 150 | Clear |
| 1315 | 0.99 | 6.98 | 1.492 | 10.71 | 156.9 | 6.45 | 3.21 | --- | 150 | Clear |
| | | | | | | | | | | |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-G103-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/14/2010 |
| Time: | 1320 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | All Parameters are stable. Field team forgot to take last turbidity measurement. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | G-104 | Date: | 12/15/2010 | | |
| Weather Conditions: | Cloudy, Freezing Drizzle, 31° | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Shawn Boyles | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_0$): | 915 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini Monsoon | Water Level at time $T_0$: | 9.12 |
| Well Depth: | 17.21 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1005 |
| Static Water Level: | 9.12 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 9.27 |
| Water Column: | 8.09 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 16.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 920 | 0.26 | 7.08 | 1.25 | 13.98 | 211.0 | 9.20 | 2.12 | 9.87 | 150 | Clear |
| 925 | 0.53 | 7.04 | 1.27 | 14.51 | 163.1 | 9.28 | 1.25 | 7.52 | 150 | Clear |
| 930 | 0.80 | 7.03 | 1.27 | 14.57 | 148.3 | 9.28 | 1.13 | 5.64 | 150 | Clear |
| 935 | 1.06 | 7.02 | 1.27 | 14.57 | 125.4 | 9.28 | 1.16 | 5.44 | 150 | Clear |
| 940 | 1.32 | 6.98 | 1.25 | 14.64 | 63.6 | 9.27 | 1.10 | 4.40 | 150 | Clear |
| 945 | 1.58 | 6.96 | 1.23 | 14.74 | 35.1 | 9.27 | 0.49 | 2.70 | 150 | Clear |
| 950 | 2.11 | 6.95 | 1.23 | 14.75 | 28.4 | 9.27 | 0.67 | 2.15 | 150 | Clear |
| 955 | 2.64 | 7.04 | 1.22 | 14.82 | 12.8 | 9.27 | 0.65 | 2.05 | 150 | Clear |
| 1000 | 3.17 | 6.97 | 1.23 | 14.61 | 11.2 | 9.27 | 0.68 | 2.68 | 150 | Clear |
| 1005 | 3.56 | 6.94 | 1.22 | 14.67 | 10.7 | 9.27 | 0.69 | 2.16 | 150 | Clear |
| | | | | | | | | | | |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-G104-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/15/2010 |
| Time: | 1010 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | G-105 | Date: | 12/14/2010 | | |
| Weather Conditions: | Sunny, Cold, 12$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | | |
|---|---|---|---|---|---|---|
| Well Datum: | TOC | | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 945 |
| Well Diameter & Type: | 2" Schedule 40 PVC | | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 4.75 |
| Well Depth: | 18.12 | (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1100 |
| Static Water Level: | 4.20 | (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 7.25 |
| Water Column: | 13.92 | (ft) | | Water Level Meter | | |
| System Volume: | 0.26 | (gal) | | | | |
| Pump intake: | 13.00 | (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 945 | 0.00 | 9.67 | 0.530 | 10.20 | 244.1 | 4.75 | 8.49 | 2.87 | 150 | Clear |
| 1015 | 1.18 | 9.42 | 0.537 | 10.60 | 214.9 | 7.00 | 8.84 | 1.78 | 110 | Clear |
| 1045 | 2.06 | 6.47 | 1.095 | 10.38 | 192.4 | 7.25 | 4.74 | 1.95 | 100 | Clear |
| 1050 | 2.19 | 6.71 | 1.133 | 9.81 | 188.4 | 7.25 | 4.32 | 0.93 | 100 | Clear |
| 1055 | 2.32 | 6.74 | 1.128 | 9.97 | 182.4 | 7.25 | 4.47 | 1.47 | 100 | Clear |
| 1100 | 2.45 | 6.80 | 1.137 | 9.66 | 174.4 | 7.25 | 4.40 | 0.68 | 100 | Clear |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-G105-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/14/2010 |
| Time: | 1105 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | All Parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | G-106 | Date: | 12/6/2010 | | |
| Weather Conditions: | Cold, Sunny, Windy, 20º | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1042 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 6.00 |
| Well Depth: | 18.00 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1112 |
| Static Water Level: | 5.55 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 6.95 |
| Water Column: | 12.45 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 12.00 (ft) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1042 | 0.00 | 7.03 | 1.219 | 10.82 | 205.3 | 6.00 | 8.15 | 24.80 | 150 | Clear |
| 1047 | 0.20 | 6.96 | 1.216 | 11.66 | 211.6 | 6.45 | 6.25 | 10.70 | 150 | Clear |
| 1052 | 0.35 | 6.93 | 1.222 | 11.42 | 216.4 | 6.60 | 5.94 | 5.02 | 120 | Clear |
| 1057 | 0.52 | 6.90 | 1.216 | 11.05 | 220.5 | 6.75 | 5.36 | 2.13 | 120 | Clear |
| 1102 | 0.67 | 6.88 | 1.210 | 11.42 | 234.6 | 6.85 | 5.05 | 1.44 | 120 | Clear |
| 1107 | 0.83 | 6.87 | 1.216 | 11.18 | 243.9 | 6.90 | 4.71 | 1.25 | 120 | Clear |
| 1112 | 0.99 | 6.86 | 1.213 | 10.90 | 251.2 | 6.95 | 4.51 | 6.02 | 120 | Clear |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-G106-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/6/2010 |
| Time: | 1025 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | All Parameters are stable. Water level is still falling, due to the fact that the well slowly recharges, Field Team Leader decides to sample well once parameters are stable. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | G-107 | Date: | Purged 12/15/2010; Sampled 12/16/2010 | | |
| Weather Conditions: | Cloudy, Freezing Drizzle, 31$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Jessica Hoffman, Jerry Kowalski | | | | |

## Well Stabilization Data

| | | | | | | |
|---|---|---|---|---|---|---|
| Well Datum: | TOC | | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 1353 |
| Well Diameter & Type: | 2" Schedule 40 PVC | | Equipment: | Peristaltic Pump | Water Level at time $T_o$: | 5.23 |
| Well Depth: | 17.97 | (ft) | | Horiba Meter | Time Purging ends ($T_1$): | 1408 |
| Static Water Level: | 5.23 | (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 17.97 |
| Water Column: | 12.74 | (ft) | | Water Level Meter | | |
| System Volume: | 0.26 | (gal) | | | | |
| Pump intake: | 17.80 | (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1355 | 0.50 | 6.07 | 2.900 | 12.10 | --- | 7.12 | --- | 999 | --- | Black |
| 1357 | 1.00 | 6.33 | 1.710 | 11.30 | --- | 8.91 | --- | 999 | --- | Black |
| 1359 | 1.50 | 6.36 | 1.640 | 11.10 | --- | 10.63 | --- | 999 | --- | Brown/Black |
| 1401 | 2.00 | 6.33 | 1.660 | 11.10 | --- | 12.69 | --- | 999 | --- | Brown |
| 1403 | 2.50 | 6.33 | 1.710 | 10.90 | --- | 14.35 | --- | 999 | --- | Brown |
| 1405 | 3.00 | 6.27 | 1.970 | 11.40 | --- | 16.47 | --- | 999 | --- | Brown |
| 1408 | 3.50 | --- | --- | --- | --- | --- | --- | 999 | --- | Well Dry |
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## Sample Information

| | |
|---|---|
| Sample ID: | EZ-G107-GW-1 |
| Analysis: | Total Site Specific Metals, Dissolved Site Specific Metals |
| Date: | 12/16/2010 |
| Time: | 940 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks: | Unable to sample well according to groundwater SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that well should be pumped dry and then sampled the next day once groundwater has returned to static level. ORP and DO measurements were not recorded because field team used a Horiba U-10. |

# Low Flow Ground Water Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Eagle Zinc OU2 Supplemental Remedial Investigation | Project Number: | 406469 | Page | 1 |
| Sample Source (Well No./Location): | G-109 | Date: | 12/14/2010 | | |
| Weather Conditions: | Cold, Cloudy, 20$^{o}$ | | | | |
| Well Condition: | Good | | | | |
| Sample Team: | Wayne Conway, Shawn Boyles | | | | |

## Well Stabilization Data

| | | | | | |
|---|---|---|---|---|---|
| Well Datum: | TOC | Purge Method: | Low Flow | Time Purging begins ($T_o$): | 959 |
| Well Diameter & Type: | 2" Schedule 40 PVC | Equipment: | Mini-Monsoon | Water Level at time $T_o$: | 4.18 |
| Well Depth: | 16.70 (ft) | | YSI Meter | Time Purging ends ($T_1$): | 1123 |
| Static Water Level: | 4.18 (ft) | | Hach Turbidity Meter | Water Level at time $T_1$: | 4.57 |
| Water Column: | 12.52 (ft) | | Water Level Meter | | |
| System Volume: | 0.26 (gal) | | | | |
| Pump intake: | 16.00 (ft bgs) | PID Reading: | N/A | | |

***Purge minimum of 3 system volumes before evaluating whether stabilization criteria is met and purging is complete before sampling.**

| Time | Volume Removed (gal) | pH ±0.1 unit | SPCOND (mS/cm) ±20 µmho/cm = ±0.02 mS/cm | TEMP ( deg C) ±0.5 degrees Celsius | Eh/ORP (mV) ±10 millivolts | Water level (ft) | DO (mg/L) < 1mg/L = ±0.1 mg/L; > 1mg/L = ±10 % | Turbidity (NTU) < 50 NTU | Purge rate (mL/min) < 500 mL/min with drawndown < 0.5 ft | Appearance |
|---|---|---|---|---|---|---|---|---|---|---|
| 1019 | 1.06 | 7.73 | 0.357 | 11.04 | 228.0 | 4.52 | 5.27 | 11.20 | 100 | Clear |
| 1024 | 1.32 | 7.68 | 0.355 | 11.11 | 218.2 | 4.52 | 4.59 | 9.71 | 100 | Clear |
| 1029 | 1.59 | 7.61 | 0.355 | 11.56 | 219.1 | 4.52 | 3.92 | 8.03 | 100 | Clear |
| 1034 | 1.85 | 7.6 | 0.354 | 11.56 | 213.2 | 4.52 | 3.69 | 8.01 | 100 | Clear |
| 1039 | 2.11 | 7.58 | 0.355 | 11.74 | 226.3 | 4.52 | 3.34 | 5.86 | 100 | Clear |
| 1044 | 2.38 | 7.59 | 0.354 | 11.82 | 222.5 | 4.52 | 3.07 | 5.20 | 100 | Clear |
| 1049 | 2.64 | 7.57 | 0.354 | 11.94 | 218.1 | 4.52 | 2.44 | 4.99 | 100 | Clear |
| 1054 | 3.17 | 7.56 | 0.353 | 11.67 | 213.3 | 4.52 | 2.17 | 4.25 | 100 | Clear |
| 1059 | 3.70 | 7.55 | 0.353 | 11.74 | 212.9 | 4.52 | 2.08 | 3.68 | 100 | Clear |
| 1104 | 4.09 | 7.57 | 0.352 | 12.10 | 210.1 | 4.56 | 1.80 | 3.50 | 100 | Clear |
| 1109 | 4.49 | 7.54 | 0.352 | 12.05 | 216.2 | 4.57 | 1.82 | 2.24 | 100 | Clear |
| 1114 | 4.89 | 7.57 | 0.350 | 12.17 | 216.3 | 4.57 | 1.87 | 2.23 | 100 | Clear |

## Sample Information

| | |
|---|---|
| Sample ID: | EZ-G109-GW-1 |
| Analysis: | Total Site Spefcific Metals, Dissolved Site Specific Metals |
| Date: | 12/14/2010 |
| Time: | 1123 |
| Field Filtering: | Dissolved Site Specific Metals - 0.45 Micron Filter |
| Laboratory: | Contract Laboratory Program |
| Method of Shipment: | FEDEX - Priority Overnight Delivery |
| Remarks : | All Parameters are stable. |

# Surface Water and Sediment Sampling Forms

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-ED-13
Date: 12/1/2010
Sample Team: Jayson Burkard / Sai Ramamurthy

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-13-1 | 13:15 | 6.54 | 0.471 | 7.30 | 14.25 | 54 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-13-1MS | 13:15 | 6.54 | 0.471 | 7.30 | 14.25 | 54 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-13-1MSD | 13:15 | 6.54 | 0.471 | 7.30 | 14.25 | 54 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-13-1 | 13:15 | 6.54 | 0.471 | 7.30 | 14.25 | 54 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-13-1MS | 13:15 | 6.54 | 0.471 | 7.30 | 14.25 | 54 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-13-1MSD | 13:15 | 6.54 | 0.471 | 7.30 | 14.25 | 54 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-13-2 | 13:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-13-2MS | 13:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-13-2MSD | 13:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-13-2 | 13:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-ED-13-2 | 13:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-13-2MS | 13:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-13-2MSD | 13:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-13-2 | 13:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

## Sample Information

Sample ID: EZ-SD-ED-13
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-ED-16
Date: 12/4/2010
Sample Team: Laura Crause / Shawn Boyle

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-16-1 | 8:35 | 6.96 | 0.617 | 4.40 | 14.00 | 10 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-16-1 | 8:35 | 6.96 | 0.617 | 4.40 | 14.00 | 10 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-16-2 | 8:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-16-2 | 8:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-ED-16-2 | 8:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-16-2 | 8:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

## Sample Information

Sample ID: EZ-SD-ED-16
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-ED-24
Date: 12/3/2010
Sample Team: Jayson Burkard / Jessica Hoffman

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-24-1 | 13:20 | 6.45 | 0.375 | 4.30 | 15.47 | 10 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-24-1 | 13:20 | 6.45 | 0.375 | 4.30 | 15.47 | 10 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-24-2 | 13:25 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-24-2 | 13:25 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-ED-24-2 | 13:25 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-24-2 | 13:25 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

## Sample Information

Sample ID: EZ-SD-ED-24
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-ED-25
Date: 12/3/2010
Sample Team: Jayson Burkard / Jessica Hoffman

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-25-1 | 14:05 | 7.00 | 0.320 | 2.60 | 14.42 | 10 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-25-1 | 14:05 | 7.00 | 0.320 | 2.60 | 14.42 | 10 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-25-2 | 14:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-25-2 | 14:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-ED-25-2 | 14:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-25-2 | 14:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

## Sample Information

Sample ID: EZ-SD-ED-25
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-ED-26
Date: 12/4/2010
Sample Team: Laura Crause / Shawn Boyle

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-26-1 | 10:10 | 7.44 | 0.443 | 2.20 | 14.31 | 7 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-26-1 | 10:10 | 7.44 | 0.443 | 2.20 | 14.31 | 7 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-26-1FD | 10:12 | 7.44 | 0.443 | 2.20 | 14.31 | 7 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-26-1FD | 10:12 | 7.44 | 0.443 | 2.20 | 14.31 | 7 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-26-2 | 10:20 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-26-2 | 10:20 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-ED-26-2 | 10:20 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-26-2 | 10:20 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |
| EZ-SD-ED-26-2FD | 10:22 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-26-2FD | 10:22 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-ED-26-2FD | 10:22 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-26-2FD | 10:22 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

Sample ID: EZ-SD-ED-26
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-ED-27
Date: 12/5/2010
Sample Team: Laura Crause / Jessica Hoffman / Jerry Kowalski

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-27-1 | 13:40 | 6.75 | 0.135 | 0.00 | 13.86 | 52 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-27-1 | 13:40 | 6.75 | 0.135 | 0.00 | 13.86 | 52 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-27-1FD | 13:42 | 6.75 | 0.135 | 0.00 | 13.86 | 52 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-27-1FD | 13:42 | 6.75 | 0.135 | 0.00 | 13.86 | 52 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-27-2 | 13:50 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-27-2 | 13:50 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-ED-27-2 | 13:50 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-27-2 | 13:50 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |
| EZ-SD-ED-27-2FD | 13:52 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-27-2FD | 13:52 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-ED-27-2FD | 13:52 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-27-2FD | 13:52 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

Sample ID: EZ-SD-ED-27
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-ED-28
Date: 12/5/2010
Sample Team: Laura Crause / Jessica Hoffman / Jerry Kowalski

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-28-1 | 13:00 | 6.26 | 0.276 | 2.10 | 15.78 | 2 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-28-1 | 13:00 | 6.26 | 0.276 | 2.10 | 15.78 | 2 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-28-2 | 13:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-28-2 | 13:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-ED-28-2 | 13:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-28-2 | 13:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

## Sample Information

Sample ID: EZ-SD-ED-28
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-ED-29
Date: 12/5/2010
Sample Team: Laura Crause / Jessica Hoffman / Jerry Kowalski

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-29-1 | 15:00 | 7.33 | 0.225 | 3.20 | 18.26 | 1 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-29-1 | 15:00 | 7.33 | 0.225 | 3.20 | 18.26 | 1 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-29-2 | 15:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-29-2 | 15:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-ED-29-2 | 15:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-29-2 | 15:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

## Sample Information

Sample ID: EZ-SD-ED-29
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-ED-30
Date: 12/6/2010
Sample Team: Laura Crause / Sai Ramamurthy

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-30-1 | 10:25 | -- | 0.258 | 2.30 | 13.85 | 0 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-30-1MS | 10:25 | -- | 0.258 | 2.30 | 13.85 | 0 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-30-1MSD | 10:25 | -- | 0.258 | 2.30 | 13.85 | 0 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-ED-30-1 | 10:25 | -- | 0.258 | 2.30 | 13.85 | 0 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-30-1MS | 10:25 | -- | 0.258 | 2.30 | 13.85 | 0 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-30-1MSD | 10:25 | -- | 0.258 | 2.30 | 13.85 | 0 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-ED-30-2 | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-30-2MS | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-30-2MSD | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-ED-30-2 | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-ED-30-2 | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-30-2MS | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-30-2MSD | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-ED-30-2 | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

## Sample Information

Sample ID: EZ-SD-ED-30
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks : pH Error on the Horiba

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-06
Date: 12/2/2010
Sample Team: Jayson Burkard / Sai Ramamurthy

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-06-1 | 10:10 | 6.85 | 0.712 | 6.80 | 15.13 | 2 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-06-1 | 10:10 | 6.85 | 0.712 | 6.80 | 15.13 | 2 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-06-1FD | 10:10 | 6.85 | 0.712 | 6.80 | 15.13 | 2 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-06-1FD | 10:10 | 6.85 | 0.712 | 6.80 | 15.13 | 2 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-06-2 | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-WD-06-2 | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-WD-06-2 | 10:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-WD-06-2 | 10:50 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |
| EZ-SD-WD-06-2FD | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-WD-06-2FD | 10:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-WD-06-2FD | 10:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-WD-06-2FD | 10:50 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

Sample ID: EZ-SD-WD-06
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-07
Date: 12/2/2010
Sample Team: Jayson Burkard / Sai Ramamurthy

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-07-1 | 11:25 | 7.27 | 0.666 | 7.20 | 12.80 | 53 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-07-1 | 11:25 | 7.27 | 0.666 | 7.20 | 12.80 | 53 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-07-1EB | 11:20 | -- | -- | -- | -- | -- | NA | DI Water (EB) | Site Metals (UF) | 1 |
| EZ-SD-WD-07-2 | 11:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-WD-07-2EB | 11:20 | -- | -- | -- | -- | -- | NA | DI Water (EB) | Site Metals | 1 |
| EZ-SD-WD-07-2 | 11:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-WD-07-2 | 11:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-WD-07-2 | 11:40 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |
| EZ-SD-WD-07-2EB | 11:20 | -- | -- | -- | -- | -- | NA | DI Water (EB) | Site Metals (F) | 1 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Sample ID: EZ-SD-WD-07
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-08
Date: 12/1/2010
Sample Team: Jayson Burkard / Sai Ramamurthy

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-08-1 | 14:45 | 7.19 | 0.504 | 7.10 | 11.10 | 52 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-08-1 | 14:45 | 7.19 | 0.504 | 7.10 | 11.10 | 52 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-08-2 | 15:00 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-WD-08-2 | 15:00 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-WD-08-2 | 15:05 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-WD-08-2 | 15:10 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

## Sample Information

Sample ID: EZ-SD-WD-08
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-09
Date: 12/2/2010
Sample Team: Jayson Burkard / Sai Ramamurthy

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-09-1 | 14:40 | 6.81 | 0.476 | 4.00 | 14.81 | 1 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-09-1 | 14:40 | 6.81 | 0.476 | 4.00 | 14.81 | 1 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-09-2 | 14:55 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-WD-09-2 | 14:55 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-WD-09-2 | 14:50 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-WD-09-2 | 14:55 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

## Sample Information

Sample ID: EZ-SD-WD-09
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-10
Date: 12/2/2010
Sample Team: Jayson Burkard / Sai Ramamurthy

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-10-1 | 15:25 | 7.36 | 0.544 | 8.30 | 11.15 | 9 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-10-1 | 15:25 | 7.36 | 0.544 | 8.30 | 11.15 | 9 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-10-2 | 15:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-WD-10-2 | 15:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-WD-10-2 | 15:30 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-WD-10-2 | 15:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

## Sample Information

Sample ID: EZ-SD-WD-10
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-17
Date: 12/4/2010
Sample Team: Laura Crause / Shawn Boyle

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-17-1 | 9:15 | 7.21 | 0.400 | 4.10 | 13.32 | 10 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-17-1 | 9:15 | 7.21 | 0.400 | 4.10 | 13.32 | 10 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-17-2 | 9:20 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-WD-17-2 | 9:20 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-WD-17-2 | 9:20 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-WD-17-2 | 9:20 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |
| EZ-SD-WD-17-2EB | 9:30 | -- | -- | -- | -- | -- | NA | DI Water (EB) | Site Metals | 1 |

## Sample Information

Sample ID: EZ-SD-WD-17
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-18
Date: 12/7/2010
Sample Team: Jayson Burkard / Sai Ramamurthy / Jessica Hoffman

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-18-1 | 9:35 | 6.83 | 0.465 | 1.50 | 11.80 | 51 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-18-1 | 9:35 | 6.83 | 0.465 | 1.50 | 11.80 | 51 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-18-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-18-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-18-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-18-2 | No Sample Collected | | | | | | | | | |

## Sample Information

Sample ID: EZ-SD-WD-18
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks : No Sediment Samples Collected at this Location. Residue was the only Media Present

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-19
Date: 12/7/2010
Sample Team: Jayson Burkard / Sai Ramamurthy / Jessica Hoffman

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-19-1 | 10:20 | 6.86 | 0.420 | 2.00 | 12.49 | 2 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-19-1 | 10:20 | 6.86 | 0.420 | 2.00 | 12.49 | 2 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-19-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-19-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-19-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-19-2 | No Sample Collected | | | | | | | | | |

## Sample Information

Sample ID: EZ-SD-WD-19
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks : No Sediment Samples Collected at this Location. Residue was the only Media Present

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-20
Date: 12/7/2010
Sample Team: Jayson Burkard / Sai Ramamurthy / Jessica Hoffman

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-20-1 | 10:55 | 7.12 | 0.420 | 1.80 | 12.51 | 46 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-20-1 | 10:55 | 7.12 | 0.420 | 1.80 | 12.51 | 46 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-20-2 | 11:00 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-WD-20-2 | 11:00 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-WD-20-2 | 11:00 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-WD-20-2 | 11:00 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |

## Sample Information

Sample ID: EZ-SD-WD-20
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-21
Date: 12/7/2010
Sample Team: Jayson Burkard / Sai Ramamurthy / Jessica Hoffman

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-21-1 | 11:30 | 7.3 | 0.424 | 2.30 | 12.54 | 3 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-21-1 | 11:30 | 7.3 | 0.242 | 2.30 | 12.54 | 3 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-21-2 | 11:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | Site Metals | 1 |
| EZ-SD-WD-21-2 | 11:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | TOC | 1 |
| EZ-SD-WD-21-2 | 11:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | AVS/SEM | 1 |
| EZ-SD-WD-21-2 | 11:35 | -- | -- | -- | -- | -- | 0-6" | Sediment | Grain Size | 1 |
| EZ-SD-WD-21-2EB | 12:00 | -- | -- | -- | -- | -- | NA | DI Water (EB) | Site Metals | 1 |

## Sample Information

Sample ID: EZ-SD-WD-21
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks :

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-22
Date: 12/3/2010
Sample Team: Jayson Burkard / Jessica Hoffman

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-22-1 | 15:20 | 6.78 | 1.960 | 10.90 | 8.06 | 10 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-22-1 | 15:20 | 6.78 | 1.960 | 10.90 | 8.06 | 10 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-22-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-22-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-22-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-22-2 | No Sample Collected | | | | | | | | | |

## Sample Information

Sample ID: EZ-SD-WD-22
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks : No Sediment Samples Collected at this Location. Residue was the only Media Present

# Surface Water and Sediment Sampling Form

Project Name: Eagle Zinc OU2 Supplemental Remedial Investigation
Project Number: 406469

Sample Source (Sample No./Location): EZ-SD-WD-23
Date: 12/3/2010
Sample Team: Jayson Burkard / Jessica Hoffman

## Surface Water Parameters

Purge Method: Low Flow
Equipment: Geopump
Horiba U-10

PID Reading: N/A

| Sample ID | Time | pH | SPCOND (mS/cm) | TEMP ( deg C) ℃ | DO (mg/L) | Turbidity (NTU) | Depth | Media | Analysis | Bottles |
|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-23-1 | 15:00 | 6.66 | 1.710 | 9.60 | 8.62 | 10 | NA | Surface Water | Site Metals (UF) | 1 |
| EZ-SD-WD-23-1 | 15:00 | 6.66 | 1.710 | 9.60 | 8.62 | 10 | NA | Surface Water | Site Metals (F) | 1 |
| EZ-SD-WD-23-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-23-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-23-2 | No Sample Collected | | | | | | | | | |
| EZ-SD-WD-23-2 | No Sample Collected | | | | | | | | | |

## Sample Information

Sample ID: EZ-SD-WD-23
Analysis: Total Site Spefcific Metals, Dissolved Site Specific Metals, TOC, AVS/SEM, Grain Size
Field Filtering: Dissolved Site Specific Metals - 0.45 Micron Filter
Laboratory: Contract Laboratory Program
Method of Shipment: FEDEX - Priority Overnight Delivery
Remarks : No Sediment Samples Collected at this Location. Residue was the only Media Present

# Appendix C
# Well Development Forms

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-1 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START : 11/16/2010 821

END: 11/18/2010 1608

START WATER LEVELS: 4.16 ft btoc

WELL DEPTH: 15.03 ft btoc

WELL VOLUME: 7.06 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 5.37 ft

TOTAL QUANTITY OF WATER DISCHARGED: 47.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/16/10 | 821 | 0.0 | 4.16 | - | - | - | - | Start Well Development. |
| 11/16/10 | 823 | 1.0 | 5.80 | 5.82 | 15.2 | 0.916 | 999 | Turbid |
| 11/16/10 | 825 | 2.0 | 6.23 | 5.99 | 15.5 | 1.000 | 999 | Turbid |
| 11/16/10 | 828 | 4.0 | 7.25 | 6.41 | 15.7 | 0.972 | 999 | Turbid |
| 11/16/10 | 830 | 6.0 | 7.85 | 6.44 | 16.3 | 0.968 | 999 | Clearing |
| 11/16/10 | 835 | 8.0 | 8.10 | 6.53 | 16.6 | 0.968 | 999 | Clearing |
| 11/16/10 | 837 | 10.0 | 8.25 | 6.58 | 16.7 | 0.966 | 999 | Clearing |
| 11/16/10 | 840 | 12.0 | 8.34 | 6.66 | 16.8 | 0.967 | 725 | Clearing |
| 11/16/10 | 845 | 15.0 | 8.30 | 6.84 | 16.2 | 0.964 | 658 | Clearing |
| 11/16/10 | 846 | 15.0 | 8.30 | - | - | - | - | Surge Well and Empty Buckets. |
| 11/16/10 | 929 | 17.0 | 6.73 | 6.94 | 15.4 | 0.960 | 999 | Turbid |
| 11/16/10 | 932 | 19.0 | 7.70 | 6.77 | 15.9 | 0.947 | 999 | Turbid |
| 11/16/10 | 936 | 21.0 | 8.35 | 6.75 | 16.2 | 0.949 | 999 | Turbid |
| 11/16/10 | 939 | 23.0 | 8.65 | 6.69 | 16.5 | 0.902 | 999 | Turbid |
| 11/16/10 | 942 | 25.0 | 8.85 | 6.77 | 16.3 | 0.928 | 999 | Turbid |
| 11/16/10 | 945 | 27.0 | 9.00 | 6.80 | 16.1 | 0.936 | 105 | Clearing |
| 11/16/10 | 949 | 29.0 | 9.20 | 6.81 | 16.7 | 0.935 | 911 | Clearing |
| 11/16/10 | 952 | 31.0 | 9.25 | 6.81 | 16.5 | 0.931 | 638 | Clearing |
| 11/16/10 | 955 | 33.0 | 9.33 | 6.75 | 16.7 | 0.933 | 630 | Clearing |
| 11/16/10 | 958 | 35.0 | 9.53 | 6.80 | 16.7 | 0.957 | 366 | Clearing |
| 11/18/10 | 1538 | 35.0 | 4.84 | - | - | - | - | Continue Well Development. |
| 11/18/10 | 1542 | 37.0 | 6.76 | 6.52 | 14.9 | 0.960 | 999 | Turbid |
| 11/18/10 | 1547 | 39.0 | 7.50 | 6.53 | 15.7 | 0.956 | 762 | Clearing |
| 11/18/10 | 1552 | 41.0 | 8.01 | 6.51 | 16.1 | 0.955 | 433 | Clearing |
| 11/18/10 | 1557 | 43.0 | 9.13 | 6.64 | 16.4 | 0.954 | 55 | Clear |
| 11/18/10 | 1603 | 45.0 | 8.30 | 6.52 | 16.4 | 0.936 | 6 | Clear |
| 11/18/10 | 1608 | 47.0 | 9.23 | 6.55 | 16.4 | 0.937 | 10 | Clear |
| 11/18/10 | 1609 | 47.0 | 9.23 | - | - | - | - | Development Complete. |

Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-2 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/15/2010 1452

END: 12/15/2010 1029

START WATER LEVELS: 8.49 ft btoc

WELL DEPTH: 14.70 ft btoc

WELL VOLUME: 6.30 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 5.88 ft

TOTAL QUANTITY OF WATER DISCHARGED: 19.00 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/15/10 | 1452 | 0.00 | 8.49 | - | - | - | - | Start Well Development. |
| 11/15/10 | 1454 | 1.00 | 10.33 | 5.48 | 16.10 | 1.20 | 561.00 | Turbid/Brown |
| 11/15/10 | 1456 | 2.00 | 11.48 | 6.56 | 15.80 | 1.14 | 308.00 | Turbid/Brown |
| 11/15/10 | 1500 | 3.00 | 12.60 | 6.60 | 16.00 | 1.13 | 391.00 | Turbid/Brown |
| 11/15/10 | 1504 | 4.00 | 13.00 | - | - | - | - | Turbid/Brown |
| 11/15/10 | 1505 | 4.00 | 13.00 | - | - | - | - | Purge Well Dry. |
| 11/16/10 | 1055 | 4.00 | 8.40 | - | - | - | - | Continue Well Development. |
| 11/16/10 | 1100 | 6.00 | 11.68 | 7.24 | 15.20 | 1.14 | 258.00 | Turbid/Brown |
| 11/16/10 | 1105 | 8.00 | 12.68 | 7.35 | 14.90 | 1.14 | 103.00 | Clearing |
| 11/16/10 | 1106 | 8.00 | 12.68 | - | - | - | - | Purge Well Dry. |
| 11/17/10 | 813 | 8.00 | 8.72 | - | - | - | - | Continue Well Development. |
| 11/17/10 | 816 | 9.00 | 10.35 | 6.03 | 14.20 | 1.35 | 585.00 | Brown/Cloudy |
| 11/17/10 | 819 | 10.00 | 11.38 | 7.00 | 15.00 | 1.21 | 786.00 | Brown/Cloudy |
| 11/17/10 | 823 | 11.00 | 12.49 | 7.04 | 15.40 | 1.18 | 965.00 | Brown/Cloudy |
| 11/17/10 | 826 | 12.00 | 13.41 | 7.06 | 15.50 | 1.19 | 791.00 | Brown/Cloudy |
| 11/17/10 | 831 | 13.00 | 14.09 | 7.04 | 15.20 | 1.18 | 505.00 | Brown/Cloudy |
| 11/17/10 | 835 | 14.00 | 14.60 | - | - | - | - | Brown/Cloudy |
| 11/17/10 | 836 | 14.00 | 14.60 | - | - | - | - | Purge Well Dry. |
| 12/15/10 | 1010 | 14.00 | 6.00 | - | - | - | - | Continue Well Development. |
| 12/15/10 | 1012 | 15.00 | 8.96 | 6.38 | 11.00 | 1.03 | 7.41 | Clear |
| 12/15/10 | 1016 | 16.00 | 10.02 | 6.39 | 10.90 | 1.04 | 5.08 | Clear |
| 12/15/10 | 1020 | 17.00 | 10.94 | 6.29 | 12.20 | 1.06 | 13.00 | Clear |
| 12/15/10 | 1024 | 18.00 | 11.81 | 6.29 | 12.50 | 1.06 | 18.40 | Clear |
| 12/15/10 | 1026 | 18.50 | 12.12 | 6.31 | 12.50 | 1.02 | 24.10 | Clear |
| 12/15/10 | 1028 | 19.00 | 12.53 | 6.34 | 12.60 | 1.06 | 37.80 | Clear |
| 12/15/10 | 1029 | 19.00 | 12.53 | - | - | - | - | Development Complete. |

Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-4 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pun

START: 11/17/2010 1530

END: 12/15/2010 1118

START WATER LEVELS: 5.85 ft btoc

WELL DEPTH: 13.95 ft btoc

WELL VOLUME: 6.6 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 8.1 ft

TOTAL QUANTITY OF WATER DISCHARGED: 16.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/17/10 | 1530 | 0.00 | 5.85 | - | - | - | - | Start Well Development. |
| 11/17/10 | 1532 | 1.00 | 8.45 | 8.35 | 17.0 | 0.687 | 177 | Brown |
| 11/17/10 | 1535 | 2.00 | 9.46 | 7.85 | 17.2 | 0.626 | 999 | Brown |
| 11/17/10 | 1541 | 3.00 | 12.01 | 7.83 | 16.9 | 0.597 | 999 | Brown |
| 11/17/10 | 1554 | 4.00 | 13.12 | 7.90 | 16.0 | 0.799 | 999 | Brown |
| 11/17/10 | 1555 | 4.00 | 13.12 | - | - | - | - | Purge Well Dry. |
| 11/18/10 | 852 | 4.00 | 5.92 | - | - | - | - | Continue Well Development. |
| 11/18/10 | 855 | 5.00 | 8.90 | 6.62 | 15.5 | 0.696 | 999 | Brown |
| 11/18/10 | 858 | 6.00 | 11.71 | 7.21 | 15.9 | 0.668 | 999 | Brown |
| 11/18/10 | 901 | 7.00 | 12.73 | 7.48 | 15.8 | 0.840 | 999 | Brown |
| 11/18/10 | 908 | 8.00 | 13.63 | 7.59 | 15.1 | 0.850 | 999 | Brown |
| 11/18/10 | 909 | 8.00 | 13.63 | - | - | - | - | Purge Well Dry. |
| 11/19/10 | 1100 | 8.00 | 7.33 | - | - | - | - | Continue Well Development. |
| 11/19/10 | 1106 | 9.50 | 10.59 | 7.80 | 16.5 | 0.750 | 999 | Brown |
| 11/19/10 | 1109 | 11.00 | 12.75 | - | - | - | - | Pump Issues. No Parameter Readings. |
| 12/15/10 | 1100 | 11.00 | 4.79 | - | - | - | - | Continue Well Development. |
| 12/15/10 | 1105 | 12.00 | 7.47 | 6.80 | 10.5 | 0.351 | 25.1 | Clear |
| 12/15/10 | 1109 | 13.00 | 8.65 | 6.74 | 10.2 | 0.348 | 26.8 | Clear |
| 12/15/10 | 1112 | 14.00 | 10.32 | 6.65 | 11.5 | 0.372 | 84 | Clear with small particulates. |
| 12/15/10 | 1114 | 14.50 | 11.54 | 6.67 | 11.6 | 0.385 | 457 | Cloudy |
| 12/15/10 | 1116 | 15.00 | 12.31 | 6.67 | 11.9 | 0.385 | 500 | Cloudy |
| 12/15/10 | 1118 | 16.00 | 13.95 | - | - | - | - | Purge Well Dry. |
| 12/15/10 | 1119 | 16.00 | 13.95 | - | - | - | - | Development Complete. |
| | | | | | | | | |
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Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-5 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/17/2010 915

END: 12/7/2010 935

START WATER LEVELS: 11.23 ft btoc

WELL DEPTH: 18.77 ft btoc

WELL VOLUME: 6.52 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 0.85 ft

TOTAL QUANTITY OF WATER DISCHARGED: 20.6 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/17/10 | 915 | 0.00 | 11.23 | - | - | - | - | Start Well Development. |
| 11/17/10 | 919 | 1.00 | 11.89 | 6.54 | 14.20 | 0.933 | 999 | Brown |
| 11/17/10 | 924 | 2.00 | 12.00 | 6.33 | 14.50 | 0.935 | 240 | Clearing |
| 11/17/10 | 928 | 3.00 | 12.00 | 6.16 | 14.50 | 0.925 | 224 | Clearing |
| 11/17/10 | 936 | 5.00 | 12.05 | 6.17 | 14.30 | 0.938 | 215 | Clearing/Surge |
| 11/17/10 | 949 | 7.00 | 12.08 | 6.33 | 14.60 | 0.957 | 993 | Brown |
| 11/17/10 | 957 | 9.00 | 12.08 | 6.46 | 14.60 | 0.970 | 231 | Clearing/Surge |
| 11/17/10 | 1005 | 11.00 | 12.03 | 6.47 | 14.70 | 0.978 | 999 | Brown |
| 11/17/10 | 1015 | 13.00 | 12.08 | 6.45 | 14.40 | 0.985 | 541 | Brown |
| 11/17/10 | 1025 | 15.00 | 12.08 | 6.49 | 14.60 | 0.989 | 291 | Clear |
| 11/17/10 | 1030 | 16.00 | 12.08 | 6.56 | 14.50 | 0.990 | 42 | Clear |
| 11/17/10 | 1030 | 16.00 | 12.08 | - | - | - | - | Stop Well Development. |
| 12/07/10 | 900 | 16.00 | 8.78 | - | - | - | - | Continue Well Development. |
| 12/07/10 | 900 | 16.05 | 8.88 | 5.48 | 9.50 | 0.638 | 78.6 | Clear |
| 12/07/10 | 905 | 16.70 | 8.88 | 5.61 | 10.53 | 0.674 | 87.9 | Clear |
| 12/07/10 | 910 | 17.40 | 8.89 | 5.73 | 11.31 | 0.735 | 67.8 | Clear |
| 12/07/10 | 915 | 18.00 | 8.90 | 5.73 | 11.88 | 0.744 | 56.7 | Clear |
| 12/07/10 | 920 | 18.70 | 8.90 | 5.77 | 12.13 | 0.757 | 43 | Clear |
| 12/07/10 | 925 | 19.30 | 8.90 | 5.80 | 12.00 | 0.765 | 34.5 | Clear |
| 12/07/10 | 930 | 20.00 | 8.90 | 5.80 | 11.98 | 0.770 | 24.4 | Clear |
| 12/07/10 | 935 | 20.60 | 8.90 | 5.81 | 11.95 | 0.771 | 20.1 | Clear |
| 12/07/10 | 936 | 20.60 | 8.90 | - | - | - | - | Development Complete. |
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Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-6 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/22/2010 905

END: 11/22/2010 1037

START WATER LEVELS: 5.96 ft btoc

WELL DEPTH: 18.00 ft btoc

WELL VOLUME: 7.25 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 0.53 ft

TOTAL QUANTITY OF WATER DISCHARGED: 28.00 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/22/10 | 905 | 0.0 | 5.96 | - | - | - | - | Start Well Development. |
| 11/22/10 | 907 | 1.0 | 6.32 | 6.30 | 15.00 | 2.50 | 999 | Brown |
| 11/22/10 | 909 | 2.0 | 6.30 | 6.90 | 14.00 | 2.40 | 999 | Brown |
| 11/22/10 | 913 | 5.0 | 6.30 | 7.10 | 14.00 | 2.40 | 999 | Brown |
| 11/22/10 | 916 | 6.0 | 6.30 | 7.10 | 14.00 | 2.40 | 960 | Brown |
| 11/22/10 | 921 | 8.0 | 6.30 | 7.10 | 14.00 | 2.40 | 999 | Brown |
| 11/22/10 | 925 | 10.0 | 6.40 | 7.40 | 14.00 | 2.40 | 999 | Brown |
| 11/22/10 | 928 | 12.0 | 6.43 | 7.20 | 14.00 | 2.30 | 999 | Brown |
| 11/22/10 | 932 | 14.0 | 6.42 | 7.10 | 14.00 | 2.40 | 390 | Brown |
| 11/22/10 | 935 | 16.0 | 6.47 | 7.10 | 14.00 | 2.40 | 140 | Brown |
| 11/22/10 | 939 | 18.0 | 6.49 | 7.20 | 14.00 | 2.30 | 70 | Clear |
| 11/22/10 | 942 | 20.0 | 6.44 | 7.20 | 14.00 | 2.30 | 60 | Clear |
| 11/22/10 | 1025 | 22.0 | 6.39 | 7.20 | 15.00 | 2.40 | 200 | Clear |
| 11/22/10 | 1029 | 24.0 | 6.34 | 7.20 | 14.00 | 2.30 | 30 | Clear |
| 11/22/10 | 1033 | 26.0 | 6.39 | 7.20 | 14.00 | 2.30 | 20 | Clear |
| 11/22/10 | 1037 | 28.0 | 6.39 | - | - | - | - | Development Complete. |
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Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-7 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/16/2010 1501

END: 12/14/2010 1600

START WATER LEVELS: 11.00 ft btoc

WELL DEPTH: 18.95 ft btoc

WELL VOLUME: 6.59 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 2.25 ft

TOTAL QUANTITY OF WATER DISCHARGED: 20.00 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/16/10 | 1455 | 0.0 | 11.00 | - | - | - | - | Start Well Development. |
| 11/16/10 | 1501 | 1.0 | 12.21 | 7.25 | 16.80 | 0.915 | 305 | Clear/Surge |
| 11/16/10 | 1508 | 2.0 | 11.97 | 7.02 | 16.90 | 1.240 | 999 | Brown |
| 11/16/10 | 1513 | 4.0 | 12.80 | 6.99 | 17.20 | 1.080 | 152 | Brown |
| 11/16/10 | 1518 | 6.0 | - | - | - | - | - | - |
| 11/16/10 | 1525 | 8.0 | 13.25 | 6.85 | 16.00 | 1.080 | 130 | Clear |
| 11/16/10 | 1533 | 10.0 | 12.30 | 6.79 | 17.10 | 1.110 | 220 | Clear |
| 11/16/10 | 1536 | 12.0 | 13.25 | 6.73 | 16.80 | 1.120 | 150 | Clear/Surge |
| 11/16/10 | 1546 | 14.0 | 12.72 | 6.77 | 17.10 | 1.140 | 662 | Brown |
| 11/16/10 | 1554 | 16.0 | 12.71 | 6.85 | 16.70 | 1.120 | 137 | Clear |
| 11/16/10 | 1600 | 17.0 | 12.73 | 6.79 | 16.20 | 1.120 | 41 | Clear |
| 11/16/10 | 1602 | 17.0 | 12.73 | - | - | - | - | Stop Well Development. |
| 12/14/10 | 1500 | 17.0 | 8.31 | - | - | - | - | Continue Well Development. |
| 12/14/10 | 1530 | 18.5 | 8.66 | 6.73 | 12.55 | 1.027 | 10.5 | Clear |
| 12/14/10 | 1540 | 19.0 | 8.67 | 6.69 | 12.41 | 1.049 | 6.64 | Clear |
| 12/14/10 | 1600 | 20.0 | 8.70 | 6.62 | 12.21 | 1.083 | 3.25 | Clear |
| 12/14/10 | 1610 | 20.0 | 8.70 | - | - | - | - | Development Complete. |
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Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-8 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/20/2010 1304

END: 12/15/2010 1256

START WATER LEVELS: 20.89 ft btoc

WELL DEPTH: 24.88 ft btoc

WELL VOLUME: 5.94 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 0.11 ft

TOTAL QUANTITY OF WATER DISCHARGED: 19.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/20/10 | 1304 | 0.0 | 20.89 | - | - | - | - | Start Well Development. |
| 11/20/10 | 1309 | 1.0 | 20.98 | 6.85 | 17.50 | 1.010 | 564 | Brown |
| 11/20/10 | 1311 | 2.0 | 20.95 | 7.11 | 17.60 | 1.010 | 740 | Brown |
| 11/20/10 | 1315 | 4.0 | 21.00 | 7.01 | 17.90 | 1.000 | 417 | Brown |
| 11/20/10 | 1321 | 8.0 | 20.91 | 7.04 | 18.00 | 0.990 | 101 | Clearing |
| 11/20/10 | 1325 | 10.0 | 20.93 | 7.17 | 18.30 | 1.010 | 46 | Clear |
| 11/20/10 | 1328 | 12.0 | 20.92 | 7.16 | 18.20 | 1.000 | 43 | Clear |
| 11/20/10 | 1331 | 14.0 | 20.91 | 7.12 | 18.10 | 0.990 | 27 | Clear |
| 11/20/10 | 1332 | 14.0 | 20.91 | - | - | - | - | Stop Well Development. |
| 12/15/10 | 1141 | 14.0 | 19.68 | - | - | - | - | Continue Well Development. |
| 12/15/10 | 1156 | 15.0 | 19.68 | 6.84 | 14.51 | 0.961 | 11.8 | Clear |
| 12/15/10 | 1211 | 16.0 | 19.68 | 6.73 | 14.43 | 0.959 | 6.54 | Clear |
| 12/15/10 | 1226 | 17.0 | 19.68 | 6.68 | 14.35 | 0.957 | 3.31 | Clear |
| 12/15/10 | 1241 | 18.0 | 19.68 | 6.63 | 14.49 | 0.955 | 1.74 | Clear |
| 12/15/10 | 1256 | 19.0 | 19.68 | 6.60 | 14.47 | 0.955 | 2.59 | Clear |
| 12/15/10 | 1257 | 19.0 | 19.68 | - | - | - | - | Development Complete. |
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Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-9 | SHEET 1 OF 2 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/17/2010 1347

END: 12/15/2010 1509

START WATER LEVELS: 11.55 ft btoc

WELL DEPTH: 23.59 ft btoc

WELL VOLUME: 7.22 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 12.04 ft

TOTAL QUANTITY OF WATER DISCHARGED: 34.5 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/17/10 | 1347 | 0.0 | 11.55 | - | - | - | - | Start Well Development. |
| 11/17/10 | 1349 | 1.5 | 13.71 | 7.89 | 16.80 | 3.700 | 999 | Brown |
| 11/17/10 | 1351 | 3.0 | 14.69 | 7.38 | 17.20 | 2.420 | 601 | Brown |
| 11/17/10 | 1353 | 5.0 | 16.88 | 7.42 | 17.20 | 3.680 | 526 | Brown |
| 11/17/10 | 1357 | 7.0 | 18.90 | 7.41 | 16.80 | 4.200 | 606 | Brown |
| 11/17/10 | 1403 | 9.0 | 20.79 | - | - | - | - | Purge Well Dry. |
| 11/18/10 | 1420 | 9.0 | 12.35 | - | - | - | - | Continue Well Development. |
| 11/18/10 | 1422 | 10.0 | 13.81 | 7.20 | 14.50 | 4.120 | 999 | Brown |
| 11/18/10 | 1426 | 12.0 | 16.59 | 7.28 | 16.10 | 3.920 | 647 | Brown |
| 11/18/10 | 1430 | 14.0 | 17.75 | - | - | - | - | Battery Issues. Stop Development. |
| 11/19/10 | 942 | 14.0 | 12.23 | - | - | - | - | Continue Well Development. |
| 11/19/10 | 946 | 15.0 | 13.93 | 7.43 | 15.70 | 4.080 | 695 | Brown |
| 11/19/10 | 950 | 17.0 | 15.10 | 7.38 | 15.80 | 3.880 | 492 | Brown |
| 11/19/10 | 955 | 19.0 | 17.68 | 7.38 | 16.20 | 3.960 | 730 | Brown |
| 11/19/10 | 1001 | 21.0 | 19.63 | 7.28 | 15.40 | 3.950 | 610 | Brown |
| 11/19/10 | 1008 | 23.0 | 22.82 | 7.29 | 15.30 | 3.970 | 581 | Brown |
| 11/19/10 | 1009 | 23.0 | 22.82 | - | - | - | - | Purge Well Dry. |
| 11/20/10 | 809 | 23.0 | 12.49 | - | - | - | - | Continue Well Development. |
| 11/20/10 | 811 | 24.0 | 13.72 | 7.20 | 14.50 | 4.170 | 999 | Brown |
| 11/20/10 | 815 | 25.0 | 14.75 | 7.45 | 15.90 | 4.040 | 454 | Light Brown |
| 11/20/10 | 818 | 26.0 | 16.05 | 7.54 | 16.10 | 3.690 | 402 | Clear |
| 11/20/10 | 823 | 27.0 | 17.47 | 7.59 | 15.80 | 3.840 | 511 | Clear |
| 11/20/10 | 827 | 28.0 | 18.75 | 7.60 | 16.10 | 4.040 | 631 | Clear |
| 11/20/10 | 832 | 29.0 | 19.99 | 7.65 | 16.20 | 4.110 | 362 | Clear |
| 11/20/10 | 836 | 30.0 | 21.75 | 7.53 | 15.90 | 4.310 | 239 | Clear |
| 11/20/10 | 839 | 30.0 | 21.75 | - | - | - | - | Purge Well Dry. |

Comments:

| | PROJECT NUMBER 406469 | WELL NUMBER MW-9 | SHEET 2 OF 2 |
|---|---|---|---|
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/17/2010 1347

END: 12/15/2010 1509

START WATER LEVELS: 11.55 ft btoc

WELL DEPTH: 23.59 ft btoc

WELL VOLUME: 7.22 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 12.04 ft

TOTAL QUANTITY OF WATER DISCHARGED: 34.5 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 12/15/10 | 1445 | 30.0 | 10.82 | - | - | - | - | Continue Well Development. |
| 12/15/10 | 1449 | 31.0 | 13.72 | 6.68 | 14.3 | 3.970 | 3.42 | Clear |
| 12/15/10 | 1454 | 32.0 | 13.72 | 6.77 | 14.2 | 3.400 | 2.39 | Clear |
| 12/15/10 | 1458 | 33.0 | 14.33 | 6.71 | 13.7 | 2.980 | 3.83 | Clear |
| 12/15/10 | 1502 | 33.5 | 14.64 | 6.69 | 13.8 | 3.240 | 9.79 | Clear |
| 12/15/10 | 1505 | 34.0 | 15.08 | 6.67 | 13.5 | 3.210 | 16.4 | Clear |
| 12/15/10 | 1509 | 34.5 | 15.45 | 6.71 | 13.2 | 3.190 | 16.2 | Clear |
| 12/15/10 | 1510 | 34.5 | 15.45 | - | - | - | - | Development Complete. |

Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-10 | SHEET 1 OF 2 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/18/2010 822

END: 12/16/2010 1608

START WATER LEVELS : 5.48 ft btoc

WELL DEPTH: 17.35 ft btoc

WELL VOLUME: 7.25 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 11.08 ft

TOTAL QUANTITY OF WATER DISCHARGED: 14.98 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/18/10 | 822 | 0.00 | 16.60 | - | - | - | - | Start Well Development. |
| 11/18/10 | 827 | 0.10 | 16.91 | 6.04 | 9.70 | 0.329 | 999 | Purge Well Dry. |
| 12/16/10 | 1043 | 0.10 | 5.48 | - | - | - | - | Continue Well Development. |
| 12/16/10 | 1053 | 1.50 | 7.75 | 4.71 | 10.50 | 0.104 | 124 | Light Brown |
| 12/16/10 | 1103 | 3.00 | 8.79 | 5.39 | 9.91 | 0.085 | 124 | Light Brown |
| 12/16/10 | 1113 | 5.00 | 10.75 | 5.44 | 9.15 | 0.061 | 124 | Light Brown |
| 12/16/10 | 1118 | 6.50 | 11.87 | 5.47 | 11.10 | 0.062 | 116 | Light Brown |
| 12/16/10 | 1123 | 8.00 | 12.60 | 5.71 | 11.20 | 0.073 | 76.9 | Light Brown |
| 12/16/10 | 1128 | 9.00 | 13.35 | 5.76 | 11.40 | 0.072 | 60.6 | Light Brown |
| 12/16/10 | 1133 | 10.00 | 14.00 | 5.62 | 11.90 | 0.068 | 94 | Light Brown |
| 12/16/10 | 1138 | 11.00 | 14.95 | 5.68 | 11.50 | 0.068 | 103 | Light Brown |
| 12/16/10 | 1143 | 12.00 | 15.95 | 5.72 | 12.10 | 0.071 | 112 | Light Brown |
| 12/16/10 | 1148 | 13.00 | 16.56 | 5.61 | 12.30 | 0.066 | 91.7 | Light Brown |
| 12/16/10 | 1153 | 13.00 | 16.56 | - | - | - | - | Purge Well Dry. |
| 12/16/10 | 1346 | 13.00 | 11.90 | - | - | - | - | Continue Well Development. |
| 12/16/10 | 1406 | 13.2 | 12.08 | 5.60 | 9.22 | 0.094 | 90.2 | Cloudy |
| 12/16/10 | 1416 | 13.29 | 12.12 | 5.41 | 9.24 | 0.092 | 76.4 | Cloudy |
| 12/16/10 | 1426 | 13.34 | 12.12 | 5.38 | 8.84 | 0.089 | 83.8 | Cloudy |
| 12/16/10 | 1436 | 13.4 | 12.08 | 5.26 | 8.45 | 0.088 | 75 | Cloudy |
| 12/16/10 | 1446 | 13.48 | 12.13 | 5.18 | 8.51 | 0.089 | 68.4 | Slightly Cloudy |
| 12/16/10 | 1456 | 13.55 | 12.16 | 5.23 | 8.50 | 0.088 | 63.6 | Slightly Cloudy |
| 12/16/10 | 1506 | 13.63 | 12.18 | 5.17 | 8.43 | 0.089 | 61.1 | Slightly Cloudy |
| 12/16/10 | 1516 | 13.73 | 12.23 | 5.09 | 8.75 | 0.087 | 57.2 | Clear |
| 12/16/10 | 1526 | 13.82 | 12.31 | 5.13 | 8.77 | 0.087 | 56.6 | Clear |
| 12/16/10 | 1536 | 13.88 | 12.49 | 4.98 | 9.14 | 0.086 | 54.4 | Clear |
| 12/16/10 | 1546 | 14.06 | 12.95 | 5.09 | 10.48 | 0.086 | 62.5 | Clear |

Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-10 | SHEET 2 OF 2 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/18/2010 822

END: 12/16/2010 1608

START WATER LEVELS : 5.48 ft btoc

WELL DEPTH: 17.35 ft btoc

WELL VOLUME: 7.25 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 11.08 ft

TOTAL QUANTITY OF WATER DISCHARGED: 14.98 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 12/16/10 | 1556 | 14.72 | 14.36 | 5.30 | 12.40 | 0.086 | 99 | Cloudy |
| 12/16/10 | 1606 | 14.98 | 16.42 | 5.57 | 12.62 | 0.100 | 127 | Cloudy |
| 12/16/10 | 1608 | 14.98 | 16.42 | - | - | - | - | Purge Well Dry. |
| 12/16/10 | 1609 | 14.98 | 16.42 | - | - | - | - | Development Complete. |

Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete. Well was almost completely dry on 11/18/10.

| | PROJECT NUMBER 406469 | WELL NUMBER MW-11 SHEET 1 OF 2 |
|---|---|---|
| | WELL DEVELOPMENT FORM | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle (EDI)

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/16/2010 1328

END: 12/15/2010 1650

START WATER LEVELS : 7.22 ft btoc

WELL DEPTH: 13.96 ft btoc

WELL VOLUME: 6.39 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 7.41 ft

TOTAL QUANTITY OF WATER DISCHARGED: 20.94 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/16/10 | 1328 | 0.0 | 7.22 | - | - | - | - | Start Well Development. |
| 11/16/10 | 1337 | 2.0 | 9.85 | 8.12 | 15.7 | 1.220 | 796 | Brown |
| 11/16/10 | 1343 | 3.0 | 10.59 | 7.95 | 16.2 | 1.210 | 577 | Brown |
| 11/16/10 | 1346 | 4.0 | 11.50 | 7.94 | 16.2 | 1.200 | 421 | Brown |
| 11/16/10 | 1351 | 5.0 | 12.42 | 8.06 | 15.8 | 1.200 | 399 | Brown |
| 11/16/10 | 1354 | 5.5 | 12.60 | - | - | - | - | Purge Well Dry. |
| 11/17/10 | 1110 | 5.5 | 7.32 | - | - | - | - | Continue Well Development. |
| 11/17/10 | 1115 | 7.0 | 9.91 | 7.65 | 15.8 | 1.180 | 999 | Brown |
| 11/17/10 | 1118 | 8.0 | 10.67 | 7.76 | 16.0 | 1.160 | 999 | Brown |
| 11/17/10 | 1121 | 9.0 | 11.78 | 7.73 | 16.4 | 1.150 | 999 | Brown |
| 11/17/10 | 1124 | 10.0 | 12.89 | - | - | - | - | Purge Well Dry. |
| 11/20/10 | 1506 | 10.0 | 7.30 | - | - | - | - | Continue Well Development. |
| 11/20/10 | 1507 | 11.0 | 9.67 | 7.97 | 14.8 | 1.200 | 999 | Brown |
| 11/20/10 | 1509 | 12.0 | 10.65 | 7.91 | 15.1 | 1.120 | 999 | Brown |
| 11/20/10 | 1510 | 13.0 | 11.75 | 8.02 | 15.2 | 1.170 | 999 | Brown |
| 11/20/10 | 1514 | 14.0 | 13.11 | 7.95 | 15.3 | 1.200 | 999 | Brown |
| 11/20/10 | 1514 | 14.0 | 13.11 | - | - | - | - | Purge Well Dry. |
| 12/15/10 | 1443 | 14.0 | 6.55 | - | - | - | - | Continue Well Development. |
| 12/15/10 | 1543 | 17.2 | 8.75 | 7.43 | 8.9 | 1.115 | 178 | Light Brown |
| 12/15/10 | 1548 | 17.4 | 8.80 | 7.44 | 8.6 | 1.120 | 143 | Light Brown |
| 12/15/10 | 1553 | 17.7 | 8.95 | 7.45 | 8.2 | 1.123 | 143 | Light Brown |
| 12/15/10 | 1558 | 18.0 | 9.00 | 7.47 | 8.3 | 1.120 | 80.4 | Light Brown |
| 12/15/10 | 1603 | 18.2 | 9.11 | 7.49 | 8.1 | 1.120 | 51.7 | Light Brown |
| 12/15/10 | 1608 | 18.5 | 9.16 | 7.50 | 8.1 | 1.116 | 42.1 | Light Brown |
| 12/15/10 | 1613 | 18.75 | 9.2 | 7.52 | 7.9 | 1.115 | 39.3 | Light Brown |
| 12/15/10 | 1618 | 19.02 | 9.28 | 7.53 | 7.87 | 1.119 | 35.8 | Light Brown |

Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-11 | SHEET 2 OF 2 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle (EDI)

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/16/2010 1328

END: 12/15/2010 1650

START WATER LEVELS : 7.22 ft btoc

WELL DEPTH: 13.96 ft btoc

WELL VOLUME: 6.39 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 7.41 ft

TOTAL QUANTITY OF WATER DISCHARGED: 20.94 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 12/15/10 | 1623 | 19.28 | 9.30 | 7.53 | 8.04 | 1.115 | 31.8 | Light Brown |
| 12/15/10 | 1628 | 19.55 | 9.34 | 7.54 | 7.93 | 1.117 | 25.2 | Light Brown |
| 12/15/10 | 1633 | 19.73 | 9.37 | 7.54 | 7.83 | 1.118 | 24 | Light Brown |
| 12/15/10 | 1638 | 19.94 | 9.39 | 7.53 | 7.59 | 1.115 | 22.4 | Light Brown |
| 12/15/10 | 1650 | 20.94 | 13.96 | - | - | - | - | Purge Well Dry. |
| 12/15/10 | 1651 | 20.94 | 13.96 | - | - | - | - | Development Complete. |

Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-12 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT : Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Wayne Conway / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/22/2010 940

END: 12/5/2010 945

START WATER LEVELS : 10.28 ft btoc

WELL DEPTH: 41.97 ft btoc

WELL VOLUME: 10.36 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 31.69 ft

TOTAL QUANTITY OF WATER DISCHARGED: 48.00 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/22/10 | 920 | 0.00 | 10.28 | - | - | - | - | Start Well Development. |
| 11/22/10 | 940 | 12.00 | - | - | - | - | - | Drilling water removed. Purge Well Dry. |
| 12/01/10 | 1330 | 12.00 | 14.61 | - | - | - | - | Continue Well Development. |
| 12/01/10 | 1345 | 18.00 | 33.45 | 7.40 | 13.00 | 1.500 | 999 | Pump Issues. Stop Development. |
| 12/02/10 | 947 | 18.00 | 10.28 | - | - | - | - | Continue Well Development. |
| 12/02/10 | 950 | 19.00 | 16.05 | 7.70 | 13.00 | 1.600 | 68 | Light Brown |
| 12/02/10 | 1013 | 20.00 | 19.65 | 7.60 | 11.00 | 1.600 | 27 | Clear |
| 12/02/10 | 1013 | 20.00 | 19.65 | - | - | - | - | Stop Well Development. |
| 12/03/10 | 1338 | 20.00 | 10.28 | - | - | - | - | Continue Well Development. |
| 12/03/10 | 1355 | 30.00 | 41.50 | - | - | - | - | Purge Well Dry. |
| 12/04/10 | 822 | 30.00 | 9.60 | - | - | - | - | Continue Well Development. |
| 12/04/10 | 830 | 40.00 | - | - | - | - | - | Purge Well Dry. |
| 12/05/10 | 855 | 40.00 | 11.45 | - | - | - | - | Continue Well Development. |
| 12/05/10 | 900 | 40.75 | 15.05 | 6.50 | 11.20 | 1.800 | 977 | Brown |
| 12/05/10 | 915 | 41.25 | 17.42 | 8.00 | 6.10 | 1.800 | 292 | Light Brown |
| 12/05/10 | 930 | 42.00 | 18.98 | 8.40 | 5.60 | 1.800 | 314 | Light Brown |
| 12/05/10 | 945 | 42.50 | 18.39 | 8.30 | 8.00 | 1.800 | 265 | Light Brown |
| 12/05/10 | 1000 | 43.00 | 19.18 | - | - | - | - | Pump Issues. Stop Development. |
| 12/17/10 | 1045 | 43.00 | 11.27 | - | - | - | - | Continue Well Development. |
| 12/17/10 | 1050 | 43.40 | 12.62 | 6.26 | 12.73 | 1.724 | 999 | Very Cloudy |
| 12/17/10 | 1055 | 43.60 | 13.68 | 6.29 | 12.20 | 1.723 | 999 | Light Brown |
| 12/17/10 | 1100 | 44.00 | 15.47 | 9.29 | 13.38 | 1.705 | 999 | Light Brown |
| 12/17/10 | 1105 | 44.60 | 18.27 | 6.27 | 14.13 | 1.685 | 647 | Cloudy |
| 12/17/10 | 1110 | 45.25 | 20.67 | 6.26 | 13.72 | 1.660 | 191 | Cloudy |
| 12/17/10 | 1115 | 47.50 | 32.74 | 6.29 | 15.19 | 1.632 | 145 | Cloudy |
| 12/17/10 | 1125 | 48.00 | 41.50 | - | - | - | - | Purge Well Dry. |
| 12/17/10 | 1126 | 48.00 | 41.00 | - | - | - | - | Development Complete. |

Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-13 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Wayne Conway / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 12/2/2010 1248

END: 12/3/2010 1310

START WATER LEVELS : 4.18 ft btoc

WELL DEPTH: 18.39 ft btoc

WELL VOLUME: 7.61 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 9.49 ft

TOTAL QUANTITY OF WATER DISCHARGED: 85.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 12/02/10 | 1230 | 0.00 | 4.18 | - | - | - | - | Start Well Development. |
| 12/02/10 | 1248 | 4.00 | 10.80 | - | - | - | - | No Parameters Taken. |
| 12/02/10 | 1315 | 25.00 | - | - | - | - | - | Pump 3 Well Volumes. |
| 12/02/10 | 1316 | 25.00 | - | - | - | - | - | Stop Well Development. |
| 12/03/10 | 1019 | 25.00 | 4.18 | - | - | - | - | Continue Well Development. |
| 12/03/10 | 1024 | 27.00 | 9.32 | 6.20 | 13.00 | 0.290 | 112 | Clear |
| 12/03/10 | 1029 | 30.00 | 10.22 | 6.80 | 12.00 | 0.290 | 111 | Clear |
| 12/03/10 | 1034 | 36.00 | 12.28 | 7.50 | 13.00 | 0.290 | 112 | Clear |
| 12/03/10 | 1038 | 41.00 | 12.62 | 7.30 | 13.00 | 0.290 | 493 | Light Brown |
| 12/03/10 | 1043 | 45.00 | 13.15 | 7.40 | 13.00 | 0.300 | 330 | Light Brown |
| 12/03/10 | 1048 | 48.00 | 13.15 | 7.30 | 13.00 | 0.290 | 140 | Clear |
| 12/03/10 | 1053 | 53.00 | 13.15 | 7.40 | 13.00 | 0.300 | 92 | Clear |
| 12/03/10 | 1058 | 55.00 | - | - | - | - | - | Pump Issues. |
| 12/03/10 | 1228 | 58.00 | 11.60 | 7.80 | 13.00 | 0.310 | 843 | Light Brown |
| 12/03/10 | 1233 | 62.00 | 13.15 | 7.40 | 13.00 | 0.310 | 725 | Light Brown |
| 12/03/10 | 1238 | 67.00 | 13.32 | 7.30 | 14.00 | 0.320 | 450 | Light Brown |
| 12/03/10 | 1245 | 73.00 | 13.40 | 7.40 | 14.00 | 0.320 | 223 | Clear |
| 12/03/10 | 1252 | 78.00 | 13.80 | 7.80 | 13.00 | 0.330 | 64 | Clear |
| 12/03/10 | 1300 | 82.00 | 13.62 | 7.30 | 13.00 | 0.330 | 111 | Clear |
| 12/03/10 | 1310 | 85.00 | 13.65 | 7.60 | 14.00 | 0.330 | 53 | Clear |
| 12/03/10 | 1311 | 85.00 | 13.65 | - | - | - | - | Development Complete. |
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Comments: Purge 10 well volumes, parameters are stable.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-14 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Wayne Conway / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/22/2010 1115

END: 12/17/2010 1012

START WATER LEVELS : 5.70 ft btoc

WELL DEPTH: 37.60 ft btoc

WELL VOLUME: 10.48 ft

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 31.30 ft

TOTAL QUANTITY OF WATER DISCHARGED: 47.00 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/22/10 | 1100 | 0.00 | 5.70 | - | - | - | - | Start Well Development. |
| 11/22/10 | 1215 | 10.00 | 37.00 | - | - | - | - | Drilling water removed. Purge Well Dry. |
| 12/01/10 | 1433 | 10.00 | 5.70 | - | - | - | - | Continue Well Development. |
| 12/01/10 | 1545 | 20.00 | 37.00 | - | - | - | - | Purge Well Dry. |
| 12/02/10 | 1045 | 20.00 | 9.51 | - | - | - | - | Continue Well Development. |
| 12/02/10 | 1051 | 21.00 | 14.71 | 8.30 | 10.00 | 1.000 | 10 | Light Brown |
| 12/02/10 | 1052 | 21.00 | 14.71 | - | - | - | - | Pump Issues. Stop Well Development. |
| 12/03/10 | 920 | 21.00 | 9.51 | - | - | - | - | Continue Well Development. |
| 12/03/10 | 1003 | 31.00 | 37.00 | - | - | - | - | Purge Well Dry. |
| 12/04/10 | 915 | 31.00 | 8.70 | - | - | - | - | Continue Well Development. |
| 12/04/10 | 938 | 39.00 | 37.00 | - | - | - | - | Purge Well Dry. |
| 12/17/10 | 925 | 39.00 | 5.34 | - | - | - | - | Continue Well Development. |
| 12/17/10 | 930 | 39.25 | 5.46 | 7.66 | 7.43 | 1.028 | 53.1 | Clear |
| 12/17/10 | 935 | 39.40 | 6.08 | 7.46 | 8.84 | 0.977 | 184 | Cloudy |
| 12/17/10 | 940 | 39.50 | 6.97 | 7.35 | 9.92 | 0.984 | 999 | Light Brown |
| 12/17/10 | 945 | 39.75 | 8.11 | 7.36 | 10.4 | 0.983 | 999 | Light Brown |
| 12/17/10 | 950 | 40.10 | 10.02 | 7.38 | 12.69 | 0.981 | 438 | Cloudy |
| 12/17/10 | 955 | 41.50 | 16.51 | 7.45 | 14.46 | 0.98 | 157 | Cloudy |
| 12/17/10 | 1000 | 43.50 | 26.25 | 7.46 | 14.04 | 0.98 | 42.6 | Clear |
| 12/17/10 | 1005 | 45.00 | 30.30 | 7.38 | 14.25 | 0.974 | 32.7 | Clear |
| 12/17/10 | 1010 | 46.75 | 33.98 | 7.31 | 14.11 | 0.964 | - | - |
| 12/17/10 | 1012 | 47.00 | 37.55 | - | - | - | - | Purge Well Dry. |
| 12/17/10 | 1013 | 47.00 | 37.55 | - | - | - | - | Development Complete. |
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Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-15 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Wayne Conway / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/22/2010 1320

END: 12/5/2010 1525

START WATER LEVELS: 9.35 ft btoc

WELL DEPTH: 32.88 ft btoc

WELL VOLUME: 9.12 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 22.35 ft

TOTAL QUANTITY OF WATER DISCHARGED: 30.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/22/10 | 1320 | 0.0 | 9.35 | - | - | - | - | Start Well Development |
| 11/22/10 | 1345 | 7.0 | 32.00 | - | - | - | - | Drilling water removed. Purge Well Dry. |
| 12/03/10 | 1412 | 7.0 | 9.39 | - | - | - | - | Continue Well Development. |
| 12/03/10 | 1428 | 16.0 | 32.00 | - | - | - | - | Purge Well Dry. |
| 12/04/10 | 1019 | 16.0 | 9.39 | - | - | - | - | Continue Well Development. |
| 12/04/10 | 1029 | 23.0 | 32.00 | - | - | - | - | Purge Well Dry. |
| 12/05/10 | 1239 | 23.0 | 9.88 | - | - | - | - | Continue Well Development. |
| 12/05/10 | 1245 | 23.25 | 10.48 | 7.90 | 10.2 | 1.200 | 83 | Clear |
| 12/05/10 | 1300 | 24.50 | 13.98 | 8.50 | 7.7 | 1.300 | 95 | Clear |
| 12/05/10 | 1315 | 25.25 | 14.92 | 7.80 | 9.3 | 1.200 | 160 | Clear |
| 12/05/10 | 1330 | 26.00 | 14.98 | 7.80 | 8.3 | 1.200 | 60 | Clear |
| 12/05/10 | 1350 | 26.50 | 15.30 | 7.90 | 8.7 | 1.200 | 119 | Light Brown |
| 12/05/10 | 1405 | 26.75 | 15.49 | 7.90 | 7.0 | 1.200 | 616 | Light Brown |
| 12/05/10 | 1420 | 27.50 | 15.48 | 7.60 | 8.0 | 1.200 | 236 | Light Brown |
| 12/05/10 | 1445 | 28.25 | 15.36 | 7.70 | 8.2 | 1.200 | 60 | Clear |
| 12/05/10 | 1510 | 29.00 | 17.50 | 7.80 | 10.0 | 1.200 | 74 | Clear |
| 12/05/10 | 1525 | 30.00 | 18.10 | - | - | - | - | Development Complete. |
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Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-16 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT : Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Wayne Conway / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/22/2010 830

END: 12/17/2010 1356

START WATER LEVELS : 5.90 ft btoc

WELL DEPTH: 37.45 ft btoc

WELL VOLUME: 11.75 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 30.10 ft

TOTAL QUANTITY OF WATER DISCHARGED: 38.00 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/22/10 | 830 | 0.00 | 5.90 | - | - | - | - | Start Well Development. |
| 11/22/10 | 930 | 10.00 | 36.00 | - | - | - | - | Drilling water removed. Purge Well Dry. |
| 12/03/10 | 1451 | 10.00 | 9.72 | - | - | - | - | Continue Well Development. |
| 12/03/10 | 1502 | 20.00 | 36.00 | - | - | - | - | Purge Well Dry. |
| 12/04/10 | 1013 | 20.00 | 6.78 | - | - | - | - | Continue Well Development. |
| 12/04/10 | 1023 | 25.00 | 20.82 | - | - | - | - | No Parameters Taken. |
| 12/04/10 | 1035 | 26.50 | 23.85 | - | - | - | - | No Parameters Taken. |
| 12/04/10 | 1037 | 28.00 | - | - | - | - | - | Pump Issues. Stop Well Development. |
| 12/17/10 | 1333 | 28.00 | 6.39 | - | - | - | - | Continue Well Development. |
| 12/17/10 | 1335 | 28.75 | 10.00 | 6.52 | 13.44 | 1.342 | 999 | Brown |
| 12/17/10 | 1338 | 29.75 | 15.00 | 6.51 | 13.79 | 1.329 | 999 | Light Brown |
| 12/17/10 | 1341 | 30.75 | 20.00 | 6.47 | 13.74 | 1.328 | 999 | Light Brown |
| 12/17/10 | 1344 | 32.00 | 25.00 | 6.42 | 13.33 | 1.326 | 999 | Light Brown |
| 12/17/10 | 1347 | 34.00 | 30.00 | 6.37 | 13.75 | 1.319 | 332 | Cloudy |
| 12/17/10 | 1353 | 36.00 | 35.00 | 6.29 | 14.14 | 1.317 | 999 | Cloudy |
| 12/17/10 | 1356 | 38.00 | 36.00 | - | - | - | - | Purge Well Dry. |
| 12/17/10 | 1357 | 38.00 | 36.00 | - | - | - | - | Development Complete. |
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Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-17 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT : Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Wayne Conway / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/29/2010 1030

END: 12/17/2010 1518

START WATER LEVELS : 6.25 ft btoc

WELL DEPTH: 37.16 ft btoc

WELL VOLUME: 10.22 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 30.75 ft

TOTAL QUANTITY OF WATER DISCHARGED: 39.55 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/29/10 | 1030 | 0.0 | 6.25 | - | - | - | - | Start Well Development. |
| 11/29/10 | 1345 | 25.0 | - | - | - | - | - | Stop Well Development. |
| 12/04/10 | 1042 | 25.0 | 6.89 | - | - | - | - | Continue Well Development. |
| 12/04/10 | 1055 | 34.0 | 37.00 | - | - | - | - | Purge Well Dry. |
| 12/17/10 | 1433 | 34.0 | 7.24 | - | - | - | - | Continue Well Development. |
| 12/17/10 | 1434 | 34.26 | 10.00 | 6.36 | 13.99 | 1.493 | 999 | Cloudy |
| 12/17/10 | 1438 | 34.53 | 15.00 | 6.28 | 14.57 | 1.515 | 249 | Cloudy |
| 12/17/10 | 1442 | 35.85 | 20.00 | 6.38 | 14.45 | 1.549 | 224 | Cloudy |
| 12/17/10 | 1447 | 37.30 | 25.00 | 6.34 | 14.51 | 1.556 | 146 | Cloudy |
| 12/17/10 | 1453 | 38.23 | 27.55 | 6.32 | 14.59 | 1.556 | 999 | Cloudy |
| 12/17/10 | 1458 | 38.49 | 27.04 | 6.24 | 14.39 | 1.601 | 259 | Cloudy |
| 12/17/10 | 1503 | 38.76 | 26.11 | 6.22 | 14.40 | 1.606 | 138 | Cloudy |
| 12/17/10 | 1508 | 39.02 | 26.10 | 6.21 | 14.32 | 1.609 | 74.7 | Cloudy |
| 12/17/10 | 1513 | 39.28 | 25.81 | 6.10 | 14.24 | 1.605 | 72.7 | Cloudy |
| 12/17/10 | 1518 | 39.55 | 25.79 | 6.18 | 14.27 | 1.608 | 62.1 | Slightly Cloudy |
| 12/17/10 | 1520 | 39.55 | 25.79 | - | - | - | - | Development Complete. |
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Comments: Purged just under 4 well volumes. Turbidity is just above 50 NTU but stable, all other parameters are stable.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-18 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Wayne Conway / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/30/2010 800

END: 12/17/2010 1615

START WATER LEVELS: 13.58 ft btoc (recorded on 01/04/10)

WELL DEPTH: 67.20 ft btoc

WELL VOLUME: 13.20 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 47.72 ft

TOTAL QUANTITY OF WATER DISCHARGED: 39.00 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/30/10 | 800 | 0.00 | - | - | - | - | - | Start Well Development. Not at Static Level |
| 11/30/10 | 900 | 15.00 | 62.90 | - | - | - | - | Stop Well Development. |
| 12/03/10 | 1528 | 15.00 | 28.65 | - | - | - | - | Continue Well Development. Not at Static Level. |
| 12/03/10 | 1538 | 26.50 | 67.00 | - | - | - | - | Purge Well Dry. |
| 12/04/10 | 1225 | 26.50 | 28.65 | - | - | - | - | Continue Well Development. Not at Static Level. |
| 12/04/10 | 1245 | 28.50 | - | - | - | - | - | Pump Issues. Stop Well Development. |
| 12/05/10 | 837 | 28.50 | 56.42 | - | - | - | - | Continue Well Development. Not at Static Level. |
| 12/05/10 | 842 | 30.50 | 67.00 | - | - | - | - | Purge Well Dry. |
| 12/17/10 | 1554 | 30.50 | 19.48 | - | - | - | - | Continue Well Development. Not at Static Level. |
| 12/17/10 | 1556 | 31.50 | 25.00 | 7.13 | 13.37 | 0.820 | 999 | Dark Brown |
| 12/17/10 | 1557 | 32.25 | 30.00 | 7.11 | 13.32 | 0.818 | 999 | Dark Brown |
| 12/17/10 | 1558 | 33.00 | 35.00 | 7.25 | 13.28 | 0.812 | 999 | Dark Brown |
| 12/17/10 | 1559 | 33.50 | 40.00 | 7.35 | 13.25 | 0.807 | 999 | Dark Brown |
| 12/17/10 | 1603 | 34.50 | 45.00 | 8.88 | 13.43 | 0.743 | 332 | Dark Brown |
| 12/17/10 | 1605 | 35.50 | 50.00 | 10.26 | 13.48 | 0.850 | 999 | Light Brown |
| 12/17/10 | 1608 | 36.50 | 55.00 | 10.92 | 13.63 | 1.096 | 999 | Cloudy |
| 12/17/10 | 1611 | 37.50 | 60.00 | 10.87 | 13.73 | 1.048 | 685 | Cloudy |
| 12/17/10 | 1613 | 38.50 | 65.00 | 10.75 | 13.71 | 0.994 | 652 | Cloudy |
| 12/17/10 | 1615 | 39.00 | 67.00 | - | - | - | - | Purge Well Dry. |
| 12/17/10 | 1616 | 39.00 | 67.00 | - | - | - | - | Development Complete. |
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Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-19 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Wayne Conway / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/29/2010 1400

END: 12/4/2010 912

START WATER LEVELS : 3.29 ft btoc

WELL DEPTH: 18.02 ft btoc

WELL VOLUME: 7.7 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 14.21 ft

TOTAL QUANTITY OF WATER DISCHARGED: 30.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/29/10 | 1400 | 0.0 | 3.29 | - | - | - | - | Start Well Development. |
| 11/29/10 | 1445 | 8.0 | 17.50 | - | - | - | - | Purge Well Dry. |
| 12/03/10 | 840 | 8.0 | 3.24 | - | - | - | - | Continue Well Development. |
| 12/03/10 | 900 | 17.0 | 17.50 | - | - | - | - | Purge Well Dry. |
| 12/04/10 | 819 | 17.0 | 3.67 | - | - | - | - | Continue Well Development. |
| 12/04/10 | 823 | 20.0 | 11.13 | - | - | - | - | None |
| 12/04/10 | 825 | 21.0 | 12.22 | - | - | - | - | None |
| 12/04/10 | 828 | 22.0 | 12.13 | 7.35 | 11.9 | 0.940 | 999 | None |
| 12/04/10 | 834 | 23.0 | 11.79 | 7.64 | 11.9 | 0.978 | 379 | None |
| 12/04/10 | 840 | 24.0 | 11.63 | 7.79 | 11.5 | 0.970 | 228 | None |
| 12/04/10 | 843 | 24.5 | 11.58 | 7.75 | 11.6 | 0.971 | 165 | None |
| 12/04/10 | 846 | 25.0 | 11.56 | 7.70 | 12.1 | 0.964 | 125 | None |
| 12/04/10 | 848 | 25.5 | 11.50 | 7.73 | 12.2 | 0.970 | 115 | None |
| 12/04/10 | 850 | 26.0 | 11.48 | 7.74 | 12.3 | 0.967 | 115 | None |
| 12/04/10 | 853 | 26.5 | 11.48 | 7.73 | 12.3 | 0.966 | 110 | None |
| 12/04/10 | 856 | 27.0 | 11.45 | 7.75 | 12.1 | 0.968 | 76 | None |
| 12/04/10 | 858 | 27.5 | 11.43 | 7.75 | 12.2 | 0.965 | 63 | None |
| 12/04/10 | 901 | 28.0 | 11.38 | 7.77 | 12.2 | 0.967 | 69 | None |
| 12/04/10 | 903 | 28.5 | 11.38 | 7.75 | 12.1 | 0.965 | 58 | None |
| 12/04/10 | 906 | 29.0 | 11.35 | 7.76 | 12.0 | 0.965 | 46 | None |
| 12/04/10 | 909 | 29.5 | 11.35 | 7.77 | 12.0 | 0.963 | 40 | None |
| 12/04/10 | 912 | 30.0 | 11.31 | 7.76 | 11.9 | 0.963 | 37 | None |
| 12/04/10 | 913 | 30.0 | 11.31 | - | - | - | - | Development Complete. |
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Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-20 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Wayne Conway / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 12/1/2010 907

END: 12/2/2010 925

START WATER LEVELS : 1.89 ft btoc

WELL DEPTH: 35.08 ft btoc

WELL VOLUME: 10.69 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 33.19 ft

TOTAL QUANTITY OF WATER DISCHARGED: 33.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 12/01/10 | 839 | 0.00 | 1.89 | - | - | - | - | Start Well Development. |
| 12/01/10 | 907 | 3.75 | 11.75 | 6.90 | 11.00 | 1.200 | 999 | Dark Brown |
| 12/01/10 | 912 | 6.00 | 14.60 | 7.70 | 12.00 | 1.200 | 999 | Dark Brown |
| 12/01/10 | 920 | 13.00 | 31.05 | 7.20 | 12.00 | 1.200 | 999 | Dark Brown |
| 12/01/10 | 928 | 19.00 | 34.50 | 7.30 | 12.00 | 1.100 | 860 | Light Brown / Clear |
| 12/01/10 | 930 | 20.00 | 34.75 | - | - | - | - | Purge Well Dry. |
| 12/02/10 | 830 | 20.00 | 2.78 | - | - | - | - | Continue Well Development. |
| 12/02/10 | 838 | 22.50 | 10.89 | 6.60 | 12.00 | 1.200 | 64 | Clear |
| 12/02/10 | 848 | 25.00 | 10.68 | 7.40 | 13.00 | 1.200 | 16 | Clear |
| 12/02/10 | 855 | 27.50 | 10.56 | 8.00 | 12.00 | 1.100 | 6 | Clear |
| 12/02/10 | 912 | 30.00 | 10.50 | 7.80 | 12.00 | 1.100 | 2 | Clear |
| 12/02/10 | 925 | 33.00 | 12.55 | 7.50 | 8.40 | 1.100 | 10 | Clear |
| 12/02/10 | 926 | 33.00 | 12.55 | - | - | - | - | Development Complete. |

Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | MW-21 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Wayne Conway / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 12/1/2010 1005

END: 12/1/2010 1155

START WATER LEVELS : 1.89 ft btoc

WELL DEPTH: 20.24 ft btoc

WELL VOLUME: 8.28 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 10.62 ft

TOTAL QUANTITY OF WATER DISCHARGED: 45.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 12/01/10 | 1005 | 0.0 | 1.89 | - | - | - | - | Start Well Development. |
| 12/01/10 | 1009 | 5.0 | 12.51 | 7.70 | 13.0 | 1.000 | 999 | Light Brown |
| 12/01/10 | 1013 | 6.5 | 4.75 | 7.50 | 12.0 | 1.100 | 999 | Light Brown |
| 12/01/10 | 1018 | 8.0 | 4.45 | 7.20 | 13.0 | 1.100 | 999 | Light Brown |
| 12/01/10 | 1026 | 12.5 | 4.34 | 7.30 | 13.0 | 1.100 | 999 | Light Brown |
| 12/01/10 | 1039 | 17.0 | 4.11 | 7.80 | 13.0 | 1.100 | 55 | Clear |
| 12/01/10 | 1045 | 17.0 | - | - | - | - | - | Development Paused. |
| 12/01/10 | 1101 | 23.0 | 4.00 | 7.80 | 12.0 | 1.100 | 999 | Light Brown |
| 12/01/10 | 1109 | 26.0 | 3.70 | 7.60 | 13.0 | 1.100 | 999 | Light Brown |
| 12/01/10 | 1121 | 30.0 | 3.18 | 7.20 | 14.0 | 1.000 | 999 | Light Brown |
| 12/01/10 | 1139 | 35.0 | 10.40 | 7.40 | 13.0 | 1.000 | 74 | Clear |
| 12/01/10 | 1145 | 40.0 | 10.15 | 7.40 | 13.0 | 1.000 | 20 | Clear |
| 12/01/10 | 1155 | 45.0 | 10.15 | 7.30 | 13.0 | 1.000 | 15 | Clear |
| 12/01/10 | 1157 | 45.0 | 10.15 | - | - | - | - | Development Complete. |

Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | G-101 | SHEET 1 OF 2 |
| | WELL DEVELOPMENT FORM | | |

PROJECT : Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/22/2010 1328

END: 12/15/2010 951

START WATER LEVELS : 12.41 ft btoc

WELL DEPTH: 17.98 ft btoc

WELL VOLUME: 6.19 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 5.57 ft

TOTAL QUANTITY OF WATER DISCHARGED: 18.75 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/22/10 | 1328 | 0.0 | 12.41 | - | - | - | - | Start Well Development |
| 11/22/10 | 1334 | 1.0 | 13.78 | 7.80 | 17.0 | 0.960 | 999 | Brown |
| 11/22/10 | 1342 | 2.0 | 15.00 | 7.70 | 17.0 | 0.930 | 999 | Brown |
| 11/22/10 | 1354 | 3.0 | 15.95 | 8.10 | 17.0 | 0.930 | 999 | Brown |
| 11/22/10 | 1400 | 4.0 | 17.50 | - | - | - | - | Purge Well Dry |
| 11/29/10 | 1430 | 4.0 | 10.62 | - | - | - | - | Continue Well Development. |
| 11/29/10 | 1437 | 4.5 | 11.50 | 8.20 | 14.0 | 0.92 | 999 | Light Brown |
| 11/29/10 | 1441 | 5.0 | 12.20 | 7.90 | 14.0 | 0.90 | 999 | Light Brown |
| 11/29/10 | 1445 | 5.5 | 12.55 | 7.80 | 14.0 | 0.89 | 999 | Light Brown |
| 11/29/10 | 1448 | 6.0 | 13.00 | 7.90 | 14.0 | 0.90 | 999 | Light Brown |
| 11/29/10 | 1455 | 6.5 | 13.35 | 7.90 | 14.0 | 0.91 | 999 | Light Brown |
| 11/29/10 | 1502 | 7.0 | 13.95 | 7.90 | 14.0 | 0.90 | 999 | Light Brown |
| 11/29/10 | 1510 | 8.0 | 14.90 | 8.30 | 13.0 | 0.87 | 990 | Light Brown |
| 11/29/10 | 1520 | 8.5 | 17.50 | - | - | - | - | Purge Well Dry |
| 11/30/10 | 949 | 8.5 | 9.50 | - | - | - | - | Continue Well Development. |
| 11/30/10 | 957 | 9.0 | 11.55 | 7.70 | 12.0 | 0.90 | 999 | Brown |
| 11/30/10 | 1003 | 9.5 | 12.45 | 7.90 | 13.0 | 0.89 | 999 | Light Brown |
| 11/30/10 | 1007 | 10.5 | 13.45 | 7.80 | 13.0 | 0.89 | 999 | Light Brown |
| 11/30/10 | 1010 | 11.0 | 14.80 | 8.00 | 13.0 | 0.87 | 999 | Light Brown |
| 11/30/10 | 1018 | 11.5 | 15.80 | 8.40 | 11.0 | 0.85 | 999 | Light Brown |
| 11/30/10 | 1030 | 12.0 | 17.25 | 8.00 | 11.0 | 0.90 | 999 | Light Brown |
| 11/30/10 | 1031 | 12.5 | 17.50 | - | - | - | - | Purge Well Dry |
| 12/15/10 | 914 | 12.5 | 9.68 | - | - | - | - | Continue Well Development. |
| 12/15/10 | 918 | 13.0 | 10.32 | 6.44 | 12.8 | 0.712 | 23.3 | Clear w/ small particulate |
| 12/15/10 | 922 | 13.5 | 11.04 | 6.90 | 13.0 | 0.678 | 24.3 | Clear w/ small particulate |
| 12/15/10 | 926 | 14.0 | 11.62 | 6.92 | 12.6 | 0.667 | 37 | Clear w/ small particulate |

Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | G-101 | SHEET 2 OF 2 |
| | WELL DEVELOPMENT FORM | | |

PROJECT : Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/22/2010 1328

END: 12/15/2010 951

START WATER LEVELS : 12.41 ft btoc

WELL DEPTH: 17.98 ft btoc

WELL VOLUME: 6.19 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 5.57 ft

TOTAL QUANTITY OF WATER DISCHARGED: 18.75 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 12/15/10 | 929 | 14.5 | 12.29 | 6.87 | 12.9 | 0.683 | 125 | Cloudy |
| 12/15/10 | 932 | 15.0 | 12.90 | 6.89 | 13.0 | 0.687 | 117 | Cloudy |
| 12/15/10 | 935 | 15.5 | 13.30 | 6.90 | 12.9 | 0.694 | 119 | Cloudy |
| 12/15/10 | 938 | 16.0 | 13.94 | 6.97 | 13.3 | 0.660 | 145 | Cloudy |
| 12/15/10 | 940 | 16.5 | 14.59 | 7.07 | 13.3 | 0.642 | 249 | Cloudy |
| 12/15/10 | 942 | 17.0 | 15.12 | 7.03 | 13.3 | 0.639 | 453 | Light Brown |
| 12/15/10 | 945 | 17.5 | 15.83 | 7.05 | 13.4 | 0.653 | 870 | Light Brown |
| 12/15/10 | 947 | 18.0 | 16.36 | 7.01 | 13.0 | 0.672 | 999 | Brown |
| 12/15/10 | 949 | 18.5 | 17.40 | 6.98 | 13.5 | 0.684 | 999 | Brown |
| 12/15/10 | 951 | 18.75 | 17.98 | - | - | - | - | Purge Well Dry |
| 12/15/10 | 952 | 18.75 | 17.98 | - | - | - | - | Development Complete. |

Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER 406469 | WELL NUMBER G-102 SHEET 1 OF 1 |
|---|---|---|
| | WELL DEVELOPMENT FORM | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/19/2010 1437

END: 12/6/2010 1415

START WATER LEVELS : 6.56 ft btoc

WELL DEPTH: 17.67 ft btoc

WELL VOLUME: 7.1 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 10.84 ft

TOTAL QUANTITY OF WATER DISCHARGED: 24.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/19/10 | 1435 | 0.00 | 6.56 | - | - | - | - | Start Well Development. |
| 11/19/10 | 1437 | 1.00 | 9.59 | 7.56 | 14.00 | 1.020 | 999 | Brown |
| 11/19/10 | 1438 | 2.00 | 11.24 | 7.48 | 14.00 | 1.030 | 636 | Cloudy |
| 11/19/10 | 1440 | 3.00 | 12.39 | 7.41 | 14.00 | 1.020 | 132 | Cloudy |
| 11/19/10 | 1442 | 4.00 | 13.78 | 7.45 | 14.20 | 1.080 | 971 | Cloudy |
| 11/19/10 | 1447 | 6.00 | 16.05 | 7.82 | 14.20 | 1.140 | 88 | Cloudy |
| 11/19/10 | 1453 | 7.00 | 16.35 | - | - | - | - | Purge Well Dry. |
| 11/20/10 | 1018 | 7.00 | 6.65 | - | - | - | - | Continue Well Development. |
| 11/20/10 | 1022 | 8.00 | 8.11 | 7.71 | 13.50 | 1.010 | 3 | Clear |
| 11/20/10 | 1031 | 9.00 | 10.54 | 7.63 | 13.70 | 1.000 | 999 | Brown (Monsoon Pumped) |
| 11/20/10 | 1034 | 10.00 | 13.79 | 7.56 | 14.10 | 0.990 | 999 | Brown |
| 11/20/10 | 1038 | 11.00 | 17.40 | - | - | - | - | Purge Well Dry. |
| 11/21/10 | 925 | 11.00 | 6.58 | - | - | - | - | Continue Well Development. |
| 11/21/10 | 927 | 12.00 | 9.55 | 7.40 | 14.00 | 1.000 | 999 | Light Brown |
| 11/21/10 | 930 | 13.00 | 12.55 | 7.50 | 14.00 | 1.000 | 999 | Light Brown |
| 11/21/10 | 933 | 15.00 | 14.35 | 7.50 | 14.00 | 1.000 | 999 | Light Brown |
| 11/21/10 | 938 | 17.00 | 17.40 | - | - | - | - | Purge Well Dry. |
| 12/06/10 | 1257 | 17.00 | 4.50 | - | - | - | - | Continue Well Development. |
| 12/06/10 | 1302 | 17.70 | 5.65 | 7.12 | 9.67 | 0.921 | 5.79 | Clear |
| 12/06/10 | 1307 | 18.30 | 6.00 | 7.10 | 9.70 | 0.924 | 4.36 | Clear |
| 12/06/10 | 1312 | 18.90 | 6.45 | 7.07 | 9.84 | 0.925 | 4.22 | Clear |
| 12/06/10 | 1317 | 19.50 | 6.80 | 7.06 | 9.65 | 0.924 | 3.30 | Clear |
| 12/06/10 | 1322 | 20.10 | 7.05 | 7.04 | 9.38 | 0.922 | 2.68 | Clear |
| 12/06/10 | 1327 | 20.70 | 7.30 | 7.02 | 9.65 | 0.916 | 1.87 | Clear |
| 12/06/10 | 1405 | 23.00 | 7.94 | 7.03 | 9.24 | 0.885 | 9.81 | Clear |
| 12/06/10 | 1410 | 23.50 | 7.93 | 7.00 | 9.38 | 0.882 | 5.14 | Clear |
| 12/06/10 | 1415 | 24.00 | 7.94 | 6.95 | 9.58 | 0.878 | 3.75 | Clear |
| 12/06/10 | 1416 | 24.00 | 7.94 | - | - | - | - | Development Complete. |

Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | G-103 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT : Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/21/2010 1038

END: 11/21/2010 1504

START WATER LEVELS : 7.71 ft btoc

WELL DEPTH: 17.40 ft btoc

WELL VOLUME: 6.55 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 5.34 ft

TOTAL QUANTITY OF WATER DISCHARGED: 56.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/21/10 | 1038 | 0.0 | 7.71 | - | - | - | - | Start Well Development. |
| 11/21/10 | 1040 | 1.0 | 9.66 | 7.60 | 15.0 | 1.900 | 999 | Brown |
| 11/21/10 | 1042 | 2.0 | 10.15 | 7.30 | 15.0 | 1.400 | 999 | Brown |
| 11/21/10 | 1054 | 6.0 | 10.85 | 7.50 | 15.0 | 1.400 | 420 | Brown |
| 11/21/10 | 1058 | 8.0 | 10.60 | 7.50 | 15.0 | 1.400 | 140 | Surge |
| 11/21/10 | 1110 | 10.0 | 10.72 | 7.30 | 15.0 | 1.400 | 999 | Brown |
| 11/21/10 | 1114 | 12.0 | 11.29 | 7.30 | 15.0 | 1.400 | 999 | Brown |
| 11/21/10 | 1118 | 14.0 | 11.63 | 7.40 | 15.0 | 1.400 | 999 | Light Brown |
| 11/21/10 | 1126 | 18.0 | 11.85 | 7.30 | 15.0 | 1.400 | 999 | Light Brown |
| 11/21/10 | 1134 | 20.0 | 12.05 | 7.30 | 15.0 | 1.400 | 470 | Light Brown |
| 11/21/10 | 1137 | 22.0 | 11.90 | 7.30 | 15.0 | 1.500 | 999 | Light Brown |
| 11/21/10 | 1313 | 24.0 | 10.43 | 7.60 | 16.0 | 1.400 | 999 | Brown |
| 11/21/10 | 1317 | 26.0 | 11.03 | 7.50 | 16.0 | 1.400 | 870 | Brown |
| 11/21/10 | 1322 | 28.0 | 11.50 | 7.50 | 16.0 | 1.400 | 450 | Clear |
| 11/21/10 | 1326 | 30.0 | 11.60 | 7.40 | 16.0 | 1.400 | 400 | Clear |
| 11/21/10 | 1332 | 32.0 | 11.74 | 7.50 | 16.0 | 1.400 | 310 | Clear |
| 11/21/10 | 1335 | 34.0 | 11.87 | 7.30 | 16.0 | 1.400 | 340 | Clear |
| 11/21/10 | 1339 | 36.0 | 12.03 | 7.50 | 16.0 | 1.400 | 290 | Clear |
| 11/21/10 | 1346 | 38.0 | 12.10 | 7.30 | 16.0 | 1.400 | 240 | Clear |
| 11/21/10 | 1355 | 44.0 | 12.12 | 7.30 | 16.0 | 1.400 | 420 | Clear |
| 11/21/10 | 1440 | 46.0 | 10.18 | 7.40 | 16.0 | 1.400 | 140 | Clear |
| 11/21/10 | 1444 | 48.0 | 11.33 | 7.40 | 16.0 | 1.400 | 80 | Clear |
| 11/21/10 | 1449 | 50.0 | 12.63 | 7.40 | 16.0 | 1.400 | 130 | Clear |
| 11/21/10 | 1454 | 52.0 | 12.82 | 7.40 | 16.0 | 1.400 | 130 | Clear |
| 11/21/10 | 1459 | 54.0 | 12.95 | 7.40 | 16.0 | 1.400 | 80 | Clear |
| 11/21/10 | 1504 | 56.0 | 13.05 | 7.40 | 16.0 | 1.400 | 30 | Clear |
| 11/21/10 | 1505 | 56.0 | 13.05 | - | - | - | - | Development Complete. |

Comments: Purge 8 well volume, parameters finally stablize.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | G-104 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Jessica Hoffman/Jerry Kowalski

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 12/14/2010 1408

END: 12/14/2010 1622

START WATER LEVELS: 9.18 ft btoc

WELL DEPTH: 17.24 ft btoc

WELL VOLUME: 6.60 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 0.12 ft

TOTAL QUANTITY OF WATER DISCHARGED: 20.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 12/14/10 | 1404 | 0.0 | 9.18 | - | - | - | - | Start Well Development. |
| 12/14/10 | 1408 | 0.5 | 9.25 | 6.82 | 12.4 | 1.390 | 459 | Light Brown |
| 12/14/10 | 1412 | 1.0 | 9.25 | 6.79 | 13.0 | 1.390 | 59.9 | Clear / Cloudy |
| 12/14/10 | 1416 | 1.5 | 9.25 | 6.74 | 13.3 | 1.330 | 30.3 | Clear |
| 12/14/10 | 1420 | 2.0 | 9.25 | 6.79 | 12.7 | 1.320 | 20.1 | Clear |
| 12/14/10 | 1427 | 3.0 | 9.27 | 6.79 | 13.4 | 1.270 | 11.4 | Clear |
| 12/14/10 | 1434 | 4.0 | 9.28 | 6.68 | 13.5 | 1.240 | 9.31 | Clear |
| 12/14/10 | 1448 | 6.0 | 9.29 | 6.78 | 13.2 | 1.170 | 6.24 | Clear |
| 12/14/10 | 1515 | 10.0 | 9.28 | 6.81 | 12.9 | 1.140 | 12.9 | Clear |
| 12/14/10 | 1600 | 17.0 | 9.29 | 6.73 | 12.3 | 1.170 | 4.14 | Clear |
| 12/14/10 | 1608 | 18.0 | 9.30 | 6.75 | 12.3 | 1.180 | 5.59 | Clear |
| 12/14/10 | 1615 | 19.0 | 9.30 | 6.76 | 12.3 | 1.190 | 5.08 | Clear |
| 12/14/10 | 1622 | 20.0 | 9.30 | 6.76 | 12.5 | 1.190 | 4.63 | Clear |
| 12/14/10 | 1623 | 20.0 | 9.30 | - | - | - | - | Development Complete. |
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Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | G-105 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/19/2010 1330

END: 12/6/2010 1531

START WATER LEVELS: 6.47 ft btoc

WELL DEPTH: 18.12 ft btoc

WELL VOLUME: 7.19 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 11.65 ft

TOTAL QUANTITY OF WATER DISCHARGED: 25.65 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/19/10 | 1330 | 0.0 | 6.47 | - | - | - | - | Start Well Development. |
| 11/19/10 | 1332 | 1.0 | 10.00 | 7.64 | 14.8 | 0.593 | 999 | Brown |
| 11/19/10 | 1334 | 2.0 | 11.50 | 7.04 | 15.1 | 0.619 | 999 | Brown |
| 11/19/10 | 1338 | 4.0 | 13.49 | 7.05 | 15.2 | 0.746 | 999 | Brown |
| 11/19/10 | 1343 | 6.0 | 15.31 | 7.18 | 15.4 | 0.934 | 999 | Brown |
| 11/19/10 | 1350 | 8.0 | 17.32 | - | - | - | - | Purge Well Dry |
| 11/20/10 | 920 | 8.0 | 6.53 | - | - | - | - | Continue Well Development. |
| 11/20/10 | 921 | 9.5 | 10.98 | 7.60 | 13.8 | 1.160 | 999 | Brown |
| 11/20/10 | 924 | 11.0 | 12.75 | 7.51 | 14.5 | 1.120 | 999 | Brown |
| 11/20/10 | 932 | 13.0 | 16.05 | 7.56 | 14.8 | 1.200 | 999 | Brown |
| 11/20/10 | 937 | 15.0 | 16.80 | 7.61 | 14.8 | 1.210 | 999 | Brown |
| 11/20/10 | 940 | 16.0 | 17.30 | - | - | - | - | Purge Well Dry |
| 11/21/10 | 838 | 16.0 | 6.51 | - | - | - | - | Continue Well Development. |
| 11/21/10 | 842 | 17.0 | 9.43 | 6.95 | 14.4 | 1.240 | 999 | Light Brown |
| 11/21/10 | 844 | 18.0 | 10.93 | 7.22 | 14.5 | 1.180 | 999 | Light Brown |
| 11/21/10 | 849 | 20.0 | 13.73 | 7.32 | 14.7 | 1.140 | 999 | Light Brown |
| 11/21/10 | 855 | 22.0 | 16.96 | 7.35 | 14.9 | 1.170 | 999 | Light Brown |
| 11/21/10 | 855 | 22.0 | 16.96 | - | - | - | - | Purge Well Dry |
| 12/06/10 | 1456 | 22.0 | 4.29 | - | - | - | - | Continue Well Development. |
| 12/06/10 | 1501 | 22.55 | 5.25 | 6.36 | 10.12 | 0.505 | 2.07 | Clear |
| 12/06/10 | 1506 | 23.10 | 5.67 | 6.31 | 10.14 | 0.499 | 1.65 | Clear |
| 12/06/10 | 1511 | 23.65 | 6.00 | 6.29 | 9.77 | 0.500 | 1.92 | Clear |
| 12/06/10 | 1516 | 24.15 | 6.10 | 6.28 | 9.40 | 0.496 | 1.62 | Clear |
| 12/06/10 | 1521 | 24.65 | 6.25 | 6.27 | 9.10 | 0.497 | 2.03 | Clear |
| 12/06/10 | 1526 | 25.15 | 6.35 | 6.26 | 9.15 | 0.497 | 2.15 | Clear |
| 12/06/10 | 1531 | 25.65 | 6.50 | 6.28 | 8.81 | 0.509 | 1.82 | Clear |
| 12/06/10 | 1532 | 25.65 | 6.50 | - | - | - | - | Development Complete. |

Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | G-106 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/18/2010 950

END: 12/6/2010 1057

START WATER LEVELS: 7.30 ft btoc

WELL DEPTH: 18.00 ft btoc

WELL VOLUME: 7.03 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 9.72 ft

TOTAL QUANTITY OF WATER DISCHARGED: 25.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/18/10 | | 0.0 | 7.30 | - | - | - | - | Start Well Development. |
| 11/18/10 | 951 | 1.0 | 8.33 | 7.61 | 15.1 | 1.390 | 999 | Brown |
| 11/18/10 | 955 | 3.0 | 11.03 | 7.17 | 15.8 | 1.380 | 999 | Brown |
| 11/18/10 | 1002 | 5.0 | 12.55 | 7.17 | 14.9 | 1.380 | 999 | Brown |
| 11/18/10 | 1010 | 7.0 | 13.65 | 7.42 | 14.5 | 1.360 | 336 | Brown |
| 11/18/10 | 1021 | 9.0 | 12.78 | 7.31 | 14.5 | 1.360 | 999 | Brown |
| 11/18/10 | - | - | - | - | - | - | - | Stop Well Development. |
| 11/18/10 | - | - | - | - | - | - | - | Continue Well Development. |
| 11/18/10 | 1112 | 10.0 | 10.51 | 7.20 | 15.8 | 1.320 | 616 | Clear |
| 11/18/10 | 1119 | 11.0 | 10.98 | 7.18 | 15.5 | 1.340 | 999 | Turbid |
| 11/18/10 | 1134 | 13.0 | 12.31 | 7.35 | 15.1 | 1.340 | 999 | Turbid |
| 11/18/10 | 1146 | 14.0 | 12.25 | 7.36 | 15.3 | 1.330 | 191 | Clear |
| 11/18/10 | 1147 | 14.0 | 12.25 | - | - | - | - | Stop Well Development. |
| 11/19/10 | 808 | 14.0 | 7.68 | - | - | - | - | Continue Well Development. |
| 11/19/10 | 800 | 15.0 | 8.25 | 6.41 | 15.1 | 1.400 | 999 | Brown |
| 11/19/10 | 814 | 16.0 | 8.61 | 7.22 | 15.4 | 1.380 | 999 | Brown |
| 11/19/10 | 825 | 18.0 | 10.98 | 7.20 | 16.2 | 1.330 | 999 | Brown |
| 11/19/10 | 832 | 20.0 | 13.79 | 7.21 | 15.7 | 1.330 | 999 | Brown |
| 11/19/10 | 836 | 21.0 | 14.18 | 7.18 | 16.3 | 1.320 | 999 | Brown |
| 11/19/10 | 847 | 23.0 | 17.02 | 7.50 | 15.3 | 1.330 | 999 | Brown |
| 11/19/10 | 847 | 23.0 | 17.02 | - | - | - | - | Stop Well Development. |
| 12/06/10 | 1041 | 23.0 | 5.55 | - | - | - | - | Continue Well Development. |
| 12/06/10 | 1042 | 23.5 | 6.00 | 7.03 | 10.82 | 1.219 | 24.8 | Clear |
| 12/06/10 | 1047 | 24.0 | 6.45 | 6.96 | 11.66 | 1.216 | 10.7 | Clear |
| 12/06/10 | 1052 | 24.5 | 6.60 | 6.93 | 11.42 | 1.222 | 5.02 | Clear |
| 12/06/10 | 1057 | 25.0 | 6.75 | 6.90 | 11.05 | 1.216 | 2.13 | Clear |
| 12/06/10 | 1058 | 25.0 | 6.75 | - | - | - | - | Development Complete. |

Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | G-107 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/22/2010 1131

END: 12/15/2010 1408

START WATER LEVELS : 5.78 ft btoc

WELL DEPTH: 17.97 ft btoc

WELL VOLUME: 7.26 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 12.19 ft

TOTAL QUANTITY OF WATER DISCHARGED: 11.50 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/22/10 | 1131 | 0.00 | 5.78 | - | - | - | - | Start Well Development. |
| 11/22/10 | 1134 | 1.00 | 14.50 | 7.00 | 15.00 | 1.400 | 999 | Red |
| 11/22/10 | 1137 | 2.00 | 17.70 | - | - | - | - | Purge Well Dry. |
| 11/30/10 | 1215 | 2.00 | 4.65 | - | - | - | - | Continue Well Development. |
| 11/30/10 | 1222 | 3.00 | 9.85 | 7.10 | 11.00 | 1.400 | 999 | Dark Brown |
| 11/30/10 | 1227 | 4.00 | 14.70 | 7.30 | 11.00 | 1.400 | 999 | Dark Brown |
| 11/30/10 | 1236 | 5.00 | 17.70 | 7.50 | 8.00 | 1.600 | 999 | Dark Brown |
| 11/30/10 | 1237 | 5.00 | 17.70 | - | - | - | - | Purge Well Dry. |
| 12/04/10 | 1115 | 5.00 | 4.50 | - | - | - | - | Continue Well Development. |
| 12/04/10 | 1130 | 8.00 | 17.70 | - | - | - | - | Purge Well Dry. |
| 12/15/10 | 1353 | 8.00 | 5.23 | - | - | - | - | Continue Well Development. |
| 12/15/10 | 1355 | 8.50 | 7.12 | 6.07 | 12.10 | 2.900 | 999 | Black |
| 12/15/10 | 1357 | 9.00 | 8.91 | 6.33 | 11.30 | 1.710 | 999 | Black |
| 12/15/10 | 1359 | 9.50 | 10.63 | 6.36 | 11.10 | 1.640 | 999 | Dark Brown |
| 12/15/10 | 1401 | 10.00 | 12.69 | 6.33 | 11.10 | 1.660 | 999 | Brown |
| 12/15/10 | 1403 | 10.50 | 14.35 | 6.33 | 10.90 | 1.710 | 999 | Brown |
| 12/15/10 | 1405 | 11.00 | 16.47 | 6.27 | 11.40 | 1.970 | 999 | Brown |
| 12/15/10 | 1408 | 11.50 | 17.70 | - | - | - | - | Purge Well Dry. |
| 12/15/10 | 1409 | 11.50 | 17.70 | - | - | - | - | Development Complete. |
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Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | G-109 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Laura Crause / Shawn Boyle

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/19/2010 1548

END: 11/19/2010 1612

START WATER LEVELS: 8.10 ft btoc

WELL DEPTH: 16.70 ft btoc

WELL VOLUME: 6.67 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 4.03 ft

TOTAL QUANTITY OF WATER DISCHARGED: 25.00 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/19/10 | 1540 | 0.0 | 4.03 | - | - | - | - | Start Well Development. |
| 11/19/10 | 1548 | 10.0 | 10.35 | 7.70 | 14.3 | 0.385 | 999 | Brown |
| 11/19/10 | 1551 | 13.0 | 11.18 | 7.55 | 14.6 | 0.391 | 516 | Brown |
| 11/19/10 | 1554 | 15.0 | 11.59 | 7.71 | 14.5 | 0.391 | 144 | Clear |
| 11/19/10 | 1601 | 17.0 | 11.69 | 7.94 | 14.4 | 0.303 | 143 | Clear |
| 11/19/10 | 1604 | 19.0 | 11.81 | 7.71 | 14.5 | 0.393 | 72 | Clear |
| 11/19/10 | 1607 | 21.0 | 11.92 | 7.73 | 14.5 | 0.389 | 64 | Clear |
| 11/19/10 | 1610 | 23.0 | 12.01 | 7.68 | 14.6 | 0.391 | 34 | Clear |
| 11/19/10 | 1612 | 25.0 | 12.13 | 7.59 | 14.7 | 0.391 | 20 | Clear |
| 11/19/10 | 1613 | 25.0 | 12.13 | - | - | - | - | Development Complete. |

Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | P-01 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT : Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Jessica Hoffman / Jerry Kowalski (EDI)

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/21/2010 1048

END: 11/21/2010 1148

START WATER LEVELS : 7.25 ft btoc

WELL DEPTH: 16.55 ft btoc

WELL VOLUME: 0.93 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 3.86 ft

TOTAL QUANTITY OF WATER DISCHARGED: 9.00 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/21/10 | 1048 | 0.00 | 7.25 | - | - | - | - | Start Well Development. |
| 11/21/10 | 1052 | 0.50 | 10.27 | 8.05 | 15.50 | 0.997 | 999 | Light Brown |
| 11/21/10 | 1055 | 1.00 | 10.70 | 7.70 | 15.70 | 0.855 | 5 | Clear |
| 11/21/10 | 1058 | 1.50 | 10.87 | 7.61 | 15.80 | 0.862 | 7 | Clear |
| 11/21/10 | 1101 | 2.00 | 11.11 | 7.61 | 15.90 | 0.854 | 97 | Clear |
| 11/21/10 | 1104 | 2.50 | 10.40 | 7.54 | 15.90 | 0.846 | 999 | Brown |
| 11/21/10 | 1107 | 3.00 | 10.45 | 7.52 | 15.90 | 0.847 | 7 | Clear |
| 11/21/10 | 1110 | 3.50 | 10.52 | 7.56 | 15.80 | 0.848 | 999 | Light Brown |
| 11/21/10 | 1113 | 4.00 | 10.60 | 7.56 | 16.00 | 0.846 | 442 | Light Brown |
| 11/21/10 | 1120 | 5.00 | 10.62 | 7.55 | 15.80 | 0.845 | 5 | Clear |
| 11/21/10 | 1123 | 5.50 | 10.62 | 7.52 | 16.10 | 0.850 | 10 | Clear |
| 11/21/10 | 1126 | 6.00 | 10.62 | 7.50 | 16.10 | 0.849 | 10 | Clear |
| 11/21/10 | 1129 | 6.50 | 10.62 | 7.50 | 16.00 | 0.852 | 10 | Clear |
| 11/21/10 | 1132 | 7.00 | 10.60 | 7.52 | 16.10 | 0.849 | 95 | Clear |
| 11/21/10 | 1136 | 7.50 | 10.62 | 7.54 | 16.00 | 0.854 | 10 | Clear |
| 11/21/10 | 1140 | 8.00 | 10.63 | 7.57 | 16.10 | 0.851 | 10 | Clear |
| 11/21/10 | 1144 | 8.50 | 10.62 | 7.53 | 16.10 | 0.852 | 10 | Clear |
| 11/21/10 | 1148 | 9.00 | 10.64 | 7.53 | 16.10 | 0.850 | 10 | Clear |
| 11/21/10 | 1149 | 9.00 | 10.64 | - | - | - | - | Development Complete. |
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Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | P-02 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Jessica Hoffman / Jerry Kowalski (EDI)

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/21/2010 1324

END: 11/21/2010 1412

START WATER LEVELS : 8.35 ft btoc

WELL DEPTH: 16.02 ft btoc

WELL VOLUME: 0.77 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 3.10 ft

TOTAL QUANTITY OF WATER DISCHARGED: 8.00 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/21/10 | 1327 | 0.5 | 10.30 | 7.97 | 17.0 | 1.520 | 999 | Brown |
| 11/21/10 | 1327 | 0.5 | 10.30 | 7.97 | 17.0 | 1.520 | 999 | Brown |
| 11/21/10 | 1330 | 1.0 | 10.75 | 7.72 | 16.9 | 1.540 | 999 | Brown |
| 11/21/10 | 1333 | 1.5 | 11.00 | 7.67 | 17.0 | 1.490 | 999 | Light Brown |
| 11/21/10 | 1336 | 2.0 | 11.22 | 7.69 | 17.0 | 1.530 | 999 | Light Brown |
| 11/21/10 | 1339 | 2.5 | 11.35 | 7.68 | 16.9 | 1.560 | 683 | Light Brown |
| 11/21/10 | 1342 | 3.0 | 11.38 | 7.64 | 17.1 | 1.570 | 561 | Light Brown |
| 11/21/10 | 1345 | 3.5 | 11.34 | 7.66 | 17.0 | 1.560 | 382 | Light Brown |
| 11/21/10 | 1348 | 4.0 | 11.43 | 7.66 | 17.1 | 1.570 | 222 | Cloudy |
| 11/21/10 | 1351 | 4.5 | 11.40 | 7.66 | 17.1 | 1.560 | 86 | Cloudy |
| 11/21/10 | 1354 | 5.0 | 11.34 | 7.65 | 17.0 | 1.570 | 30 | Clear |
| 11/21/10 | 1357 | 5.5 | 11.40 | 7.65 | 17.1 | 1.570 | 13 | Clear |
| 11/21/10 | 1400 | 6.0 | 11.40 | 7.62 | 17.2 | 1.560 | 5 | Clear |
| 11/21/10 | 1403 | 6.5 | 11.40 | 7.65 | 17.0 | 1.570 | 125 | Cloudy |
| 11/21/10 | 1406 | 7.0 | 11.38 | 7.63 | 17.2 | 1.570 | 121 | Cloudy |
| 11/21/10 | 1409 | 7.5 | 11.45 | 7.65 | 17.0 | 1.570 | 90 | Cloudy |
| 11/21/10 | 1412 | 8.0 | 11.42 | 7.60 | 17.2 | 1.570 | 80 | Cloudy |
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Comments: Purge 10 well volumes, all paramters stabilize, but turbidity.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | P-03 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Jessica Hoffman / Jerry Kowalski (EDI)

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/21/2010 1445

END: 11/29/2010 1355

START WATER LEVELS: 6.05 ft btoc

WELL DEPTH: 17.52 ft btoc

WELL VOLUME: 1.14 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 11.45 ft

TOTAL QUANTITY OF WATER DISCHARGED: 5.85 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| | | | Stabilization Criteria: | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/21/10 | 1445 | 0.00 | 6.05 | - | - | - | - | Start Well Development. |
| 11/21/10 | 1448 | 0.50 | 15.20 | 7.69 | 16.2 | 1.460 | 999 | Brown |
| 11/21/10 | 1452 | 0.75 | 17.13 | - | - | - | - | Purge Well Dry. |
| 11/22/10 | 920 | 0.75 | 6.76 | - | - | - | - | Continue Well Development. |
| 11/22/10 | 922 | 1.00 | 9.95 | 6.21 | 17.1 | 1.780 | 193 | Cloudy |
| 11/22/10 | 924 | 1.25 | 12.70 | 6.32 | 17.0 | 1.650 | 55 | Cloudy |
| 11/22/10 | 926 | 1.50 | 15.50 | 6.50 | 17.1 | 1.610 | 891 | Brown |
| 11/22/10 | 928 | 1.60 | 17.10 | - | - | - | - | Purge Well Dry. |
| 11/29/10 | 855 | 1.60 | 3.90 | - | - | - | - | Continue Well Development. |
| 11/29/10 | 857 | 1.85 | 10.70 | 6.50 | 12.0 | 1.800 | 999 | Brown |
| 11/29/10 | 900 | 2.10 | 12.50 | 6.90 | 13.0 | 1.800 | 999 | Brown |
| 11/29/10 | 903 | 2.35 | 12.40 | 7.30 | 13.0 | 1.900 | 999 | Brown |
| 11/29/10 | 910 | 2.60 | 12.50 | 7.50 | 12.0 | 2.000 | 999 | - |
| 11/29/10 | 920 | 3.10 | 12.45 | 7.80 | 12.0 | 2.000 | 999 | - |
| 11/29/10 | 936 | 3.60 | 17.50 | 7.70 | 12.0 | 2.000 | 780 | - |
| 11/29/10 | 950 | 4.10 | 17.50 | 7.80 | 13.0 | 2.100 | 750 | Slow |
| 11/29/10 | 1007 | 4.60 | 17.50 | 7.70 | 13.0 | 1.900 | 260 | Clear |
| 11/29/10 | 1008 | 4.60 | 17.50 | - | - | - | - | Purge Well Dry. |
| 11/29/10 | 1344 | 4.60 | 3.95 | - | - | - | - | Continue Well Development. |
| 11/29/10 | 1346 | 4.85 | 9.50 | 7.40 | 13.0 | 1.900 | 500 | Brown |
| 11/29/10 | 1348 | 5.10 | 12.80 | 7.30 | 14.0 | 1.900 | 999 | Brown |
| 11/29/10 | 1350 | 5.35 | 15.75 | 7.40 | 14.0 | 2.000 | 999 | Brown |
| 11/29/10 | 1352 | 5.60 | 17.45 | 7.70 | 13.0 | 1.900 | 999 | Gray |
| 11/29/10 | 1355 | 5.85 | 17.50 | 7.70 | 13.0 | 1.900 | 740 | Brown |
| 11/29/10 | 1356 | 5.85 | 17.50 | - | - | - | - | Purge Well Dry. |
| 11/29/10 | 1356 | 5.85 | 17.50 | - | - | - | - | Development Complete. |

Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | P-04 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Jessica Hoffman / Jerry Kowalski (EDI)

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/22/2010 954

END: 11/30/2010 913

START WATER LEVELS : 12.22 ft btoc

WELL DEPTH: 16.18 ft btoc

WELL VOLUME: 0.40 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 3.96 ft

TOTAL QUANTITY OF WATER DISCHARGED: 1.20 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/22/10 | 954 | 0.00 | 12.22 | - | - | - | - | Start Well Development. |
| 11/22/10 | 956 | 0.25 | 15.20 | 6.85 | 16.40 | 0.444 | 493 | Light Brown |
| 11/22/10 | 957 | 0.30 | 16.10 | - | - | - | - | Purge Well Dry. |
| 11/29/10 | 1040 | 0.30 | 8.54 | - | - | - | - | Continue Well Development. |
| 11/29/10 | 1055 | 0.55 | 15.10 | 8.20 | 1.20 | 0.480 | 999 | - |
| 11/29/10 | 1058 | 0.65 | 16.10 | - | - | - | - | Purge Well Dry. |
| 11/30/10 | 906 | 0.65 | 7.40 | - | - | - | - | Continue Well Development. |
| 11/30/10 | 910 | 0.90 | 12.60 | 6.50 | 11.00 | 0.450 | 380 | Light Brown |
| 11/30/10 | 913 | 1.20 | 16.10 | - | - | - | - | Purge Well Dry. |
| 11/30/10 | 914 | 1.20 | 16.10 | - | - | - | - | Development Complete. |

Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | P-05 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT : Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Jessica Hoffman / Jerry Kowalski (EDI)

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/22/2010 1025

END: 11/22/2010 1117

START WATER LEVELS : 10.20 ft btoc

WELL DEPTH: 17.07 ft btoc

WELL VOLUME: 0.69 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 6.2 ft

TOTAL QUANTITY OF WATER DISCHARGED: 7.0 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/22/10 | 1025 | 0.00 | 10.20 | - | - | - | - | Start Well Development. |
| 11/22/10 | 1027 | 0.25 | 12.75 | 7.26 | 16.30 | 0.980 | 999 | Brown/Red |
| 11/22/10 | 1028 | 0.50 | 14.10 | 7.08 | 16.00 | 0.980 | 999 | Brown/Red |
| 11/22/10 | 1029 | 0.75 | 15.08 | 7.12 | 16.00 | 0.980 | 999 | Brown |
| 11/22/10 | 1030 | 1.00 | 15.50 | 7.07 | 16.00 | 0.990 | 999 | Brown |
| 11/22/10 | 1032 | 1.25 | 15.85 | 7.08 | 15.90 | 0.990 | 999 | Brown |
| 11/22/10 | 1033 | 1.50 | 15.95 | 7.08 | 15.90 | 0.932 | 52 | Light Brown |
| 11/22/10 | 1035 | 1.75 | 15.95 | 7.08 | 15.90 | 0.936 | 861 | Light Brown |
| 11/22/10 | 1037 | 2.00 | 16.00 | 7.09 | 16.00 | 0.936 | 831 | Light Brown |
| 11/22/10 | 1039 | 2.25 | 16.00 | 7.08 | 15.90 | 0.939 | 771 | Light Brown |
| 11/22/10 | 1041 | 2.50 | 16.02 | 7.11 | 16.10 | 0.938 | 100 | Light Brown |
| 11/22/10 | 1043 | 2.75 | 16.25 | 7.09 | 15.90 | 0.939 | 601 | Light Brown |
| 11/22/10 | 1045 | 3.00 | 16.23 | 7.10 | 15.90 | 0.940 | 535 | Light Brown |
| 11/22/10 | 1047 | 3.25 | 16.25 | 7.08 | 15.80 | 0.941 | 59 | Light Brown |
| 11/22/10 | 1049 | 3.50 | 16.25 | 7.10 | 15.70 | 0.940 | 53 | Light Brown |
| 11/22/10 | 1051 | 3.75 | 16.25 | 6.99 | 16.00 | 0.915 | 127 | Light Brown |
| 11/22/10 | 1053 | 4.00 | 16.28 | 7.09 | 16.00 | 0.937 | 129 | Light Brown |
| 11/22/10 | 1057 | 4.50 | 16.30 | 6.99 | 16.10 | 0.897 | 85 | Light Brown |
| 11/22/10 | 1101 | 5.00 | 16.22 | 7.16 | 16.20 | 0.934 | 49 | Clear |
| 11/22/10 | 1105 | 5.50 | 16.26 | 7.16 | 16.20 | 0.941 | 61 | Clear |
| 11/22/10 | 1109 | 6.00 | 16.25 | 7.16 | 16.20 | 0.944 | 63 | Clear |
| 11/22/10 | 1113 | 6.50 | 16.40 | 7.16 | 16.20 | 0.943 | 60 | Clear |
| 11/22/10 | 1117 | 7.00 | 16.25 | 7.16 | 16.20 | 0.943 | 53 | Clear |
| 11/22/10 | 1118 | 7.00 | 16.25 | - | - | - | - | Development Complete. |
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| | | | | | | | | |

Comments:

| | PROJECT NUMBER | WELL NUMBER | |
|---|---|---|---|
| | 406469 | P-06 | SHEET 1 OF 1 |
| | WELL DEVELOPMENT FORM | | |

PROJECT: Eagle Zinc OU2 Supplemental Remedial Investigation

PERSONNEL: Jessica Hoffman / Jerry Kowalski (EDI)

EQUIPMENT: Horiba U-10, water level indicator, mini-monsoon pump and/or Qwater well developer and peristaltic pump

START: 11/22/2010 1135

END: 11/30/2010 933

START WATER LEVELS: 8.77 ft btoc

WELL DEPTH: 19.24 ft btoc

WELL VOLUME: 1.05 gal

MAXIMUM DRAWDOWN DURING DEVELOPMENT: 12.15 ft

TOTAL QUANTITY OF WATER DISCHARGED: 2.10 gal

**Field crew will attempt to remove at least three well volumes during development (Calculate well volume before starting development!)**
**Development will be continued until pH, temperature, and specific conductance, and turbidity stabilize within 10% over 3 readings or until 10 well volumes have been purged.**

| Date | Time | Water Volume Discharged (gal) | Water Level (ft BTOC) | pH | Temperature (°C) | Specific Conductivity (mS/cm) | Turbidity (NTU) | Remarks (color, odor, sheen, sediment, etc.) |
|---|---|---|---|---|---|---|---|---|
| Stabilization Criteria: | | | | ±10% | ±10% | ±10% | < 50 NTU | |
| 11/22/10 | 1135 | 0.00 | 8.77 | - | - | - | - | Start Well Development. |
| 11/22/10 | 1140 | 0.50 | 13.40 | 6.25 | 18.30 | 1.420 | 60 | Clear |
| 11/22/10 | 1144 | 0.75 | 19.20 | - | - | - | - | Purge Well Dry. |
| 11/29/10 | 1224 | 0.75 | 7.05 | - | - | - | - | Continue Well Development. |
| 11/29/10 | 1226 | 1.00 | 8.70 | 7.00 | 14.00 | 1.600 | 190 | Clear |
| 11/29/10 | 1229 | 1.25 | 18.10 | 6.70 | 14.00 | 1.700 | 370 | Clear |
| 11/29/10 | 1230 | 1.25 | 18.10 | - | - | - | - | Purge Well Dry. |
| 11/30/10 | 925 | 1.25 | 7.10 | - | - | - | - | Continue Well Development. |
| 11/30/10 | 930 | 1.50 | 14.90 | 6.30 | 13.00 | 1.500 | 60 | Clear |
| 11/30/10 | 933 | 2.10 | 19.20 | - | - | - | - | Purge Well Dry. |

Comments: Unable to develop well according to groundwater developlment SOP, extremely slow recharge. Field Team Leader and Senior Technologist determine that the well should be pumped dry three times; at which time well development would be considered complete.

# Appendix D
# Slug Test Data Logger Output & Illinois EPA Correspondence on Groundwater Classification

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW12**

Depth to Water: 10.00 ft btoc
Total Depth of Well: 41.97 ft btoc
Slug Test Performed: 01/07/11
Slug Test Start Time: 0835
Slug Test End Time: 1400

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 835 | 0 | 10.00 | Remove Slug from Monitoring Well |
| | 30 | 12.52 | |
| 836 | 60 | 12.44 | |
| | 90 | 12.42 | |
| 837 | 120 | 12.39 | |
| 838 | 180 | 12.33 | |
| 839 | 240 | 12.30 | |
| 840 | 300 | 12.27 | |
| 841 | 360 | 12.24 | |
| 842 | 420 | 12.20 | |
| 843 | 480 | 12.18 | |
| 844 | 540 | 12.14 | |
| 846 | 660 | 12.07 | |
| 848 | 780 | 12.02 | |
| 850 | 900 | 11.97 | |
| 852 | 1020 | 11.91 | |
| 854 | 1140 | 11.88 | |
| 856 | 1260 | 11.82 | |
| 858 | 1380 | 11.78 | |
| 900 | 1500 | 11.73 | |
| 905 | 1800 | 11.64 | |
| 910 | 2100 | 11.55 | |
| 915 | 2400 | 11.47 | |
| 920 | 2700 | 11.39 | |
| 925 | 3000 | 11.33 | |
| 930 | 3300 | 11.28 | |
| 935 | 3600 | 11.21 | |
| 940 | 3900 | 11.16 | |
| 945 | 4200 | 11.10 | |
| 950 | 4500 | 11.05 | |
| 955 | 4800 | 11.01 | |
| 1000 | 5100 | 10.97 | |
| 1005 | 5400 | 10.92 | |
| 1010 | 5700 | 10.89 | |
| 1015 | 6000 | 10.85 | |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW12**

Depth to Water: 10.00 ft btoc
Total Depth of Well: 41.97 ft btoc
Slug Test Performed: 01/07/11
Slug Test Start Time: 0835
Slug Test End Time: 1400

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 1020 | 6300 | 10.82 | |
| 1025 | 6600 | 10.79 | |
| 1030 | 6900 | 10.76 | |
| 1035 | 7200 | 10.73 | |
| 1040 | 7500 | 10.71 | |
| 1050 | 8100 | 10.66 | |
| 1100 | 8700 | 10.61 | |
| 1130 | 10500 | 10.50 | |
| 1145 | 11400 | 10.46 | |
| 1200 | 12300 | 10.45 | |
| 1220 | 13500 | 10.36 | |
| 1230 | 14100 | 10.35 | |
| 1240 | 14700 | 10.34 | |
| 1300 | 15900 | 10.30 | |
| 1330 | 17700 | 10.26 | |
| 1400 | 19500 | 10.24 | Test Finished - within 10% of maximum displacement |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW13**

Depth to Water: 4.47 ft btoc
Total Depth of Well: 18.39 ft btoc
Slug Test Performed: 01/05/11
Slug Test Start Time: 0750
Slug Test End Time: 0815

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 750 | 0 | 4.47 | Remove Slug from Monitoring Well |
| | 30 | 6.22 | |
| | 45 | 5.96 | |
| 751 | 60 | 5.75 | |
| | 75 | 5.63 | |
| | 90 | 5.48 | |
| | 105 | 5.38 | |
| 752 | 120 | 5.25 | |
| | 135 | 5.15 | |
| | 150 | 5.10 | |
| | 165 | 5.05 | |
| 753 | 180 | 5.00 | |
| | 195 | 4.95 | |
| | 210 | 4.90 | |
| | 225 | 4.86 | |
| 754 | 240 | 4.83 | |
| | 255 | 4.81 | |
| | 270 | 4.79 | |
| | 285 | 4.77 | |
| 755 | 300 | 4.74 | |
| | 315 | 4.73 | |
| | 330 | 4.71 | |
| | 345 | 4.69 | |
| 756 | 360 | 4.68 | |
| | 390 | 4.66 | |
| 757 | 420 | 4.63 | |
| | 450 | 4.62 | |
| 758 | 480 | 4.61 | |
| | 510 | 4.59 | |
| | 570 | 4.57 | |
| | 630 | 4.55 | |
| | 690 | 4.53 | |
| | 750 | 4.52 | |
| | 810 | 4.51 | |
| 805 | 900 | 4.51 | |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW13**

Depth to Water: 4.47 ft btoc
Total Depth of Well: 18.39 ft btoc
Slug Test Performed: 01/05/11
Slug Test Start Time: 0750
Slug Test End Time: 0815

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 807 | 1020 | 4.50 | |
| 809 | 1140 | 4.49 | |
| 811 | 1260 | 4.49 | |
| 813 | 1380 | 4.48 | |
| 815 | 1500 | 4.47 | Test Finished - within 10% of maximum displacement |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW14**

Depth to Water: 4.93 ft btoc
Total Depth of Well: 37.6 ft btoc
Slug Test Performed: 01/06/11
Slug Test Start Time: 0727
Slug Test End Time: 1600

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 727 | 0 | 4.68 | Remove Slug from Monitoring Well (had not fully recovered to 4.93) |
| 728 | 60 | 7.22 | |
| 729 | 120 | 7.18 | |
| 730 | 180 | 7.11 | |
| 731 | 240 | 7.06 | |
| 732 | 300 | 7.01 | |
| 733 | 360 | 6.98 | |
| 734 | 420 | 6.95 | |
| 735 | 480 | 6.92 | |
| 736 | 540 | 6.89 | |
| 737 | 600 | 6.86 | |
| 738 | 660 | 6.84 | |
| 740 | 780 | 6.80 | |
| 742 | 900 | 6.75 | |
| 744 | 1020 | 6.71 | |
| 746 | 1140 | 6.67 | |
| 748 | 1260 | 6.64 | |
| 750 | 1380 | 6.61 | |
| 752 | 1500 | 6.59 | |
| 754 | 1620 | 6.56 | |
| 756 | 1740 | 6.53 | |
| 758 | 1860 | 6.50 | |
| 800 | 1980 | 6.46 | |
| 802 | 2100 | 6.45 | |
| 804 | 2220 | 6.43 | |
| 806 | 2340 | 6.41 | |
| 810 | 2580 | 6.38 | |
| 815 | 2880 | 6.32 | |
| 820 | 3180 | 6.28 | |
| 825 | 3480 | 6.23 | |
| 830 | 3780 | 6.19 | |
| 835 | 4080 | 6.15 | |
| 840 | 4380 | 6.12 | |
| 845 | 4680 | 6.10 | |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW14**

Depth to Water: 4.93 ft btoc
Total Depth of Well: 37.6 ft btoc
Slug Test Performed: 01/06/11
Slug Test Start Time: 0727
Slug Test End Time: 1600

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 850 | 4980 | 6.08 | |
| 855 | 5280 | 6.04 | |
| 900 | 5580 | 6.02 | |
| 915 | 6480 | 5.94 | |
| 930 | 7380 | 5.88 | |
| 945 | 8280 | 5.82 | |
| 1000 | 9180 | 5.78 | |
| 1030 | 10980 | 5.69 | |
| 1100 | 12780 | 5.63 | |
| 1200 | 16380 | 5.51 | |
| 1300 | 19980 | 5.42 | |
| 1400 | 23580 | 5.33 | |
| 1500 | 27180 | 5.28 | |
| 1600 | 30780 | 5.23 | Test Finished - never recovered to within 10% of maximum displacement during work day. |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW15**

Depth to Water: 7.01 ft btoc
Total Depth of Well: 32.88 ft btoc
Slug Test Performed: 01/07/11
Slug Test Start Time: 1455
Slug Test End Time: 1600

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 1455 | 0 | 7.08 | Remove Slug from Monitoring Well (had not fully recovered to 7.01) |
| | 15 | 8.74 | |
| | 30 | 8.69 | |
| | 45 | 8.66 | |
| 1456 | 60 | 8.63 | |
| | 75 | 8.59 | |
| | 90 | 8.56 | |
| | 105 | 8.54 | |
| 1457 | 120 | 8.51 | |
| | 135 | 8.49 | |
| | 150 | 8.46 | |
| | 165 | 8.43 | |
| 1458 | 180 | 8.41 | |
| | 210 | 8.37 | |
| 1459 | 240 | 8.32 | |
| | 270 | 8.28 | |
| 1500 | 300 | 8.24 | |
| | 330 | 8.20 | |
| 1501 | 360 | 8.16 | |
| | 390 | 8.13 | |
| 1502 | 420 | 8.09 | |
| | 450 | 8.05 | |
| 1503 | 480 | 8.02 | |
| | 510 | 8.00 | |
| 1504 | 540 | 7.98 | |
| | 570 | 7.95 | |
| 1505 | 600 | 7.93 | |
| 1506 | 660 | 7.88 | |
| 1508 | 780 | 7.77 | |
| 1509 | 840 | 7.73 | |
| 1510 | 900 | 7.69 | |
| 1511 | 960 | 7.65 | |
| 1512 | 1020 | 7.62 | |
| 1513 | 1080 | 7.59 | |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW15**

Depth to Water: 7.01 ft btoc
Total Depth of Well: 32.88 ft btoc
Slug Test Performed: 01/07/11
Slug Test Start Time: 1455
Slug Test End Time: 1600

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 1514 | 1140 | 7.57 | |
| 1515 | 1200 | 7.54 | |
| 1516 | 1260 | 7.51 | |
| 1518 | 1380 | 7.45 | |
| 1520 | 1500 | 7.41 | |
| 1522 | 1620 | 7.38 | |
| 1524 | 1740 | 7.35 | |
| 1526 | 1860 | 7.32 | |
| 1530 | 2100 | 7.27 | |
| 1535 | 2400 | 7.25 | |
| 1540 | 2700 | 7.22 | |
| 1545 | 3000 | 7.20 | |
| 1550 | 3300 | 7.18 | |
| 1600 | 3600 | 7.14 | Test Finished - within 10% of maximum displacement |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW16**

Depth to Water: 5.51 ft btoc
Total Depth of Well: 37.45 ft btoc
Slug Test Performed: 01/10/11
Slug Test Start Time: 0830
Slug Test End Time: 1555

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 830 | 0 | 5.51 | Remove Slug from Monitoring Well |
| | 30 | 7.96 | |
| 831 | 60 | 7.94 | |
| | 90 | 7.88 | |
| 832 | 120 | 7.84 | |
| | 150 | 7.82 | |
| 833 | 180 | 7.82 | |
| 834 | 240 | 7.80 | |
| 835 | 300 | 7.71 | |
| 836 | 360 | 7.67 | |
| 837 | 420 | 7.65 | |
| 838 | 480 | 7.62 | |
| 839 | 540 | 7.59 | |
| 840 | 600 | 7.56 | |
| 845 | 900 | 7.43 | |
| 850 | 1200 | 7.34 | |
| 855 | 1500 | 7.28 | |
| 900 | 1800 | 7.19 | |
| 905 | 2100 | 7.12 | |
| 910 | 2400 | 7.04 | |
| 915 | 2700 | 6.98 | |
| 920 | 3000 | 6.92 | |
| 925 | 3300 | 6.87 | |
| 930 | 3600 | 6.82 | |
| 935 | 3900 | 6.77 | |
| 940 | 4200 | 6.73 | |
| 945 | 4500 | 6.68 | |
| 950 | 4800 | 6.64 | |
| 955 | 5100 | 6.61 | |
| 1000 | 5400 | 6.58 | |
| 1014 | 6240 | 6.45 | |
| 1020 | 6600 | 6.41 | |
| 1030 | 7200 | 6.36 | |
| 1050 | 8400 | 6.27 | |
| 1100 | 9000 | 6.23 | |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW16**

Depth to Water: 5.51 ft btoc
Total Depth of Well: 37.45 ft btoc
Slug Test Performed: 01/10/11
Slug Test Start Time: 0830
Slug Test End Time: 1555

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 1125 | 10500 | 6.17 | |
| 1155 | 12300 | 6.05 | |
| 1225 | 14100 | 5.97 | |
| 1255 | 15900 | 5.92 | |
| 1325 | 17700 | 5.87 | |
| 1355 | 19500 | 5.82 | |
| 1455 | 23100 | 5.75 | |
| 1555 | 26700 | 5.69 | Test Finished - within 10% of maximum displacement |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW17**

Depth to Water: 6.71 ft btoc
Total Depth of Well: 37.16 ft btoc
Slug Test Performed: 01/06/11
Slug Test Start Time: 1209
Slug Test End Time: 1600

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 1209 | 0 | 6.63 | Remove Slug from Monitoring Well (had not fully recovered to 6.71) |
| | 15 | 8.63 | |
| | 30 | 8.39 | |
| | 45 | 8.20 | |
| 1210 | 60 | 8.03 | |
| | 75 | 7.91 | |
| | 90 | 7.80 | |
| | 105 | 7.70 | |
| 1211 | 120 | 7.64 | |
| | 150 | 7.52 | |
| 1212 | 180 | 7.44 | |
| | 210 | 7.38 | |
| 1213 | 240 | 7.33 | |
| | 270 | 7.30 | |
| 1214 | 300 | 7.27 | |
| | 330 | 7.24 | |
| 1215 | 360 | 7.22 | |
| | 390 | 7.20 | |
| 1216 | 420 | 7.19 | |
| 1217 | 480 | 7.16 | |
| 1218 | 540 | 7.15 | |
| 1219 | 600 | 7.13 | |
| 1220 | 660 | 7.12 | |
| 1222 | 780 | 7.10 | |
| 1224 | 900 | 7.09 | |
| 1226 | 1020 | 7.09 | |
| 1233 | 1440 | 7.06 | |
| 1238 | 1740 | 7.04 | |
| 1243 | 2040 | 7.02 | |
| 1248 | 2340 | 7.01 | |
| 1300 | 3060 | 6.98 | |
| 1315 | 3960 | 6.95 | |
| 1330 | 4860 | 6.93 | |
| 1345 | 5760 | 6.91 | |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW17**

Depth to Water: 6.71 ft btoc
Total Depth of Well: 37.16 ft btoc
Slug Test Performed: 01/06/11
Slug Test Start Time: 1209
Slug Test End Time: 1600

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 1400 | 6660 | 6.89 | |
| 1430 | 8460 | 6.88 | |
| 1500 | 10260 | 6.84 | |
| 1600 | 13860 | 6.76 | Test Finished - within 10% of maximum displacement |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW18**

Depth to Water: 11.89 ft btoc
Total Depth of Well: 67.20 ft btoc
Slug Test Performed: 01/10/11
Slug Test Start Time: 0855
Slug Test End Time: 1610

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 855 | 0 | 11.89 | Remove Slug from Monitoring Well |
| 856 | 60 | 13.73 | |
| 857 | 120 | 13.72 | |
| 858 | 180 | 13.71 | |
| 859 | 240 | 13.71 | |
| 900 | 300 | 13.70 | |
| 905 | 600 | 13.69 | |
| 910 | 900 | 13.68 | |
| 915 | 1200 | 13.67 | |
| 920 | 1500 | 13.66 | |
| 925 | 1800 | 13.66 | |
| 930 | 2100 | 13.65 | |
| 945 | 3000 | 13.63 | |
| 1000 | 3900 | 13.61 | |
| 1130 | 9300 | 13.52 | |
| 1300 | 14700 | 13.44 | |
| 1510 | 22500 | 13.31 | |
| 1610 | 26100 | 13.30 | Test Finished. Well Never Recovered to within 10% of maximum displacement during working day. |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW19**

Depth to Water: 3.66 ft btoc
Total Depth of Well: 18.02 ft btoc
Slug Test Performed: 01/06/11
Slug Test Start Time: 1550
Slug Test End Time: 1630

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 1550 | 0 | 3.66 | Remove Slug from Monitoring Well |
| | 15 | 5.86 | |
| | 30 | 5.72 | |
| | 45 | 5.58 | |
| 1551 | 60 | 5.50 | |
| | 75 | 5.40 | |
| | 90 | 5.29 | |
| | 105 | 5.23 | |
| 1552 | 120 | 5.15 | |
| | 135 | 5.05 | |
| | 150 | 4.97 | |
| | 165 | 4.91 | |
| 1553 | 180 | 4.85 | |
| | 210 | 4.73 | |
| 1554 | 240 | 4.65 | |
| | 270 | 4.55 | |
| 1555 | 300 | 4.49 | |
| | 330 | 4.41 | |
| | 390 | 4.30 | |
| 1557 | 420 | 4.24 | |
| | 450 | 4.21 | |
| 1558 | 480 | 4.15 | |
| | 510 | 4.11 | |
| 1559 | 540 | 4.10 | |
| 1601 | 660 | 3.96 | |
| 1602 | 720 | 3.94 | |
| 1603 | 780 | 3.90 | |
| 1605 | 900 | 3.85 | |
| 1606 | 960 | 3.82 | |
| 1607 | 1020 | 3.81 | |
| 1608 | 1080 | 3.79 | |
| 1609 | 1140 | 3.77 | |
| 1610 | 1200 | 3.76 | |
| 1615 | 1500 | 3.72 | |
| 1620 | 1800 | 3.71 | |
| 1625 | 2100 | 3.69 | |
| 1630 | 2400 | 3.68 | Test Finished - within 10% of maximum displacement |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW20**

Depth to Water: 1.71 ft btoc
Total Depth of Well: 35.09 ft btoc
Slug Test Performed: 01/04/11
Slug Test Start Time: 1112
Slug Test End Time: 1210

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 1112 | 0 | 1.71 | Remove Slug from Monitoring Well |
| 1113 | 60 | 4.01 | |
| | 90 | 3.81 | |
| 1114 | 120 | 3.66 | |
| | 150 | 3.51 | |
| 1115 | 180 | 3.38 | |
| | 210 | 3.28 | |
| 1116 | 240 | 3.16 | |
| | 270 | 3.06 | |
| 1117 | 300 | 2.97 | |
| | 330 | 2.90 | |
| 1118 | 360 | 2.83 | |
| | 390 | 2.76 | |
| 1119 | 420 | 2.70 | |
| | 450 | 2.64 | |
| 1120 | 480 | 2.59 | |
| | 510 | 2.54 | |
| 1121 | 540 | 2.50 | |
| | 570 | 2.46 | |
| 1122 | 600 | 2.42 | |
| | 630 | 2.38 | |
| 1123 | 660 | 2.35 | |
| | 690 | 2.32 | |
| 1124 | 720 | 2.29 | |
| | 750 | 2.26 | |
| 1125 | 780 | 2.24 | |
| | 810 | 2.22 | |
| 1126 | 840 | 2.20 | |
| | 870 | 2.18 | |
| 1127 | 900 | 2.16 | |
| | 930 | 2.14 | |
| 1128 | 960 | 2.12 | |
| | 990 | 2.11 | |
| 1129 | 1020 | 2.10 | |
| | 1050 | 2.09 | |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW20**

Depth to Water: 1.71 ft btoc
Total Depth of Well: 35.09 ft btoc
Slug Test Performed: 01/04/11
Slug Test Start Time: 1112
Slug Test End Time: 1210

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 1130 | 1080 | 2.08 | |
| | 1110 | 2.07 | |
| 1131 | 1140 | 2.06 | |
| | 1170 | 2.05 | |
| 1134 | 1320 | 2.00 | |
| | 1350 | 1.99 | |
| 1135 | 1380 | 1.98 | |
| 1136 | 1440 | 1.97 | |
| 1137 | 1500 | 1.96 | |
| 1138 | 1560 | 1.95 | |
| 1139 | 1620 | 1.94 | |
| 1140 | 1680 | 1.93 | |
| 1141 | 1740 | 1.92 | |
| 1142 | 1800 | 1.92 | |
| 1143 | 1860 | 1.91 | |
| 1144 | 1920 | 1.91 | |
| 1145 | 1980 | 1.91 | |
| 1146 | 2040 | 1.91 | |
| 1147 | 2100 | 1.91 | |
| 1148 | 2160 | 1.91 | |
| 1150 | 2280 | 1.90 | |
| 1201 | 2940 | 1.89 | |
| 1206 | 3240 | 1.88 | |
| 1210 | 3480 | 1.88 | Test Finished - within 10% of maximum displacement |

**Eagle Zinc Superfund Site**
**Supplemental Remedial Investigation**
**Aquifer Test: MW21**

Depth to Water: 1.98 ft btoc
Total Depth of Well: 20.24 ft btoc
Slug Test Performed: 01/04/11
Slug Test Start Time: 1345
Slug Test End Time: 1349

| Time (minutes) | Time (seconds) | Depth to Water (ft btoc) | Comments |
|---|---|---|---|
| 1345 | 0 | 1.98 | Remove Slug from Monitoring Well |
| | 15 | 3.75 | |
| | 30 | 3.21 | |
| | 45 | 2.89 | |
| 1346 | 60 | 2.65 | |
| | 75 | 2.45 | |
| | 90 | 2.34 | |
| | 105 | 2.22 | |
| 1347 | 120 | 2.16 | |
| | 135 | 2.10 | |
| | 150 | 2.06 | |
| | 165 | 2.04 | |
| 1348 | 180 | 2.02 | |
| | 195 | 2.01 | |
| | 210 | 2.00 | |
| 1349 | 240 | 1.98 | Test Finished - within 10% of maximum displacement |

# Appendix E
# Field Logbooks and Survey Data

Provided on CD

Appendix E is located on the accompanying CD.

# Appendix F
# Investigation-derived Waste Inventory

**THIS MEMORANDUM** is an acknowledgement that a bill of lading has been issued and is not the Original Bill of Lading, not a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper's No. _____

Carrier SET ENVIRONMENTAL INC SCAC _____ Carrier's No. ILD981957236

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request; and all applicable state and federal regulations;

at _____, date _____ from _____

the Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below which said company (the word company being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to delivery at said destination, if on its route, or otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said Property over all or any portion of said route to destination and as to each party at any time interested in all or any of said Property that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

**TO:**
Consignee
Street
Destination _____ Zip _____

**FROM:** EPA
Shipper
Street
Origin _____ Zip _____

Route

Delivering Carrier

Vehicle Number

U.S. DOT Hazmat Reg. Number

| Number and Type of Packages | HM | I.D. Number | Description of Articles | Hazard Class | Pkg. Grp. | Total Quantity (mass, volume, or activity) | Weight (subject to correction) | Class or Rate |
|---|---|---|---|---|---|---|---|---|
| 22 DM | | – | EMPTY 55 GAL STEEL DRUMS | – | – | 10 | 500lb | – |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remit COD to:
Address:
City: State: Zip:

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding $ Per

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

**COD AMT:** $

**TOTAL CHARGES:** $

**COD FEE:** Prepaid ☐ Collect ☐ $

**FREIGHT CHARGES:** ☐ Prepaid ☐ Collect

**NOTE: Liability Limitation for loss or damage in this shipment may be applicable. See 49 U.S.C. 14706(c)(1)(A) and (B).**

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

PLACARDS REQUIRED N/A

PLACARDS SUPPLIED ☐ BY SHIPPER ☐ BY CARRIER

DRIVER'S SIGNATURE: X

SHIPPER: USEPA Region 5
PER: [signature] DATE: 03/10/11

CARRIER: SET ENVIRONMENTAL INC
PER: [signature] DATE: 03/10/11

**EMERGENCY RESPONSE TELEPHONE NUMBER:** 314 890-8600

**OFFEROR'S NAME OR ERI CONTRACT NUMBER:**

9-BLS-A3 431 (Rev. 11/09)

# INDUSTRIAL WASTE TRACKING RECEIPT

WASTE MANAGEMENT

186264

**Disposal Site:** Milam Landfill

**Profile Number:** 11036611

**Generator:** US Environmental Protection Agency

**Location:** School Street and Industrial Park Drive, Hillsboro, IL 62049

**Waste Description:** RCRA Nonhazardous, NonDOT Regulated Debris ☐ ~~Yards~~ ☒ ~~Tons~~ XXXXXXXXX Drums

**Generator's Signature or Designee:** Jayson Burkard/CH2M HILL on behalf of USEPA Region 5 Jayson Burkard 03/10/11

**Transporter:** SET Environmental

**Driver's Signature:** Douglas S Sabin Date: 3-16-11

WHITE-Transporter / YELLOW-Landfill / PINK-Stays on site / GOLD-Generator

# INDUSTRIAL WASTE TRACKING RECEIPT

WASTE MANAGEMENT

186263

**Disposal Site:** Milam Landfill

**Profile Number:** 110361IL

**Generator:** US Environmental Protection Agency

**Location:** School Street and Industrial Park Drive, Hillsboro, IL 60249

**Waste Description:** RCRA Nonhazardous, NonDOT regulated soil _____ ☐ ~~Yards~~ ☐ ~~Tons~~ Drums

Jayson Burkard/CH2M HILL on behalf of USEPA Region 5

**Generator's Signature or Designee:** Jayson Burkard 03/10/11

**Transporter:** SET Environmental

**Driver's Signature:** Daylog S. Salm Date: 3-10-11

WHITE-Transporter / YELLOW-Landfill / PINK-Stays on site / GOLD-Generator

**NON-HAZARDOUS WASTE MANIFEST**

1. Generator ID Number: ILD 980 606 941
2. Page 1 of 1
3. Emergency Response Phone
4. Waste Tracking Number

5. Generator's Name and Mailing Address
U.S. Environmental Protection Agency
77 West Jackson Boulevard, Chicago, IL 60604
Generator's Phone: 312 886-6148 Attn: Nefertiti Simmons

Generator's Site Address (if different than mailing address)
U. S. Environmental Protection Agency
School Street and Industrial Park Drive
Hillsboro, IL 62049

6. Transporter 1 Company Name: SET Environmental
U.S. EPA ID Number: N/A

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
City of Hillsboro WWTP
510 Old Taylorsville Rd
Facility's Phone: 217 532-5566 Hillsboro, IL 62049
U.S. EPA ID Number: N/A

| | 9. Waste Shipping Name and Description | 10. Containers No. | 10. Containers Type | 11. Total Quantity | 12. Unit Wt./Vol. | |
|---|---|---|---|---|---|---|
| | 1. NonRCRA, NonDOT regulated water | | TT | [illegible] | G | None |
| | 2. | | | | | |
| | 3. | | | | | |
| | 4. | | | | | |

13. Special Handling Instructions and Additional Information
Nonhazardous Water
Site: Eagle Zinc
Hillsboro, IL
CESI Job# ROAN-TFORT-3873-19363

**14. GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: [illegible] Signature: [illegible] Month: 03 Day: 10 Year: 11

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name | Signature | Month | Day | Year
Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) | U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name | Signature | Month | Day | Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY



GENERATOR'S/SHIPPER'S INITIAL COPY

# Generator's Nonhazardous Waste Profile Sheet

WASTE MANAGEMENT

Requested Disposal Facility Milam Profile Number

❑ Renewal for Profile Number _____ Waste Approval Expiration Date _____

## A. Waste Generator Facility Information (must reflect location of waste generation/origin)

1. Generator Name: U.S. Environmental Protection Agency - Eagle Zinc Superfund Site
2. Site Address: School Street and Industrial Park Drive
3. City/ZIP: Hillsboro, 62049
4. State: Illinois
5. County: _____
6. Contact Name/Title: Laura Crause/Staff Geologist
7. Email Address: Laura.Crause@CH2M.com
8. Phone: 314.335.3008 9. FAX: 414.454.8809
10. NAICS Code: _____
11. Generator USEPA ID #: ILD980606941
12. State ID# (if applicable): _____

## B. Customer Information ❑ same as above

P. O. Number: _____

1. Customer Name: Capitol Environmental Services, Inc.
2. Billing Address: 200 Biddle Ave., Suite 205
3. City, State and ZIP: Newark, DE 19702
4. Contact Name: Terri Fort
5. Contact Email: terri.fort@capitol-environmental.com
6. Phone: 5407776547 FAX: 5409044788
7. Transporter Name: SET Environmental
8. Transporter ID # (if appl.): N/A
9. Transporter Address: 450 Sumac Road
10. City, State and ZIP: Wheeling, IL 60090

## C. Waste Stream Information

1. DESCRIPTION
   a. Common Waste Name: ~~Nonhaz RCRA Empty~~ State Waste Code(s): _____
   b. Describe Process Generating Waste or Source of Contamination:

   Empty drums from which Nonhaz water was pumped. Site is historical zinc oxide manufacturing facility.

   c. Typical Color(s): black
   d. Strong Odor? ❑ Yes ☑ No Describe: _____
   e. Physical State at 70°F: ☑ Solid ❑ Liquid ❑ Powder ❑ Semi-Solid or Sludge ❑ Other: _____
   f. Layers? ☑ Single layer ❑ Multi- layer ❑ NA
   g. Water Reactive? ❑ Yes ☑ No If Yes, Describe: _____
   h. Free Liquid Range (%): 0 to _____ ☑ NA(solid)
   i. pH Range: ❑ ≤2 ❑ 2.1-12.4 ❑ ≥12.5 ☑ NA(solid) ❑ Actual: _____
   j. Liquid Flash Point: ❑ < 140°F ❑ ≥ 140°F ☑ NA(solid) ❑ Actual: _____
   k. Flammable Solid: ❑ Yes ☑ No
   l. Physical Constituents: List all constituents of waste stream - (e.g. Soil 0-80%, Wood 0-20%): ❑ (See Attached)

| Constituents *(Total Composition Must be ≥ 100%)* | Concentration % | Constituents *(Total Composition Must be ≥ 100%)* | Concentration % |
|---|---|---|---|
| 1. empty steel drums | 100 | 4. | |
| 2. | | 5. | |
| 3. | | 6. | |

2. ESTIMATED QUANTITY OF WASTE AND SHIPPING INFORMATION
   a. ☑ Event ❑ Base/Ongoing (Check One)
   b. Estimated Annual Quantity: 5 ❑ Tons ❑ Cubic Yards ☑ Drums ❑ Gallons ❑ Other (specify): _____
   c. Shipping Frequency: _____ Units per ❑ Month ❑ Quarter ❑ Year ☑ One Time ❑ Other
   d. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If yes, answer e.) ❑ Yes ☑ No
   e. USDOT Shipping Description (if applicable): NonRCRA, NonDOT regulated empty drums
3. SAFETY REQUIREMENTS (Handling, PPE, etc.): _____

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# Generator's Nonhazardous Waste Profile Sheet

WASTE MANAGEMENT

## D. Regulatory Status (Please check appropriate responses)

1. Is this a USEPA (40 CFR Part 261)/State hazardous waste? If yes, contact your sales representative. ☐ Yes ☑ No
2. Is this waste included in one or more of categories below (Check all that apply)? If yes, attach supporting documentation. ☐ Yes ☑ No
   - ☐ Delisted Hazardous Waste
   - ☐ Excluded Wastes Under 40 CFR 261.4
   - ☐ Treated Hazardous Waste Debris
   - ☐ Treated Characteristic Hazardous Waste
3. Is the waste from a Federal (40 CFR 300, Appendix B) or state mandated clean-up? If yes, see instructions. ☑ Yes ☐ No
4. Does the waste represented by this waste profile sheet contain radioactive material? ☐ Yes ☑ No
   a. If yes, is disposal regulated by the Nuclear Regulatory Commission? ☐ Yes ☑ No
   b. If yes, is disposal regulated by a State Agency for radioactive waste/NORM? ☐ Yes ☑ No
5. Does the waste represented by this waste profile sheet contain concentrations of regulated Polychlorinated Biphenyls (PCBs)? ☐ Yes ☑ No
   a. If yes, is disposal regulated under TSCA? ☐ Yes ☐ No
6. Does the waste contain untreated, regulated, medical or infectious waste? ☐ Yes ☑ No
7. Does the waste contain asbestos? ☐ Yes ☑ No If Yes, ☐ Friable ☐ Non Friable
8. Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)? ☐ Yes ☑ No
   If yes, does the waste contain <500 ppmw VOHAPs at the point of determination? ☐ Yes ☑ No

## E. Generator Certification (Please read and certify by signature below)

By signing this Generator's Waste Profile Sheet, I hereby certify that all:

1. Information submitted in this profile and all attached documents contain true and accurate descriptions of the waste material;
2. Relevant information within the possession of the Generator regarding known or suspected hazards pertaining to this waste has been disclosed to WM/the Contractor;
3. Analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20(c) or equivalent rules; and
4. Changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by the Generator and disclosed to WM (and the Contractor if applicable) prior to providing the waste to WM (and the Contractor if applicable).
5. Check all that apply:
   - ☑ Attached analytical pertains to the waste. Identify laboratory & sample ID #'s and parameters tested:
     Empty drums were in contact with CT laboratories. Sample ID: EZ-IDW-Water-001 # Pages: 7
   - ☐ Only the analyses identified on the attachment pertain to the waste (identify by laboratory & sample ID #'s and parameters tested). Attachment #: _____
   - ☐ Additional information necessary to characterize the profiled waste has been attached (other than analytical). Indicate the number of attached pages: _____
   - ☑ I am an agent signing on behalf of the Generator, and the delegation of authority to me from the Generator for this signature is available upon request.
   - ☐ By Generator process knowledge, the following waste is not a listed waste and is below all TCLP regulatory limits.

**Certification Signature:** L Crause / CH2MHill on behalf of USEPA Region 5 **Title:** Staff Geologist

**Company Name:** CH2MHill **Name (Print):** Laura Crause

**Date:** 3/3/2011

## FOR WM USE ONLY

**Management Method:** ☐ Landfill ☐ Bioremediation **Approval Decision:** ☐ Approved ☐ Not Approved

☐ Non-hazardous solidification ☐ Other: _____ Waste Approval Expiration Date: _____

**Management Facility Precautions, Special Handling Procedures or Limitation on approval:** _____

☐ Shall not contain free liquid
☐ Shipment must be scheduled into disposal facility
☐ Approval Number must accompany each shipment
☐ Waste Manifest must accompany load

**WM Authorization Name / Title:** _____ **Date:** _____

**State Authorization (if Required):** _____ **Date:** _____

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# Generator's Nonhazardous Waste Profile Sheet

WASTE MANAGEMENT

Requested Disposal Facility Milam Profile Number

☐ Renewal for Profile Number _____ Waste Approval Expiration Date _____

## A. Waste Generator Facility Information (must reflect location of waste generation/origin)

1. Generator Name: U.S. Environmental Protection Agency - Eagle Zinc Superfund Site
2. Site Address: School Street and Industrial Park Drive
3. City/ZIP: Hillsboro, 62049
4. State: Illinois
5. County: _____
6. Contact Name/Title: Laura Crause/Staff Geologist
7. Email Address: Laura.Crause@CH2M.com
8. Phone: 314.335.3008
9. FAX: 414.454.8809
10. NAICS Code: _____
11. Generator USEPA ID #: ILD980606941
12. State ID# (if applicable): _____

## B. Customer Information ☐ same as above

P. O. Number: _____

1. Customer Name: Capitol Environmental Services, Inc.
2. Billing Address: 200 Biddle Ave., Suite 205
3. City, State and ZIP: Newark, DE 19702
4. Contact Name: Terri Fort
5. Contact Email: terri.fort@capitol-environmental.com
6. Phone: 5407776547 FAX: 5409044788
7. Transporter Name: SET Environmental
8. Transporter ID # (if appl.): N/A
9. Transporter Address: 450 Sumac Road
10. City, State and ZIP: Wheeling, IL 60090

## C. Waste Stream Information

1. DESCRIPTION
   a. Common Waste Name: ~~Nonhaz PPE~~ State Waste Code(s): _____
   b. Describe Process Generating Waste or Source of Contamination:

PPE used during collection of purge water and soil borings during a subsurface investigation to determine metals contamination. Site is historical zinc oxide manufacturing facility.

   c. Typical Color(s): white, varies
   d. Strong Odor? ☐ Yes ☑ No Describe: _____
   e. Physical State at 70°F: ☑ Solid ☐ Liquid ☐ Powder ☐ Semi-Solid or Sludge ☐ Other: _____
   f. Layers? ☑ Single layer ☐ Multi- layer ☐ NA
   g. Water Reactive? ☐ Yes ☑ No If Yes, Describe: _____
   h. Free Liquid Range (%): 0 to _____ ☑ NA(solid)
   i. pH Range: ☐ ≤2 ☑ 2.1-12.4 ☐ ≥12.5 ☐ NA(solid) ☐ Actual: _____
   j. Liquid Flash Point: ☐ < 140°F ☐ ≥ 140°F ☑ NA(solid) ☐ Actual: _____
   k. Flammable Solid: ☐ Yes ☑ No
   l. Physical Constituents: List all constituents of waste stream - (e.g. Soil 0-80%, Wood 0-20%): ☐ (See Attached)

| Constituents *(Total Composition Must be ≥ 100%)* | Concentration % | Constituents *(Total Composition Must be ≥ 100%)* | Concentration % |
|---|---|---|---|
| 1. soil | 1-5 | 4. | |
| 2. PPE (tyveks, gloves, rags) | 75-85 | 5. | |
| 3. plastic tubing | 15-24 | 6. | |

2. ESTIMATED QUANTITY OF WASTE AND SHIPPING INFORMATION
   a. ☑ Event ☐ Base/Ongoing (Check One)
   b. Estimated Annual Quantity: 6 ☐ Tons ☐ Cubic Yards ☑ Drums ☐ Gallons ☐ Other (specify): _____
   c. Shipping Frequency: _____ Units per ☐ Month ☐ Quarter ☐ Year ☑ One Time ☐ Other
   d. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If yes, answer e.) ☐ Yes ☑ No
   e. USDOT Shipping Description (if applicable): NonRCRA, NonDOT regulated debris
3. SAFETY REQUIREMENTS (Handling, PPE, etc.): _____

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# Generator's Nonhazardous Waste Profile Sheet

WASTE MANAGEMENT

## D. Regulatory Status (Please check appropriate responses)

1. Is this a USEPA (40 CFR Part 261)/State hazardous waste? If yes, contact your sales representative. ☐ Yes ☑ No
2. Is this waste included in one or more of categories below (Check all that apply)? If yes, attach supporting documentation. ☐ Yes ☑ No
   - ☐ Delisted Hazardous Waste
   - ☐ Excluded Wastes Under 40 CFR 261.4
   - ☐ Treated Hazardous Waste Debris
   - ☐ Treated Characteristic Hazardous Waste
3. Is the waste from a Federal (40 CFR 300, Appendix B) or state mandated clean-up? If yes, see instructions. ☑ Yes ☐ No
4. Does the waste represented by this waste profile sheet contain radioactive material? ☐ Yes ☑ No
   a. If yes, is disposal regulated by the Nuclear Regulatory Commission? ☐ Yes ☑ No
   b. If yes, is disposal regulated by a State Agency for radioactive waste/NORM? ☐ Yes ☑ No
5. Does the waste represented by this waste profile sheet contain concentrations of regulated Polychlorinated Biphenyls (PCBs)? ☐ Yes ☑ No
   a. If yes, is disposal regulated under TSCA? ☐ Yes ☐ No
6. Does the waste contain untreated, regulated, medical or infectious waste? ☐ Yes ☑ No
7. Does the waste contain asbestos? ☐ Yes ☑ No If Yes, ☐ Friable ☐ Non Friable
8. Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)? ☐ Yes ☑ No
   If yes, does the waste contain <500 ppmw VOHAPs at the point of determination? ☐ Yes ☑ No

## E. Generator Certification (Please read and certify by signature below)

By signing this Generator's Waste Profile Sheet, I hereby certify that all:

1. Information submitted in this profile and all attached documents contain true and accurate descriptions of the waste material;
2. Relevant information within the possession of the Generator regarding known or suspected hazards pertaining to this waste has been disclosed to WM/the Contractor;
3. Analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20(c) or equivalent rules; and
4. Changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by the Generator and disclosed to WM (and the Contractor if applicable) prior to providing the waste to WM (and the Contractor if applicable).
5. Check all that apply:
   - ☑ Attached analytical pertains to the waste. Identify laboratory & sample ID #'s and parameters tested:
     Debris has been in contact with CT laboratories, Sample ID: EZ-IDW-Soil-001 and EZ-IDW-Water-001 # Pages: 7
   - ☐ Only the analyses identified on the attachment pertain to the waste (identify by laboratory & sample ID #'s and parameters tested).
     Attachment #: _____
   - ☐ Additional information necessary to characterize the profiled waste has been attached (other than analytical).
     Indicate the number of attached pages: _____
   - ☑ I am an agent signing on behalf of the Generator, and the delegation of authority to me from the Generator for this signature is available upon request.
   - ☐ By Generator process knowledge, the following waste is not a listed waste and is below all TCLP regulatory limits.

**Certification Signature:** L Crause / CH2M HILL on behalf of USEPA Region 5 **Title:** Staff Geologist

**Company Name:** CH2MHill **Name (Print):** Laura Crause

**Date:** 3/3/2011

## FOR WM USE ONLY

**Management Method:** ☐ Landfill ☐ Bioremediation **Approval Decision:** ☐ Approved ☐ Not Approved

☐ Non-hazardous solidification ☐ Other: _____ Waste Approval Expiration Date: _____

**Management Facility Precautions, Special Handling Procedures or Limitation on approval:** _____

☐ Shall not contain free liquid
☐ Shipment must be scheduled into disposal facility
☐ Approval Number must accompany each shipment
☐ Waste Manifest must accompany load

**WM Authorization Name / Title:** _____ **Date:** _____

**State Authorization (if Required):** _____ **Date:** _____

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# Generator's Nonhazardous Waste Profile Sheet

WASTE MANAGEMENT

Requested Disposal Facility Milam Profile Number

☐ Renewal for Profile Number _____ Waste Approval Expiration Date _____

## A. Waste Generator Facility Information (must reflect location of waste generation/origin)

1. Generator Name: U.S. Environmental Protection Agency - Eagle Zinc Superfund Site
2. Site Address: School Street and Industrial Park Drive
3. City/ZIP: Hillsboro, 62049
4. State: Illinois
5. County: _____
6. Contact Name/Title: Laura Crause/Staff Geologist
7. Email Address: Laura.Crause@CH2M.com
8. Phone: 314.335.3008
9. FAX: 414.454.8809
10. NAICS Code: _____
11. Generator USEPA ID #: ILD980606941
12. State ID# (if applicable): _____

## B. Customer Information ☐ same as above

P. O. Number: _____

1. Customer Name: Capitol Environmental Services, Inc.
2. Billing Address: 200 Biddle Ave., Suite 205
3. City, State and ZIP: Newark, DE 19702
4. Contact Name: Terri Fort
5. Contact Email: terri.fort@capitol-environmental.com
6. Phone: 5407776547 FAX: 5409044788
7. Transporter Name: SET Environmental
8. Transporter ID # (if appl.): N/A
9. Transporter Address: 450 Sumac Road
10. City, State and ZIP: Wheeling, IL 60090

## C. Waste Stream Information

1. DESCRIPTION
   a. Common Waste Name: ~~Nonhaz Soil~~ State Waste Code(s): _____
   b. Describe Process Generating Waste or Source of Contamination:

   Soil borings collected during subsurface investigation to determine metals contamination. Site is historical zinc oxide manufacturing facility

   c. Typical Color(s): brown
   d. Strong Odor? ☐ Yes ☑ No Describe: _____
   e. Physical State at 70°F: ☑ Solid ☐ Liquid ☐ Powder ☐ Semi-Solid or Sludge ☐ Other: _____
   f. Layers? ☑ Single layer ☐ Multi- layer ☐ NA
   g. Water Reactive? ☐ Yes ☑ No If Yes, Describe: _____
   h. Free Liquid Range (%): 0 to _____ ☑ NA(solid)
   i. pH Range: ☐ ≤2 ☑ 2.1-12.4 ☐ ≥12.5 ☐ NA(solid) ☑ Actual: 8.34
   j. Liquid Flash Point: ☐ < 140°F ☐ ≥ 140°F ☑ NA(solid) ☐ Actual: _____
   k. Flammable Solid: ☐ Yes ☑ No
   l. Physical Constituents: List all constituents of waste stream - (e.g. Soil 0-80%, Wood 0-20%): ☐ (See Attached)

| Constituents *(Total Composition Must be ≥ 100%)* | Concentration % | Constituents *(Total Composition Must be ≥ 100%)* | Concentration % |
|---|---|---|---|
| 1. soil | 95-99 | 4. | |
| 2. gravel, rocks | 1-5 | 5. | |
| 3. | | 6. | |

2. ESTIMATED QUANTITY OF WASTE AND SHIPPING INFORMATION
   a. ☑ Event ☐ Base/Ongoing (Check One)
   b. Estimated Annual Quantity: 13 ☐ Tons ☐ Cubic Yards ☑ Drums ☐ Gallons ☐ Other (specify): _____
   c. Shipping Frequency: _____ Units per ☐ Month ☐ Quarter ☐ Year ☑ One Time ☐ Other
   d. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If yes, answer e.) ☐ Yes ☑ No
   e. USDOT Shipping Description (if applicable): NonRCRA, NonDOT regulated soil
3. SAFETY REQUIREMENTS (Handling, PPE, etc.): _____

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# Generator's Nonhazardous Waste Profile Sheet

WASTE MANAGEMENT

## D. Regulatory Status (Please check appropriate responses)

1. Is this a USEPA (40 CFR Part 261)/State hazardous waste? If yes, contact your sales representative. ☐ Yes ☑ No
2. Is this waste included in one or more of categories below (Check all that apply)? If yes, attach supporting documentation. ☐ Yes ☑ No
   - ☐ Delisted Hazardous Waste
   - ☐ Excluded Wastes Under 40 CFR 261.4
   - ☐ Treated Hazardous Waste Debris
   - ☐ Treated Characteristic Hazardous Waste
3. Is the waste from a Federal (40 CFR 300, Appendix B) or state mandated clean-up? If yes, see instructions. ☑ Yes ☐ No
4. Does the waste represented by this waste profile sheet contain radioactive material? ☐ Yes ☑ No
   a. If yes, is disposal regulated by the Nuclear Regulatory Commission? ☐ Yes ☑ No
   b. If yes, is disposal regulated by a State Agency for radioactive waste/NORM? ☐ Yes ☑ No
5. Does the waste represented by this waste profile sheet contain concentrations of regulated Polychlorinated Biphenyls (PCBs)? ☐ Yes ☑ No
   a. If yes, is disposal regulated under TSCA? ☐ Yes ☐ No
6. Does the waste contain untreated, regulated, medical or infectious waste? ☐ Yes ☑ No
7. Does the waste contain asbestos? ☐ Yes ☑ No If Yes, ☐ Friable ☐ Non Friable
8. Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)? ☐ Yes ☑ No
   If yes, does the waste contain <500 ppmw VOHAPs at the point of determination? ☐ Yes ☑ No

## E. Generator Certification (Please read and certify by signature below)

By signing this Generator's Waste Profile Sheet, I hereby certify that all:

1. Information submitted in this profile and all attached documents contain true and accurate descriptions of the waste material;
2. Relevant information within the possession of the Generator regarding known or suspected hazards pertaining to this waste has been disclosed to WM/the Contractor;
3. Analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20(c) or equivalent rules; and
4. Changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by the Generator and disclosed to WM (and the Contractor if applicable) prior to providing the waste to WM (and the Contractor if applicable).
5. Check all that apply:
   - ☑ Attached analytical pertains to the waste. Identify laboratory & sample ID #'s and parameters tested: CT laboratories, Sample ID: EZ-IDW-Soil-001 # Pages: 7
   - ☐ Only the analyses identified on the attachment pertain to the waste (identify by laboratory & sample ID #'s and parameters tested). Attachment #: _____
   - ☐ Additional information necessary to characterize the profiled waste has been attached (other than analytical). Indicate the number of attached pages: _____
   - ☑ I am an agent signing on behalf of the Generator, and the delegation of authority to me from the Generator for this signature is available upon request.
   - ☐ By Generator process knowledge, the following waste is not a listed waste and is below all TCLP regulatory limits.

**Certification Signature:** L Crause / CH2M Hill on behalf of USEPA Region 5 **Title:** Staff Geologist

**Company Name:** CH2MHill **Name (Print):** Laura Crause

**Date:** 3/3/2011

## FOR WM USE ONLY

**Management Method:** ☐ Landfill ☐ Bioremediation **Approval Decision:** ☐ Approved ☐ Not Approved

☐ Non-hazardous solidification ☐ Other: _____ Waste Approval Expiration Date: _____

**Management Facility Precautions, Special Handling Procedures or Limitation on approval:** _____

☐ Shall not contain free liquid
☐ Shipment must be scheduled into disposal facility
☐ Approval Number must accompany each shipment
☐ Waste Manifest must accompany load

**WM Authorization Name / Title:** _____ **Date:** _____

**State Authorization (if Required):** _____ **Date:** _____

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# Generator's Nonhazardous Waste Profile Sheet

WASTE MANAGEMENT

Requested Disposal Facility Milam Profile Number

☐ Renewal for Profile Number _____ Waste Approval Expiration Date _____

## A. Waste Generator Facility Information (must reflect location of waste generation/origin)

1. Generator Name: U.S. Environmental Protection Agency - Eagle Zinc Superfund Site
2. Site Address: School Street and Industrial Park Drive
3. City/ZIP: Hillsboro, 62049
4. State: Illinois
5. County: _____
6. Contact Name/Title: Laura Crause/Staff Geologist
7. Email Address: Laura.Crause@CH2M.com
8. Phone: 314.335.3008
9. FAX: 414.454.8809
10. NAICS Code: _____
11. Generator USEPA ID #: ILD980606941
12. State ID# (if applicable): _____

## B. Customer Information ☐ same as above

P. O. Number: _____

1. Customer Name: Capitol Environmental Services, Inc.
2. Billing Address: 200 Biddle Ave., Suite 205
3. City, State and ZIP: Newark, DE 19702
4. Contact Name: Terri Fort
5. Contact Email: terri.fort@capitol-environmental.com
6. Phone: 5407776547 FAX: 5409044788
7. Transporter Name: SET Environmental
8. Transporter ID # (if appl.): N/A
9. Transporter Address: 450 Sumac Road
10. City, State and ZIP: Wheeling, IL 60090

## C. Waste Stream Information

1. DESCRIPTION
   a. Common Waste Name: Nonhaz Water State Waste Code(s): _____
   b. Describe Process Generating Waste or Source of Contamination:

   Nonhazardous Purge Water collected from monitoring wells. Site is historical zinc oxide manufacturing facility.

   c. Typical Color(s): none, clear
   d. Strong Odor? ☐ Yes ☑ No Describe: _____
   e. Physical State at 70°F: ☐ Solid ☑ Liquid ☐ Powder ☐ Semi-Solid or Sludge ☐ Other: _____
   f. Layers? ☑ Single layer ☐ Multi- layer ☐ NA
   g. Water Reactive? ☐ Yes ☑ No If Yes, Describe: _____
   h. Free Liquid Range (%): 100 to _____ ☐ NA(solid)
   i. pH Range: ☐ ≤2 ☑ 2.1-12.4 ☐ ≥12.5 ☐ NA(solid) ☑ Actual: 7.91
   j. Liquid Flash Point: ☐ < 140°F ☑ ≥ 140°F ☐ NA(solid) ☐ Actual: _____
   k. Flammable Solid: ☐ Yes ☑ No
   l. Physical Constituents: List all constituents of waste stream - (e.g. Soil 0-80%, Wood 0-20%): ☐ (See Attached)

| Constituents *(Total Composition Must be ≥ 100%)* | Concentration % | Constituents *(Total Composition Must be ≥ 100%)* | Concentration % |
|---|---|---|---|
| 1. Water | 95-99 | 4. | |
| 2. Sediment | 1-5 | 5. | |
| 3. | | 6. | |

2. ESTIMATED QUANTITY OF WASTE AND SHIPPING INFORMATION
   a. ☑ Event ☐ Base/Ongoing (Check One)
   b. Estimated Annual Quantity: 2000 ☐ Tons ☐ Cubic Yards ☐ Drums ☑ Gallons ☐ Other (specify): _____
   c. Shipping Frequency: _____ Units per ☐ Month ☐ Quarter ☐ Year ☑ One Time ☐ Other
   d. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If yes, answer e.) ☐ Yes ☑ No
   e. USDOT Shipping Description (if applicable): NonRCRA, NonDOT regulated water
3. SAFETY REQUIREMENTS (Handling, PPE, etc.): _____

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# Generator's Nonhazardous Waste Profile Sheet

WASTE MANAGEMENT

## D. Regulatory Status (Please check appropriate responses)

1. Is this a USEPA (40 CFR Part 261)/State hazardous waste? If yes, contact your sales representative. ☐ Yes ☑ No
2. Is this waste included in one or more of categories below (Check all that apply)? If yes, attach supporting documentation. ☐ Yes ☑ No
   - ☐ Delisted Hazardous Waste
   - ☐ Excluded Wastes Under 40 CFR 261.4
   - ☐ Treated Hazardous Waste Debris
   - ☐ Treated Characteristic Hazardous Waste
3. Is the waste from a Federal (40 CFR 300, Appendix B) or state mandated clean-up? If yes, see instructions. ☑ Yes ☐ No
4. Does the waste represented by this waste profile sheet contain radioactive material? ☐ Yes ☑ No
   a. If yes, is disposal regulated by the Nuclear Regulatory Commission? ☐ Yes ☑ No
   b. If yes, is disposal regulated by a State Agency for radioactive waste/NORM? ☐ Yes ☑ No
5. Does the waste represented by this waste profile sheet contain concentrations of regulated Polychlorinated Biphenyls (PCBs)? ☐ Yes ☑ No
   a. If yes, is disposal regulated under TSCA? ☐ Yes ☐ No
6. Does the waste contain untreated, regulated, medical or infectious waste? ☐ Yes ☑ No
7. Does the waste contain asbestos? ☐ Yes ☑ No If Yes, ☐ Friable ☐ Non Friable
8. Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)? ☐ Yes ☑ No
   If yes, does the waste contain <500 ppmw VOHAPs at the point of determination? ☐ Yes ☑ No

## E. Generator Certification (Please read and certify by signature below)

By signing this Generator's Waste Profile Sheet, I hereby certify that all:

1. Information submitted in this profile and all attached documents contain true and accurate descriptions of the waste material;
2. Relevant information within the possession of the Generator regarding known or suspected hazards pertaining to this waste has been disclosed to WM/the Contractor;
3. Analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20(c) or equivalent rules; and
4. Changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by the Generator and disclosed to WM (and the Contractor if applicable) prior to providing the waste to WM (and the Contractor if applicable).
5. Check all that apply:
   - ☑ Attached analytical pertains to the waste. Identify laboratory & sample ID #'s and parameters tested:
     CT laboratories, Sample ID: EZ-IDW-Water-001 # Pages: 7
   - ☐ Only the analyses identified on the attachment pertain to the waste (identify by laboratory & sample ID #'s and parameters tested).
     Attachment #: _____
   - ☐ Additional information necessary to characterize the profiled waste has been attached (other than analytical).
     Indicate the number of attached pages: _____
   - ☑ I am an agent signing on behalf of the Generator, and the delegation of authority to me from the Generator for this signature is available upon request.
   - ☐ By Generator process knowledge, the following waste is not a listed waste and is below all TCLP regulatory limits.

**Certification Signature:** L Crause / CH2M HILL on behalf of USEPA Region 5 **Title:** Staff Geologist

**Company Name:** CH2MHill **Name (Print):** Laura Crause

**Date:** 3/3/2011

## FOR WM USE ONLY

**Management Method:** ☐ Landfill ☐ Bioremediation **Approval Decision:** ☐ Approved ☐ Not Approved

☐ Non-hazardous solidification ☐ Other: _____ Waste Approval Expiration Date: _____

**Management Facility Precautions, Special Handling Procedures or Limitation on approval:** _____

☐ Shall not contain free liquid
☐ Shipment must be scheduled into disposal facility
☐ Approval Number must accompany each shipment
☐ Waste Manifest must accompany load

**WM Authorization Name / Title:** _____ **Date:** _____

**State Authorization (if Required):** _____ **Date:** _____

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# Appendix G
# Data Validation Summary and Analytical Data

Provided on CD

Appendix G is located on the accompanying CD.

# Appendix H
# Human Health Risk Assessment

*Human Health Risk Assessment*

# Eagle Zinc Site
# Hillsboro, Illinois

## WA No. 102-RICO-B5Y7/Contract No. EP-S5-06-01

Prepared for

May 2012

CH2MHILL®

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A RAGS Part D Tables
B Figures
C Tables
D Analytical Data
E ProUCL Output
F Evaluation of Lead Exposure
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# Abbreviations

| | |
|---|---|
| ALM | adult lead methodology |
| ATSDR | Agency for Toxic Substances and Disease Registry |
| bgs | below ground surface |
| BLL | blood lead level |
| COC | chemical of concern |
| COPC | chemical of potential concern |
| CSF | cancer slope factor |
| EC | exposure concentration |
| ELCR | excess lifetime cancer risk |
| EPC | exposure point concentration |
| ENVIRON | ENVIRON International Corporation |
| HHRA | human health risk assessment |
| HI | hazard index |
| HQ | hazard quotient |
| IEPA | Illinois Environmental Protection Agency |
| IUR | inhalation unit risk |
| MCL | maximum contaminant level |
| µg/L | micrograms per liter |
| $\mu g/m^3$ | micrograms per cubic meter |
| mg/kg | milligrams per kilogram |
| mg/kg-day | milligrams per kilogram per day |
| $mg/m^3$ | milligrams per cubic meter |
| NRWQC | National Recommended Water Quality Criteria |
| OU2 | Eagle Zinc Operable Unit 2 |
| PEF | particulate emission factor |
| RAGS | Risk Assessment Guidance for Superfund |
| RfC | reference concentration |
| RfD | reference dose |
| RI | remedial investigation |
| RME | reasonable maximum exposure |
| RPD | relative percent difference |
| RSL | regional screening level |
| SDI | subchronic daily intake |
| SL | screening level |
| TRW | technical work group |
| UCL | upper confidence limit |
| USEPA | U.S. Environmental Protection Agency |

SECTION 1

# Introduction

This report presents the approach, assumptions, and results of the baseline human health risk assessment (HHRA) conducted for the Eagle Zinc Operable Unit 2 (OU2) Site in Hillsboro, Illinois. The approach and assumptions were developed to be generally consistent with the *Final Site-Specific Plans* (CH2M HILL 2010) and were submitted to the U.S. Environmental Protection Agency (USEPA) Region 5 in the technical memorandum entitled *Interim Deliverable for the Human Health Risk Assessment* (CH2M HILL 2011), hereinafter referred to as the Interim Deliverable, for regulatory review on August 11, 2011. The baseline HHRA was performed in accordance with the proposed approach and assumptions in the Interim Deliverable and subsequent comments from USEPA.

In accordance with USEPA guidance documents, the HHRA consists of a four-step evaluation process comprising the following:

- Data evaluation
- Exposure assessment
- Toxicity assessment
- Risk characterization

## 1.1 Scope of the Risk Assessment

The HHRA is an update to the HHRA conducted in 2004 by ENVIRON International Corporation (ENVIRON) and provides an updated evaluation of the potential current and future risks to human health posed by detected chemicals at the site based on incorporation of recent analytical data, in accordance with USEPA guidance for conducting HHRAs. The detailed scope and overall approach for the HHRA follow USEPA *Risk Assessment Guidance for Superfund,* Parts A, D, E, and F (USEPA 1989, 2001, 2004, and 2009a).

The baseline HHRA follows the specific report organization and table presentation format described in *Risk Assessment Guidance for Superfund: Volume I Human Health Evaluation Manual, Part D* (USEPA 2001). Therefore, the tables follow the standard numbering format required by USEPA. The Risk Assessment Guidelines for Superfund (RAGS) Part D tables are presented in Attachment A. The tables present the analytical data, data groupings, results of the chemical of potential concern (COPC) selection process, exposure point concentrations (EPC), exposure factors, toxicity values for COPCs, intake/risk estimates for each receptor, and chemical of concern (COC).

## 1.2 Potential Receptors

The Eagle Zinc OU2 Site is located in a mixed industrial/commercial/residential area in Hillsboro, Montgomery County, Illinois. The area is zoned commercial/industrial, and there are no plans to rezone the area for other future uses. To facilitate risk-based decisions, the OU2 site was divided into one onsite exposure area (Exposure Area 2) and two offsite exposure areas (Exposure Areas 1 and 3) as depicted in Figure B.1 of Attachment B.

Based on current and reasonably foreseeable future site conditions, the following potential current and future human receptors were identified and evaluated in the HHRA:

- **Current Onsite Trespassers**—Adolescent trespassers who may contact onsite residues and surface soil and sediment/surface water in the onsite water bodies in Exposure Area 2.
- **Current/Future Offsite Residents**—Adult and child residents who may contact surface soil in offsite exposure areas (Exposure Areas 1 and 3).
- **Current/Future Offsite Recreational Users**—Adult and child recreational users who may contact offsite sediment and surface water in Exposure Areas 1 and 3. The current/future recreator scenario in the offsite ditch (Exposure Area 3) can be used to conservatively represent potential exposures by future City maintenance workers in the drainage ditch.

- **Future Onsite Industrial Workers**—Industrial workers who may contact onsite residues and surface soil, assuming the site is developed as an industrial facility without site remediation activities in the future (Exposure Area 2). The exposure scenario is also considered a conservative representation of future onsite groundskeepers.
- **Future Onsite Construction Workers**—Construction workers who may contact residues and surface/subsurface soil during future site redevelopment/construction activities in Exposure Area 2.
- **Future Offsite Construction Workers**—Construction workers who may contact surface/subsurface soil during future redevelopment/construction activities in Exposure Areas 1 and 3.

A conceptual exposure model presents potential exposure media, exposure points, receptors (current and future), and exposure routes, and is included in Table 1 of Attachment A and is graphically presented in Figure B.2 of Attachment B. A more detailed exposure assessment is provided in Section 3.

SECTION 2

# Data Evaluation

The following subsections summarize the data evaluation.

## 2.1 Data Used in the HHRA

Analytical results for soil (surface and subsurface), residue, surface water, and sediment samples from previous investigations, including the remedial investigation (RI; ENVIRON 2005a) as well as the RI addendum conducted in 2005 (ENVIRON 2005b) were used in the HHRA. A summary of the samples used in the HHRA and their associated data groupings are presented in Tables C.1 through C.3 of Attachment C. A discussion of data groupings for each exposure medium is provided in the following subsections. Sampling locations for soil, residue, sediment, and surface water are depicted in Figure B.1 in Attachment B.

According to the *Final Site-Specific Plans* (CH2M HILL 2010), asbestos, if present, is not evaluated in the HHRA. The data set used in the HHRA includes offsite laboratory data only and not onsite field-screening x-ray fluorescence data. Soil, sediment, and surface water samples were analyzed for volatile organic compounds, semivolatile organic compounds, and inorganics. Residue samples were analyzed for inorganics, and a few residue samples were also analyzed for semivolatile organic compounds. In addition, soil and sediment samples were analyzed for polychlorinated biphenyls. The analytical data set for the samples used in the HHRA is included in Attachment D.

### 2.1.1 Soil and Surface Residues

Residue and soil samples collected from the 0- to 10-foot interval in July 2002, March/April 2005, May/October 2008, and November/December 2010 were used in the HHRA. The soil data were divided into three exposure areas (Exposure Areas 1 through 3) and then subdivided into specific exposure depths as described in the following subsections. It should be noted that both discrete and composite samples were included in the soil data set (composite samples were collected from residues), and that both sieved and unsieved lead samples were collected and used in the HHRA. A discussion of the potential impacts on the overall HHRA conclusions resulting from the use of different sampling and analysis methods are included in the Uncertainty Analysis (Section 5.4).

#### 2.1.1.1 Onsite (Exposure Area 2)

Under current land use, onsite trespassers could be exposed to COPCs in residues or surface soil (0 to 2 feet below ground surface [bgs]) through incidental ingestion, inhalation of volatile emissions and dust in ambient air, and dermal contact with soil/residue or dust in areas where soil/residue is exposed (that is, not covered with asphalt or concrete). The potential current soil/residue exposure scenarios were quantified for onsite trespassers. The onsite residue/surface soil data set consists of 108 samples.

In the future, assuming that surface residues currently present onsite remain, future onsite industrial workers could be exposed to COPCs in residue and surface soil (0 to 2 feet bgs) through incidental ingestion, inhalation of volatile emissions and dust in ambient air, and dermal contact with soil/residue or dust in areas where soil/residue is exposed. Therefore, the potential soil/residue exposure scenarios were quantified for future industrial workers using the same data set used for current onsite trespassers.

Under future land use, onsite construction workers could be exposed to COPCs in surface residues or surface and subsurface soil situated at 0 to 10 feet bgs (termed “total soil”) through incidental ingestion, inhalation of volatile emissions and dust in ambient air, and dermal contact with soil/residue or dust. Therefore, the potential soil/residue exposure scenarios were quantified for future construction workers. The onsite residue and total soil data set (0 to 10 feet bgs) consists of 142 samples.

#### 2.1.1.2 Offsite (Exposure Areas 1 and 3)

Under both current and future land uses, offsite residents could be exposed to COPCs in surface soil (0 to 2 feet bgs) if site residues have impacted offsite soil in Exposure Areas 1 and 3. Potential exposure scenarios include incidental

ingestion, inhalation of volatile emissions and dust in ambient air, and dermal contact with soil or dust in areas where soil is exposed (that is, not covered with asphalt or concrete). The potential exposure scenarios were evaluated for residents. The data set consists of 10 and 3 soil samples in Exposure Areas 1 and 3, respectively.

Future offsite construction workers could be exposed to COPCs in soil situated at 0 to 10 feet bgs (total soil) if site residues have impacted offsite soil. Potential exposure scenarios include incidental ingestion, inhalation of volatile emissions and dust in ambient air, and dermal contact with total soil or dust by construction workers at offsite exposure areas. The data set consists of 25 and 9 soil samples in Exposure Areas 1 and 3, respectively.

### 2.1.2 Groundwater

Site groundwater is Class II groundwater (that is, nonpotable groundwater); therefore, the use of onsite groundwater by future industrial workers for drinking purposes was not evaluated in the HHRA. Additionally, hypothetical offsite (current and future) groundwater exposures by residents were not evaluated in the HHRA because offsite groundwater users were not located within a 1-mile radius of the site. Additionally, Subsection C4 c, Section VI (Human Health Risk Assessment) of the 2005 RI document (ENVIRON 2005a) states that:

> *According to a local ordinance, "…any connection whereby a private, auxiliary or emergency water supply other than the regular public water supply enters the supply or distribution system of the City…" is prohibited. According to Mr. Scott Hunt of Hurste-Roche, Inc., the City's engineering firm, the prohibition of cross-connections would preclude the use of a separate domestic well water system within a household that is connected to the municipal water system. Although local officials have indicated that some older domestic wells may be used for non-potable outdoor purposes (e.g., watering lawns and gardens), it is unlikely that significant ingestion occurs, and there is no expectation that ground water resources will be developed for potable use in the foreseeable future.*

### 2.1.3 Surface Water and Sediment

The sediment and surface water data set used in the HHRA consists of samples collected onsite and offsite in July 2002, March/June/November 2003, and December 2010. Surface water and sediment samples were divided into two groupings: onsite and offsite. Sediment samples collected by the Illinois Environmental Protection Agency (IEPA) in 2005 were not used in the HHRA due to the availability of more recent data collected at the locations sampled by IEPA. Sediment and surface water samples collected from location SD-WD-10 in 2002 and 2003 were not used since this location was subsequently excavated. Additionally, sediment samples collected from locations EZ-SD-ED-26 and EZ-SD-WD-10 were treated as soil samples because sediment at these locations are not covered with water for a significant portion of the year.

#### 2.1.3.1 Onsite

Under current land uses, onsite trespassers could be exposed to COPCs in surface water and sediment through incidental ingestion and dermal contact. The onsite sediment and surface water grouping consists of 20 sediment samples and 30 surface water samples collected from 6 water features onsite: 2 retention ponds, the eastern and western drainage ditches (within the site boundaries), and the 2 ponds located in the southern portion of the site.

#### 2.1.3.2 Offsite

Under current land uses, offsite adult and child recreators could be exposed to COPCs in surface water and sediment through incidental ingestion and dermal contact. The offsite sediment and surface water data groupings consist of 14 sediment and 12 surface water samples that were collected from the offsite eastern and western drainage ditches (outside the site boundaries).

Lake Hillsboro is used as a backup potable water supply for the area. In addition, Lake Hillsboro is used for fishing and other recreational activities. Therefore, offsite recreational users and residents could be exposed to COPCs in surface water (used as drinking water) and fish from Lake Hillsboro. An evaluation of potential impacts on Lake Hillsboro is presented in Section 4.0 of the supplemental RI report.

## 2.2 Selection of Chemicals of Potential Concern

The maximum detected concentration of each chemical in a data grouping was compared to its respective screening level (SL), with the exception of lead in soil and sediment. If the maximum detected concentration exceeded its SL, it was retained as a COPC for the HHRA. Chemicals not detected in any sample within an exposure medium were not selected as COPCs for that medium/data grouping.

The SLs used in the HHRA are the USEPA regional screening levels (RSLs) for Chemical Contaminants at Superfund Sites (USEPA 2011a). The RSLs that are based on noncarcinogenic health endpoints were reduced by a factor of 10 (that is, adjusted to a hazard quotient [HQ] of 0.1) to account for the potential presence of multiple chemicals affecting the same target organ, with the exception of lead. No adjustment was made for the RSLs based on carcinogenic health endpoints (that is, the RSLs are based on a target excess lifetime cancer risk [ELCR] of $1 \times 10^{-6}$). For chemicals with more than one RSL (for example, a chemical with both a carcinogenic-based and a noncarcinogenic-based RSL), the lowest value was selected as the final SL for that chemical. For detected chemicals with more than one RSL in different oxidation states or chemical compositions, the RSL based on the chemical composition most likely to be present at the site was selected (for example, the RSL for mercuric chloride was used for mercury).

USEPA considers lead to be a special case because of the difficulty in identifying the classic threshold needed to develop a reference dose (RfD) and, therefore, the soil SLs for lead were established using probabilistic exposure models, namely the Integrated Exposure Uptake Biokinetic and the adult lead methodology (ALM) models. Therefore, although the RSLs for lead indicate noncarcinogenic health endpoints as their basis, the SLs were not reduced by a factor of 10. Because of the specific characteristic of soil SLs, the recommendation of the technical review workgroup (TRW) for lead was adopted in the screening process, and the average detected concentration of lead, rather than maximum detected concentration, was compared to its soil SL. If the average detected concentration in soil or sediment exceeded its SL, lead was identified as a COPC.

### 2.2.1 COPC Screening Levels

The following RSLs were used to screen the concentrations detected in exposure media for each receptor group:

- **Trespassers**—Concentrations detected in onsite surface soil and residue (0 to 2 feet) and sediment samples collected from the onsite water bodies were compared to residential soil RSLs. Concentrations detected in surface water from onsite water bodies were compared to tap water RSLs.
- **Residents (adult and child)**—Concentrations detected in offsite surface soil (0 to 2 feet) were compared to residential soil RSLs.
- **Recreational Users (adult and child)**—Concentrations detected in sediment samples collected from the offsite water bodies were compared to residential soil RSLs, and concentrations detected in surface water from offsite water bodies were compared to tap water RSLs.
- **Industrial Workers**—Concentrations detected in onsite surface soil and residue samples collected from the 0- to 2-foot interval were compared to industrial soil RSLs.
- **Construction Workers**—Concentrations detected in soil and residue samples collected from the 0- to 10-foot interval were compared to industrial soil RSLs.

### 2.2.2 Results of COPC Selection

The results of the COPC screening process for each data grouping (exposure domain) are presented in Tables 2.1 through 2.11 of Attachment A and summarized in this section. RSLs were available for all detected chemicals except for four essential nutrients (calcium, magnesium, potassium, and sodium), which were not selected as COPCs.

- **Onsite Trespassers**—Fifteen metals (aluminum, antimony, arsenic, barium, cadmium, cobalt, copper, iron, lead, manganese, nickel, silver, thallium, vanadium, and zinc), and benzo(a)pyrene were identified as COPCs in surface soil (0 to 2 feet) and residue (Table 2.1 of Attachment A); six metals (arsenic, cadmium, cobalt, iron,

manganese, and zinc) were identified as COPCs in onsite sediment (Table 2.2 of Attachment A); and six metals (cadmium, cobalt, iron, lead, manganese, and zinc) and one volatile organic compound (trichloroethylene) were identified as COPCs in onsite surface water (Table 2.3 of Attachment A).

- **Offsite Residents (Exposure Area 1)**—Two metals (arsenic and manganese) were identified as COPCs in surface soil (0 to 2 feet; Table 2.4 of Attachment A).
- **Offsite Residents (Exposure Area 3)**—Two metals (arsenic and manganese) were identified as COPCs in surface soil (0 to 2 feet; Table 2.5 of Attachment A).
- **Offsite Recreational Users**—Nine metals (aluminum, antimony, arsenic, cadmium, cobalt, copper, iron, manganese, and zinc) were identified as COPCs in offsite sediment (Table 2.6 of Attachment A), and six metals (arsenic, cadmium, cobalt, lead, manganese, and zinc) were identified as COPCs in offsite surface water (Table 2.7 of Attachment A).
- **Onsite Industrial Workers**—Eleven metals (antimony, arsenic, cadmium, cobalt, copper, iron, lead, manganese, nickel, thallium, and zinc) were identified as COPCs in surface soil (0 to 2 feet) and residue (Table 2.8 of Attachment A).
- **Onsite Construction Workers (Exposure Area 2)**—Eleven metals (antimony, arsenic, cadmium, cobalt, copper, iron, lead, manganese, nickel, thallium, and zinc) were identified as COPCs in total soil (0 to 10 feet) and residue (Table 2.9 of Attachment A).
- **Offsite Construction Workers (Exposure Area 1)**—Two metals (arsenic and manganese) were identified as COPCs in total soil (0 to 10 feet; Table 2.10 of Attachment A).
- **Offsite Construction Workers (Exposure Area 3)**—One metal (arsenic) was identified as a COPC in total soil (0 to 10 feet; Table 2.11 of Attachment A).

### 2.2.3 Evaluation of Chemicals Exceeding RSLs in Exposure Areas 1 and 3

As indicated in Tables 2.4 and 2.5 of Attachment A, only two metals (arsenic and manganese) exceeded residential RSLs. Because the two metals occur naturally in soil, a multiple-lines-of-evidence evaluation was performed to assess whether the detected concentrations of arsenic and manganese in the residential area of Exposure Area 1 and the triangular-shaped property in Exposure Area 3 are related to site impact or are naturally occurring. The following four aspects were evaluated:

1. Detected concentrations of arsenic in surface soil (0 to 2 feet bgs) and subsurface soil (3 to 5 feet bgs and 7 to 9 feet bgs) were compared to the background concentration (11.3 milligrams per kilogram [mg/kg]) identified in state risk regulations for counties outside metropolitan statistical areas (IEPA 2007).
2. Detected concentrations of manganese in surface soil and subsurface soil were compared to the background concentration (630 mg/kg) identified in state risk regulations for counties outside metropolitan statistical areas (IEPA 2007).
3. Observations made during offsite sampling were reviewed.
4. The final Phase 1 RI Report (ENVIRON 2005a) concluded that air emissions from the site (to offsite areas) were not significant, and the Addendum to the RI Report (ENVIRON 2005b) concluded that current and historical airborne emissions from the site waste piles did not result in unacceptable risks.

In order to identify the fingerprint of metals in onsite residues for comparison to offsite soil, the ratios of arsenic to cadmium, calcium, copper, lead, manganese, and zinc in onsite residue samples (that is, residue piles and surface residues) were calculated and compared to the ratios of arsenic to the same metals in offsite surface and subsurface soil samples. A similar fingerprint would indicate that residue may have been disposed at the location. Likewise, to identify the fingerprint of metals in onsite residues for comparison to offsite soil, the ratios of manganese to arsenic, cadmium, calcium, copper, lead, and zinc in onsite residue samples (that is, residue piles and surface residues) were calculated and compared to the ratios of arsenic to the same metals in offsite surface and subsurface soil samples. The ratios are provided in Attachment G.

Results of the assessment are provided in the following subsections.

#### 2.2.3.1 Exposure Area 1 (Residential Area)

1. Arsenic concentrations detected in surface soil exceeded the 11.3 mg/kg background value in 4 of 8 samples, with a maximum detected concentration of 17.8 mg/kg. Arsenic concentrations detected in subsurface soil exceeded background values in 2 of 12 samples, with a maximum detected concentration of 14.6 mg/kg.
2. Manganese concentrations detected in surface soil exceeded the 630 mg/kg background value in 8 of 9 samples, with a maximum detected concentration of 2,490 mg/kg. Manganese concentrations detected in subsurface soil exceeded background values in 5 of 12 samples, at a maximum detected concentration of 1,340 mg/kg.
3. There was no indication of surface or subsurface disturbance or fill materials within the exposure area based on soil boring logs from sampling stations EZ-SB01 through EZ-SB06. In addition, there was no evidence of fill materials in the offsite soil samples based on visual observation during sample collection.
4. The ratios between arsenic and the various metals, manganese and the various metals, and lead and the various metals are presented in Attachment G. As shown, the ratios are significantly different for onsite residues and offsite soils. The largest difference in ratios is for zinc.

Although background concentrations used for the comparison were the upper limit of the area background concentration, IEPA Title 35, Part 742, Section 742.415 b) 1) (Use of Area Background Concentrations) indicates that "an area background concentration may be used … to support a request to exclude a chemical as a contaminant of concern from further consideration for remediation at a site due to its presence as a result of background conditions." The ranges of detected concentrations in surface soil (0 to 2 feet) at the 2 offsite locations in comparison to the statewide background concentrations (for counties outside metropolitan statistical areas) presented in IEPA Title 35, Section 742.APPENDIX A, are presented in the table below. Also, the final Phase 1 RI Report (ENVIRON 2005a) concluded that air emissions from the site (to offsite areas) were not significant, and the Addendum to the RI Report (ENVIRON 2005b) concluded that current and historical airborne emissions from the site waste piles did not result in unacceptable risks.

| | | Exposure Area 1 | | Exposure Area 3 | |
|---|---|---|---|---|---|
| | Area Background [a] (mg/kg) | Min. Detected (mg/kg) | Max. Detected (mg/kg) | Min. Detected (mg/kg) | Max. Detected (mg/kg) |
| Arsenic | 11.3 | 4.5 | 17.8 | 6.4 | 14.5 |
| Manganese | 630 | 363 | 2,490 | 625 | 1,340 |

[a] Counties outside metropolitan statistical areas

In summary, arsenic and manganese concentrations in the residential area are similar to published background levels, no fill material was observed offsite in borings or samples, and the metals ratios are significantly different for onsite residue material and offsite soil. Therefore, site residues do not appear to have been placed offsite in the residential area of Exposure Area 1, and the detected concentrations of arsenic and manganese in the residential area are not related to a site release.

#### 2.2.3.2 Exposure Area 3 (Triangular-shaped Property)

1. Arsenic concentrations detected in surface soil exceeded the 11.3 mg/kg background value in 1 of 3 samples, with a maximum detected concentration of 14.5 mg/kg. Arsenic concentrations detected in subsurface soil exceeded background values in 1 of 6 samples. The maximum detected concentration was 18.2 mg/kg.
2. Manganese concentrations detected in surface soil exceeded the 630 mg/kg background level in 2 of 3 samples, with a maximum detected concentration of 1,340 mg/kg. Manganese concentrations detected in subsurface soil were within background levels, with a maximum detected concentration of 281 mg/kg.

3. There was no indication of surface or subsurface disturbance or fill materials within the exposure area based on soil boring logs from sampling stations SB-07 through SB-09. In addition, there was no evidence of fill materials in the offsite soil samples based on visual observation during sample collection.
4. The ratios between arsenic and the various metals, manganese and the various metals, and lead and the various metals are presented in Attachment G. As shown, the ratios are significantly different for onsite residues and offsite soils. The largest difference in ratios is for zinc.

Please see the discussion of the IEPA background concentrations and the comparison table showing the range of detected arsenic and manganese concentration in Exposure Area 3. Again, the final Phase 1 RI Report (2005) concluded that air emissions from the site (to offsite areas) were not significant, and the Addendum to the RI Report (2005) concluded that current and historical airborne emissions from the site waste piles did not result in unacceptable risks. Therefore, further evaluation is not necessary.

In summary, arsenic and manganese concentrations in the triangular-shaped property are similar to published background levels, no fill material was observed in borings or samples, and the metals ratios are significantly different for onsite residue material and the triangular-shaped property in Exposure Area 3. Therefore, site residues do not appear to have been placed in the triangular-shaped property in Exposure Area 3, and the detected concentrations of arsenic and manganese on the triangular-shaped property are not related to a site release.

## 2.3 Hot Spot Evaluation

A graphical review of site data was conducted to assess whether potential hot spots are present in exposure media that may require a separate exposure evaluation in the HHRA. The maximum detected concentrations were compared to 100 times the adjusted RSLs (corresponding to an ELCR of $1 \times 10^{-4}$ and HQ of 10) to identify the presence of discrete areas (if any) where concentrations are considerably higher than those present in the surrounding area.

As seen in Figure 3 of Attachment B, detected concentrations of various metals in soil/residue, surface water, and sediment exceeded 100 times their respective SLs. Overall, a graphical review of site data indicates that the detected concentrations in soil are distributed relatively evenly without any discrete area of elevated concentrations. Although the concentration of cadmium in one surface water sample (SW-WD-9) exceeded 100 times its SL, the SL is very conservative for surface water (that is, it is an SL for drinking water), the sample was collected from a marshy area that is difficult to access, and the area drains toward the onsite southwest pond. Therefore, it was concluded that hot spots are not present and, therefore, no separate exposure evaluation was needed for soil or surface water.

SECTION 3

# Exposure Assessment

The following subsections summarize the exposure assessment.

## 3.1 Potential Receptors

The Eagle Zinc OU2 Site is located in a mixed industrial/commercial/residential area in Hillsboro, Montgomery County, Illinois. The site is approximately 132 acres, with approximately 30 acres of buildings and associated structures. Active industrial operations ceased in 2003. The area is zoned commercial/industrial, and there are no plans to rezone the area for other uses.

The site resides within the eastern city limits of Hillsboro, Illinois, in Montgomery County, approximately 10 miles west of Litchfield, Illinois and Interstate Highway 55. According to the 2000 Census, Montgomery County had a population of 30,652. Hillsboro had a population of 4,359, of which 25.8 percent were under the age 18, 56.6 percent were from the ages of 18 to 65, and 17.6 percent were over the age of 65. Hillsboro has a total area of approximately 5.3 square miles, predominantly occupied by a mixture of residential, commercial, and agricultural properties.

To facilitate risk-based decisions, the OU2 site was divided into one onsite (Exposure Area 2) and two offsite exposure areas (Exposure Areas 1 and 3) as summarized below and depicted in Figure B.1 of Attachment B.

| Area | Description |
|---|---|
| **Onsite Area** | |
| Exposure Area 2 | Area encompassing the entire onsite area. |
| **Offsite Areas** | |
| Exposure Area 1 | Area encompassing the western offsite area, including the public housing area and grassy knoll located immediately to the west of the site and the western drainage ditch, downstream of Stormwater Outfall 001. |
| Exposure Area 3 | Area encompassing the eastern offsite area, including the triangular-shaped property immediately to the east of the site and the eastern drainage ditch, downstream of Stormwater Outfall 002. |

The current land use and receptor group addressed in the HHRA for the onsite area is vacant land (former industrial) for adolescent trespassers. The future land use and receptor groups addressed in the HHRA for the onsite area are industrial land use for industrial workers and construction workers. The current and future land use and receptor groups assumed in the HHRA for offsite areas are residential land use for adult and child residents and recreators.

## 3.2 Exposure Point Concentrations

EPCs were identified based on measured COPC concentrations in soil/residue, surface water, and sediment, while modeled EPCs were used to estimate air concentrations for potential ambient air exposures (from soil through particulate emissions). The upper confidence limit (UCL) of the mean concentration was calculated for each COPC in soil and residue, surface water, and sediment where at least eight samples were available and at least four detected concentrations observed. The maximum detected concentration was used in place of the UCL as the EPC when: (1) the calculated UCL was greater than the maximum detected concentration, or (2) the number of samples or detected concentrations was less than the quantities described above. EPCs were estimated following the most recent parametric (distributional) and nonparametric USEPA recommendations in ProUCL Version 4.1.00 software (USEPA 2011b). ProUCL provides approaches for calculating UCLs of the mean, particularly when nondetected concentrations are present. The approaches consider a large variety of inputs including the perceived distribution of the detected results (if no perceived distribution is acceptable, nonparametric alternatives are provided),

sample size, variability, and skewness. The estimated EPCs are summarized in Tables 3.1 through 3.7 of Attachment A, and the ProUCL output is provided in Attachment E.

## 3.3 Exposure Pathways/Scenarios Quantified

The potential exposure pathways quantified for each receptor group and the exposure medium are presented in the following subsection.

### 3.3.1 Current Exposure Scenarios

**Onsite Trespassers**—The following potential exposure pathways were quantified for current onsite trespassers:

- **Surface Soil and Residue**—Ingestion and dermal contact exposures to COPCs in onsite surface soil (0 to 2 feet) and residue were quantified for adolescent trespassers. EPCs used in the intake calculations are presented in Table 3.1 of Attachment A.
- **Ambient Air**—Inhalation exposure to COPCs in fugitive dust emissions from surface soil (0 to 2 feet) and residue were quantified for adolescent trespassers. EPCs used in the exposure calculations are presented in Table 3.1.a of Attachment A.
- **Sediment**—Ingestion and dermal contact with COPCs in onsite sediment were quantified for adolescent trespassers, and EPCs used in the intake calculations are presented in Table 3.2 of Attachment A.
- **Surface water**—Ingestion and dermal contact with COPCs in onsite surface water were quantified for adolescent trespassers, and EPCs used in the intake calculations are presented in Table 3.3 of Attachment A.

### 3.3.2 Current and Future Exposure Scenarios

**Offsite Recreational Users—**The following potential exposure pathways were quantified for current and future offsite recreational users (adult and child):

- **Sediment**—Ingestion and dermal contact with COPCs in offsite sediment were quantified for recreational users, and EPCs used in the intake calculations are presented in Table 3.4 of Attachment A.
- **Surface water**—Ingestion and dermal contact with COPCs in offsite surface water were quantified for recreational users, and EPCs used in the intake calculations are presented in Table 3.5 of Attachment A.

The current/future recreator scenario in the offsite ditch was used to conservatively represent potential exposures by future city maintenance workers in the drainage ditch.

#### 3.3.2.1 Future Exposure Scenarios

**Onsite Industrial Workers**—The following exposure pathways were quantified for potential future onsite industrial workers:

- **Surface Soil and Residue**—Ingestion and dermal contact exposures to COPCs in onsite surface soil and residue (0 to 2 feet) were quantified for onsite industrial workers. EPCs used in the intake calculations are presented in Table 3.6 of Attachment A.
- **Ambient Air**—Inhalation exposure to COPCs in fugitive dust emissions from surface soil and residue (0 to 2 feet) were quantified for onsite industrial workers. EPCs used in the exposure calculations are presented in Table 3.6.a of Attachment A.

The future industrial worker exposure scenario was used to conservatively represent potential exposures by future onsite groundskeepers.

**Onsite Construction Workers (Exposure Area 2)**—The following exposure pathways were quantified for potential future onsite construction workers in Exposure Area 2:

- **Total Soil and Residue**—Ingestion and dermal contact exposures to COPCs in total soil (0 to 10 feet) and residue were quantified for construction workers. EPCs used in the intake calculations are presented in Table 3.7 of Attachment A.
- **Ambient Air**—Inhalation exposure to COPCs in fugitive dust emissions from total soil (0 to 10 feet) and residue were quantified for onsite construction workers. EPCs used in the exposure calculations are presented in Table 3.7.a of Attachment A.

## 3.4 Exposure Factors

A reasonable maximum exposure (RME) scenario was quantified for potential receptors under current and future land use scenarios (USEPA 1989). The exposure factors used in the intake calculations are presented in Tables 4.1 through 4.8 of Attachment A. The primary references for exposure factors are the standard default exposure factors presented in USEPA guidance (1989, 1991, 2002, 2004, 2011a). The chemical-specific dermal absorption factors for each COPC identified in soil and sediment are presented in Table 4 Supplement A of Attachment A.

Region-specific particulate emission factors (PEFs) were calculated for use in estimation of ambient air concentrations of soil COPCs through fugitive dust emissions (Table 4, Supplement B-1 of Attachment A). A PEF was calculated for trespassers and industrial workers using Equation 4-5 and Exhibit D-2 from the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (USEPA 2002). Data associated with Climate Zone 7 (based on Chicago, Illinois) and data for a 0.5-acre aerial extent of site contamination (USEPA's default value) were used in the region-specific PEF calculations. Another PEF was calculated for construction workers (Table 4 Supplement B-2 of Attachment A). The PEF was calculated using Equations 5-5 and 5-6 of the aforementioned USEPA document (USEPA 2002). It was assumed that the daily unpaved road traffic consists of three vehicles (one 2-ton car and two 20-ton trucks) generating particulates in the vicinity of a construction worker.

## 3.5 Exposure Pathways/Scenarios Not Quantified

Potential current and future exposures to recreational users eating fish caught in Lake Hillsboro and area residents drinking water from Lake Hillsboro (a backup water supply) were not quantified. However, a comparison of the surface water sampling data (sample EZ-SE-ED-16-1) at the confluence of the eastern drainage ditch and Lake Hillsboro to tap water RSLs (National Recommended Water Quality Criteria [NRWQC]; USEPA 2009b) for human consumption is presented in the following table.

Surface Water Concentrations Discharging into Lake Hillsboro

| Chemical | Concentration (total/dissolved) | USEPA Tap Water RSL (Hazard Quotient = 1) | NRWQC for Human Health for the consumption of: | | IEPA Surface Water Human Health Standard |
|---|---|---|---|---|---|
| | | | Water + Organism | Organism Only | |
| Manganese | 1,130/1,090 | 880 | 50 | 100 | 1,000 |
| Cadmium | 2.1/1.6 | 18 | 5[a] | -- | -- |
| Zinc | 3,210/3,050 | 11,000 | 7,400 | 26,000 | -- |

Concentrations presented in micrograms per liter.
Chemicals detected in EZ-SE-ED-16-1 are presented.
[a] USEPA maximum contaminant level (MCL).
Shading = Exceeds RSL, NRWQC, or MCL
-- = not available

As shown, manganese exceeds the NRWQC for protection of human health for drinking water and fish consumption and IEPA Surface Water Human Health Standard. However, as indicated in Section 4.0 of the RI, a large amount of dilution and mixing occurs in Lake Hillsboro. Therefore, concentrations measured at the confluence of the eastern ditch and Lake Hillsboro are expected to be much higher than the diluted concentrations in the lake.

SECTION 4

# Toxicity Assessment

The oral toxicity values (cancer slope factors [CSFs] and RfD) and inhalation toxicity values (inhalation unit risks [IURs] and reference concentrations [RfCs]) used in the HHRA were obtained from the USEPA standard hierarchy of toxicity value sources (USEPA 2003a), as follows:

- Tier 1 Source—Integrated Risk Information System (USEPA 2011c)
- Tier 2 Source—USEPA Provisional Preliminary Peer-Reviewed Toxicity Values (USEPA 2006a, 2006b, 2008, and 2010)
- Tier 3 Sources—Other peer-reviewed federal and state toxicity values
  - California EPA toxicity database (2011)
  - USEPA's Health Effects Assessment Summary Tables (USEPA 1997)
  - Minimal risk levels identified by the Agency for Toxic Substances and Disease Registry (ATSDR; ATSDR 2009)

## 4.1 Noncarcinogenic Toxicity Values

Noncarcinogenic toxicity values (oral RfDs and inhalation RfCs) were used in estimating potential adverse health effects associated with exposure to COPCs. Chronic and subchronic toxicity data for potential noncarcinogenic effects of COPCs are presented in Tables 5.1 and 5.2 of Attachment A. Where subchronic toxicity values were not available, chronic toxicity values were used as a conservative approach.

## 4.2 Carcinogenic Toxicity Values

Carcinogenic toxicity values (CSFs and IURs) were used in evaluating potential carcinogenic effects associated with exposure to known, probable, or possible carcinogens having an USEPA weight-of-evidence classification of A, B, or C, respectively. CSFs and IURs were used to estimate upper-bound lifetime statistical probabilities of a hypothetical individual developing cancer as a result of exposure to a potential carcinogen. Toxicity data for potential carcinogenic effects for COPCs are presented in Tables 6.1 and 6.2 of Attachment A.

## 4.3 Derivation of Dermal Toxicity Values

Oral RfDs and CSFs were converted to dermal RfDs and CSFs using a gastrointestinal absorption factor. The values used for this conversion were obtained from RAGS Part E, Section 4.2, and Exhibit 4-1 (USEPA 2004). Following USEPA's recommendation, such a conversion was performed only when a chemical had a gastrointestinal absorption factor of less than 50 percent. If a chemical-specific gastrointestinal absorption factor was not available, gastrointestinal absorption of the chemical was assumed to be 100 percent, and the oral RfD (or oral CSF) was used as the dermal RfD (or dermal CSF) without adjustment.

## 4.4 Toxicity Values for Mutagenic Chemicals

Consistent with the USEPA cancer guidelines and supplemental guidance (USEPA 2005a and 2005b, respectively), COPCs that act through a Mutagenic Mode of Action for carcinogenicity were evaluated using age-dependent adjustment factors for receptor groups including children and adolescent ages 16 and under. Benzo(a)pyrene is the only COPC identified in site media that is considered by USEPA to act through a Mutagenic Mode of Action, and as such, an age-specific age-dependent adjustment factor of 3 was applied to the CSF and IUR when carcinogenic risk was estimated for onsite trespassers (6 to 16 years of age) under current exposure scenarios.

SECTION 5

# Risk Characterization

Potential human health risks are discussed separately for carcinogenic and noncarcinogenic effects due to the different toxicological endpoints, relevant exposure durations, and methods used to estimate risk. USEPA Superfund guidance generally considers an acceptable site ELCR range to be within 1 to 100 in a million ($1 \times 10^{-6}$ to $1 \times 10^{-4}$). Generally, remedial actions are not warranted for site media with an ELCR of $1 \times 10^{-4}$ or below, or a hazard index (HI) of 1.0 or less, although it may be warranted if a standard is exceeded, or if other site-specific information suggests risk to managers.

## 5.1 Approach for Calculation of Risk Estimates

The following subsections summarize the approach for calculation of risk estimates.

### 5.1.1 Approach for Potential Noncarcinogenic Effects

The HHRA evaluated the potential for noncarcinogenic effects by comparing exposure intakes of each COPC over a specified time period (chronic or subchronic) with RfDs derived for similar exposure periods. For the inhalation exposure route, noncarcinogenic effects were evaluated by comparing the exposure concentration (EC) of each COPC with its RfC. In USEPA methodology, this ratio of exposure to toxicity is referred to as an HQ. The HQ assumes that there is a level of exposure below which it is unlikely for even sensitive populations to experience adverse health effects. If the exposure level exceeds the threshold, there is the potential for noncancer health effects to occur. The HQ is calculated as follows:

$$HQ = \frac{Intake}{RfD} \quad \text{or} \quad HQ = \frac{Exposure\ \ Concentration}{RfC}$$

Intake and RfD are expressed in the same units (mg/kg per day [mg/kg-day]) and represent the same exposure period (chronic or subchronic). Similarly, ECs and RfCs are expressed in the same units (milligrams per cubic meter [$mg/m^3$]). An HQ that exceeds 1.0 (that is, intake exceeds the RfD or EC exceeds the RfC) indicates that there is a potential for adverse health effects associated with exposure to that COPC.

To assess the potential for noncarcinogenic health effects posed by exposure to multiple COPCs and exposure routes, an HI approach was used (USEPA 1989). The approach assumes that noncarcinogenic hazards associated with exposure to more than one COPC and exposure route are additive. Synergistic or antagonistic interactions between COPCs are not quantified. The HI may exceed 1.0 even if all of the individual HQs are less than 1.0. The HI is equal to the sum of the HQs and is calculated as follows:

$$HI = \frac{I_1}{RfD_1} + \frac{I_2}{RfD_2} + \ldots \frac{I_i}{RfD_i} + \frac{EC_1}{RfC_1} + \frac{EC_2}{RfC_2} + \ldots \frac{EC_j}{RfC_j}$$

where:

I = Intake level (mg/kg-day)
RfD = Reference dose (mg/kg-day)
$I_i$ = Intake level for the "*i*"th constituent
$RfD_i$ = Reference dose for the "*i*"th constituent
EC = Exposure concentration ($mg/m^3$)
RfC = Reference concentration ($mg/m^3$)
$EC_j$ = Exposure concentration for the "*j*"th constituent
$RfCj_i$ = Reference concentration for the "*j*"th constituent

HIs were calculated in a phased approach. Screening HIs were calculated by summing all HQs for a receptor, and final HIs were calculated for each potential receptor by target organ (or critical effect or target system). If a final HI exceeds 1.0, there is a potential for adverse noncarcinogenic effects on that target organ/system or critical effect.

### 5.1.2 Approach for Potential Carcinogenic Effects

The potential for carcinogenic effects due to exposure to site media was evaluated by estimating the ELCR. The ELCR is the incremental increase in the probability of developing cancer during one's lifetime (as a result of exposure to site media) above the probability of developing cancer from nonsite exposures.

Potential ELCRs associated with exposure to individual carcinogens were calculated using CSFs and chronic daily intakes or subchronic daily intakes (SDIs) for oral and dermal contact exposures and IURs and ECs for inhalation exposures. The linear low-dose equation was used to estimate the incremental probability of an individual developing cancer over a lifetime as a result of exposure to potential carcinogens. Estimated ELCRs are calculated by multiplying the chronic daily intake or SDI by the CSF or by multiplying the EC by the IUR.

$$ELCR = CDI \times CSF \quad \text{or} \quad ELCR = SDI \times CSF \quad \text{or} \quad ELCR = EC \times IUR$$

where:

ELCR = unitless probability of developing cancer
CDI = chronic daily intake averaged over 70 years
SDI = subchronic daily intake averaged over 70 years
CSF = cancer slope factor
EC = exposure concentration averaged over 70 years
IUR = inhalation unit risk

The theoretical probability of developing cancer as a consequence of exposure to two or more COPCs and by two or more exposure pathways was calculated by summing the risk estimates for each COPC in the appropriate scenarios using the following equations:

$$Total\ ELCR = (I_1 \times CSF_1) + (I_2 \times CSF_2) + \ldots (I_i \times CSF_i) +$$
$$(EC_1 \times IUR_1) + (EC_2 \times IUR_2) + \ldots (EC_i \times IUR_j)$$

where:

I = Intake level (mg/kg-day)
CSF = Cancer slope factor $(mg/kg\text{-}day)^{-1}$
$I_i$ = Intake level for the *"i"*th constituent
$CSF_i$ = Cancer slope factor for the *"i"*th constituent
EC = Exposure concentration [microgram per cubic meter ($\mu g/m^3$)]
IUR = Inhalation unit risk $(\mu g/m^3)^{-1}$
$EC_j$ = Exposure concentration for the *"j"*th constituent
$IUR_j$ = Inhalation unit risk for the *"j"*th constituent

### 5.1.3 Approach for Lead

Quantitative toxicity criteria are not currently available for lead. Risk assessments for lead, therefore, differ from those for other noncarcinogens in that they rely on observed or predicted blood lead levels (BLLs). BLLs can be estimated from environmental data through modeling techniques. USEPA's ALM was used to evaluate potential risks associated with non-residential adult (that is, industrial workers and construction workers) exposures to lead in soil. Because the lead models are probabilistic models, several of the USEPA default parameters are based on central tendency (that is, average) values (USEPA 2003b). Therefore, the arithmetic mean concentration of lead in soil was used as the EPC. For the ALM, the USEPA default input parameters, geometric standard deviation (1.8), and baseline BLL (1.0 micrograms per deciliter) obtained from the National Health and Nutrition Examination Survey conducted in 1999 through 2004 were used.

Due to the lack of adult lead exposure models specific to liquid media (surface water), lead in onsite and offsite surface water was evaluated qualitatively rather than quantitatively.

## 5.2 Summary of Risk Estimates

Potential exposures to soil, surface water, and sediment were quantified for the RME scenarios identified below. The following are the calculated ELCRs and HIs:

- **Onsite Trespassers (Adolescent)—Current Scenario**
  - Surface soil and residue (0 to 2 feet) (ingestion, dermal contact, and inhalation); surface water (ingestion and dermal contact); and sediment (ingestion and dermal contact)
  - $5 \times 10^{-6}$ cumulative ELCR and all target organ-specific HIs less than 1.0 (Table 7.1 RME, summarized in Table 9.1 RME of Attachment A)
- **Offsite Recreational Users (Ault and Child)—Current/Future Scenario**
  - Surface water (ingestion and dermal contact) and sediment (ingestion and dermal contact) in the eastern and western drainage ditches
  - Adult: all target organ-specific HIs less than 1.0 (Table 7.2 RME, summarized in Table 9.2 RME of Attachment A)
  - Child: all target organ-specific HIs less than 1.0 (Table 7.3 RME, summarized in Table 9.3 RME of Attachment A)
  - Adult and child aggregate: $2 \times 10^{-6}$ cumulative ELCR (Table 7.4 RME, summarized in Table 9.4 RME of Attachment A)
- **Onsite Industrial Workers—Future Scenario**
  - Surface soil and residue (0 to 2 feet) (ingestion, dermal contact, and inhalation)
  - $3 \times 10^{-5}$ cumulative ELCR and one target organ-specific HI greater than 1.0 (blood [2]) (Table 7.5 RME, summarized in Table 9.5 RME of Attachment A)
  - Based on the average lead concentration in surface soil and residue (4,508 mg/kg), the ALM model predicts that 72.6 percent of the population will have BLLs exceeding 10 micrograms per deciliter (Table 11.1, summarized in Table 11.2 of Attachment F). The target percentage of the population exceeding 10 micrograms per deciliter is 5 percent.
- **Onsite Construction Workers—Future Scenario**
  - Total soil and residue (0 to 10 feet) ingestion, dermal contact, and inhalation
  - $3 \times 10^{-6}$ cumulative ELCR and four target organ-specific HIs greater than 1.0 (blood [3], longevity [2], respiratory [2], and thyroid [2]) (Table 7.6 RME, summarized in Table 9.6 RME of Attachment A)
  - Based on the average lead concentration in soil and residue (3,113 mg/kg), the ALM model predicts that 97.4 percent of the population will have BLLs exceeding 10 micrograms per deciliter (Table 11.3, summarized in Table 11.4 of Attachment F), which exceeds the target percentage (5 percent)

Although lead was identified as a COPC in onsite and offsite surface water under current trespasser and current/future recreational scenarios, respectively, a quantitative evaluation of lead was not conducted for these exposure scenarios because of the lack of adult lead exposure models to evaluate liquid media. The mean detected concentrations of lead in the exposure media (12.7 micrograms per liter [µg/L] in onsite and 6.6 µg/L in offsite surface water) are lower than USEPA's drinking water action level of 15 µg/L. Because of the limited exposure to lead in surface water by these potential receptors (incidental ingestion and dermal contact during wading) and low concentrations of lead (below the federal action level), lead in onsite and offsite surface water is not expected to pose risks at levels of concern.

# 5.3 Summary of Chemicals of Concern

COCs were identified where the potential ELCR or HI for a receptor group exceeded threshold values (a total ELCR of $1 \times 10^{-4}$ or a target organ-specific HI of 1.0). When a potential ELCR of $1 \times 10^{-4}$ was exceeded for an exposure medium for a receptor group, the COPCs posing an individual ELCR greater than $1 \times 10^{-6}$ in the environmental medium responsible for the unacceptable risks were identified as COCs. When a potential target organ-specific HI exceeded 1.0 for an exposure medium for a receptor group, the COPCs posing a HQ greater than 0.1 for that target organ in the environmental medium responsible for the unacceptable HI were identified as COCs. For lead, if the exposure model (ALM model) predicted more than 5 percent of the exposed population exceeding a BLL of 10 micrograms per deciliter, lead was identified as a COC for that potential receptor. The COCs identified for each receptor group are presented in Table 10.1 RME through 10.2 RME of Attachment A and are summarized in Table C.5 of Attachment C and the following subsections. Because risk estimates for onsite trespassers and offsite recreational users did not exceed threshold values, no COCs were identified for these receptor groups.

## 5.3.1 Future Industrial Workers

The noncancer HI estimates for future industrial workers exceed the threshold values. For soil and residue (0 to 2 feet), antimony, zinc, and lead were identified as COCs. However, the cumulative ELCR was within the threshold value.

## 5.3.2 Future Construction Workers

The noncancer HI estimates for future construction workers exceed threshold values. For soil and residue (0 to 10 feet), antimony, cobalt, nickel, zinc, and lead were identified as COCs. However, the cumulative ELCR was within the threshold value.

# 5.4 Uncertainty Analyses

The assumptions used in the HHRA have inherent uncertainty. While it is theoretically possible that this leads to underestimates of potential risk, the use of numerous upper-bound assumptions most likely results in conservative estimates of potential risks. A receptor group's potential exposure and subsequent potential risk are influenced by the exposure scenario and dose/response and vary on a case-by-case basis. The key assumptions in the HHRA and their influence on the numerical risk estimates are presented in Table C.6 of Attachment C. Additionally, specific uncertainties associated with the HHRA for the Eagle Zinc OU2 Site are discussed in the following subsections.

## 5.4.1 Data Evaluation

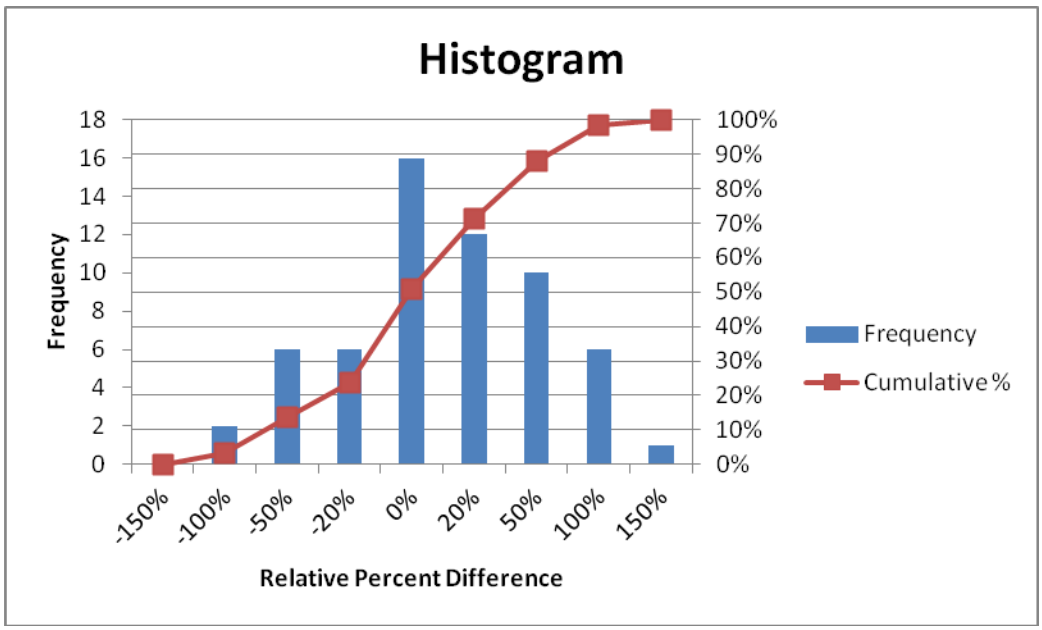
The purpose of data evaluation is to determine which constituents, if any, are present at the Eagle Zinc OU2 Site at concentrations requiring evaluation in the risk assessment. Uncertainty with respect to data evaluation can arise from many sources, such as the quality of data used to characterize the site and the process used to select data and COPCs used in the risk assessment.

Samples in the soil/residue data set consist of both discrete and composite samples. The composite samples were collected from residues. Both types of samples are representative of soil concentrations contacted onsite in the assumed exposure area over the assumed exposure durations. Therefore, there is not expected to be a significant impact on the overall HHRA conclusions from the use of the merged discrete and composite sample data.

In the HHRA, lead concentrations in sieved and unsieved samples were combined and were treated equally in soil data sets. USEPA's TRW for lead recommends using the lead concentrations in sieved samples as input for the lead exposure models because the concentration from the fine fraction is relevant for exposure from incidental soil ingestion. Sixty soil samples collected from the site were analyzed for lead both on sieved and unsieved fractions. The relative percent difference (RPD) was calculated between lead concentrations in sieved and unsieved samples using the following equation.

$$RPD = \frac{Pb_{total} - Pb_{sieved}}{\left(Pb_{total} + Pb_{sieved}\right)/2}$$

The histogram below presents the RPD of 60 soil samples.




As seen in the histogram, no apparent trend of higher lead concentration on one fraction over the other was observed. The lead concentration in the sieved fraction was higher than that in the unsieved fraction in one-half of the samples, while the opposite was observed in the other half of the samples. A relatively small relative percent difference (less than 20 percent) was seen in approximately 50 percent of the samples. Based on the evaluation, it was concluded that lead concentrations in the unsieved fraction are a reasonable or slightly conservative representation of the lead concentrations in sieved fraction. Therefore, it is not likely that the inclusion of unsieved lead samples in the HHRA data sets adversely impact the overall HHRA conclusions.

### 5.4.2 Exposure Assessment

The UCL concentrations were selected as EPCs for the chemicals having at least eight samples and four detected concentrations within a data group. In general, the smaller the sample size and number of detected concentrations of a chemical, the less reliable the calculated UCL becomes. Although the potential impacts on the overall HHRA conclusions (such as COCs) are minimal because of the elevated COC concentrations at the site, the UCL concentrations that are based on a small number of detected concentrations observed at the site may not be reliable.

Using the EPCs based on UCLs or maximum detected concentrations likely leads to an overestimation of average exposure because receptors are assumed to be exposed to the UCL or maximum detected concentration for the entire exposure duration. As the data indicate, many COPCs were not detected in all samples. Thus, the assumption that all potential exposures are to the UCL or maximum detected concentration likely results in an overestimation of actual exposures and estimates of potential risk.

Both discrete and composite samples were pooled together and were included in the soil datasets used to calculate EPCs. Two Exposure Area 2 soil data groups were used in the draft HHRA based on receptor type: (1) surface soil and residue (0 to 2 feet), and (2) total soil and residue (0 to 10 feet). For purposes of evaluating the impacts of use of the combined dataset rather than the dataset segregated by sampling methods (discrete samples only and composite samples only), these two data groups were further divided into two subgroups based on sample type (discrete or composite). Summary statistics and UCLs were calculated for each subgroup and compared to the UCLs used in the draft HHRA (based on the combined data grouping). Table C.6 of Attachment C presents the results of the comparisons.

As seen in Table C.6, higher concentrations are associated with the composite sample group (both maximum detected concentrations and UCLs) than the discrete sample group. Although the higher UCL of the two subgroups (discrete versus composite) is generally less than two times the UCL used in the HHRA and within the same order

of magnitude, it indicates that if the soil datasets used in the HHRA were further divided based on sample type, the EPCs would be higher, resulting in higher risk estimates.

In accordance with USEPA guidance, intake and exposure estimates were calculated for an RME scenario. An RME scenario results in upper-bound exposure estimates and likely overestimates average site exposures. For instance, the construction worker is assumed to contact soil and residue for 250 days per year for 1 year. A construction worker is unlikely to engage in construction activities at Eagle Zinc Site for this extended time period, but 250 days per year is expected to be a conservative estimate. Any actual risks are likely to be less than the potential risks presented in this HHRA.

It was assumed that all chemicals (except lead, consistent with the ALM) are 100 percent bioavailable following intake. However, the actual bioavailability, especially of metals (for example, arsenic), is likely much lower than 100 percent. Therefore, the assumption of 100 percent bioavailability likely results in an overestimate of risk from metals, although the extent cannot be quantified because of the lack of site-specific and receptor-specific bioavailability data. It should be noted that a draft default bioaccessibility value of 60 percent is available from USEPA's TRW for arsenic bioavailability and will be used in the feasibility study unless the default value has been updated at the time the feasibility study is prepared.

Dermal exposure to chemicals in soil was not quantified for metal COPCs, except arsenic and cadmium, because of the lack of dermal absorption values. Although metals absorption through skin is known to be limited, and exposure through this route is not expected be significant, this leads to an underestimation of metal exposures.

### 5.4.3 Toxicity Assessment

Noncancer toxicity values were not available for benzo(a)pyrene for oral and dermal exposure routes, and noncancer inhalation toxicity values were not available for eight COPCs (benzo(a)pyrene, antimony, copper, iron, silver, thallium, vanadium, and zinc), which leads to an underestimation of noncancer hazards, although the extent cannot be determined.

Subchronic toxicity values were not available for various COPCs identified for the construction worker scenario. Chronic toxic values were used as surrogate values for subchronic toxicity values. Since chronic toxicity values conservatively represent toxicity values for subchronic exposures, this leads to an overestimation of potential noncancer hazards.

The extent of absorption and resulting toxicity of metals can vary dramatically, depending on the metal form, matrix in which it is present, metal species and compounds, and exposure routes. Due to the lack of specific information about the metals at the site, a general assumption is made that the metal species and compounds, exposure media, and exposure routes at the site are compatible with those used when estimating toxicity values, which may lead to an under- or over-estimation of risks, although the extent cannot be determined.

### 5.4.4 Risk Characterization

As prescribed by USEPA, once potential exposures and potential risks from each COPC were calculated, the total upperbound potential risk and HI associated with each receptor scenario were calculated by combining the estimated potential health risk from each COPC for each scenario. For virtually all combinations of chemicals, potential synergistic, potentiating, and/or antagonistic effects resulting from exposures to multiple chemicals are possible. ATSDR developed a guidance manual that outlines the latest methods for mixtures assessment. In addition, a series of documents called Interaction Profiles are being developed for certain priority mixtures that are of special concern to ATSDR, including some chemicals identified as COCs at the Eagle Zinc OU2 Site.

Specifically, the document entitled *Interaction Profile for Arsenic, Cadmium, Chromium, and Lead* (ATSDR 2004) suggests that the predicted direction of joint toxic action for neurological effects, an endpoint common to all four components, is greater than additive when a receptor is exposed to a mixture of metals: the effect of lead on arsenic is expressed as (+0.23), and the effect of arsenic on lead is expressed as (+0.50). Therefore, cumulative risk estimates assuming additivity in the HHRA may lead to an underestimation of risk due to the presence of multiple metals that may have synergistic effects.

SECTION 6

# References


Agency for Toxic Substances and Disease Registry (ATSDR). 2004. *Interaction Profile for: Arsenic, Cadmium, Chromium, and Lead.* May.

Agency for Toxic Substances and Disease Registry (ATSDR). 2009. *Minimal Risk Levels for Hazardous Substances. December*. http://www.atsdr.cdc.gov/mrls/mrls_list.html.

California EPA. 2011. Toxicity Criteria Database. Office of Environmental Health Hazard Assessment. [Online]. Available: http://www.oehha.ca.gov/risk/ChemicalDB/index.asp.

CH2M HILL. 2010. *Final Site-Specific Plans, Eagle Zinc OU2 Site, Revision #1, Hillsboro, Illinois, Supplemental Remedial Investigation, WA No. 69-RICO-B5Y7/Contract No. EP-S5-06-01.* November.

CH2M HILL. 2011. Eagle Zinc OU2 Site: Interim Deliverable for the Human Health Risk Assessment – RAGS Part D Tables. Prepared for U.S. Environmental Protection Agency Region 5. August 11.

ENVIRON. 2005a. *Remedial Investigation Report*. Eagle Zinc Company Site. Hillsboro, Illinois. January.

ENVIRON. 2005b. *Addendum to Remedial Investigation Report*. Remedial Investigation/Feasibility Study. Eagle Zinc Company Site. Hillsboro, Illinois. April.

Illinois Environmental Protection Agency (IEPA). 2007. Title 35: Environmental Protection. Subtitle G: Waste Disposal. Chapter I: Pollution Control Board. Subchapter f: Risk Based Cleanup Objectives. Part 742. Tiered Approach to Corrective Action Objectives.

U.S. Environmental Protection Agency (USEPA). 1989. *Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A)*. USEPA/540/1-89/002.

U.S. Environmental Protection Agency (USEPA). 1991. *RAGS: Volume 1—HHEM Supplemental Guidance. Standard Default Exposure Factors.* Interim Final. Office of Solid Waste and Emergency Response. OSWER Directive 9285.6-03.

U.S. Environmental Protection Agency (USEPA). 1997. *Health Effects Assessment Summary Tables, Annual Update (HEAST)*. EPA, Environmental Criterion Assessment Office, Office of Research and Development, Cincinnati, OH. July.

U.S. Environmental Protection Agency (USEPA). 2001. *Risk Assessment Guidance for Superfund: Volume I. Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments).* Final. Office of Emergency and Remedial Response. 9285.7-47. December.

U.S. Environmental Protection Agency (USEPA). 2002. *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites.* OSWER 9355.4-24.

U.S. Environmental Protection Agency (USEPA). 2003a. *Human Health Toxicity Values in Superfund Risk Assessments*. OSWER Directive 9285.7-53. December 5.

U.S. Environmental Protection Agency (USEPA). 2003b. *Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposure to Lead in Soil*. Office of Solid Waste and Emergency Response. OSWER 9285.7-54. January.

U.S. Environmental Protection Agency (USEPA). 2004. *Risk Assessment Guidance for Superfund (RAGS), Volume 1—Human Health Evaluation Manual (HHEM) (Part E) Supplemental Guidance for Dermal Risk Assessment*. USEPA/540/R/99/005. Final. Office of Emergency and Remedial Response. July.

U.S. Environmental Protection Agency (USEPA). 2005a. *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens.* Risk Assessment Forum. EPA/630/R-03/003F. March.

U.S. Environmental Protection Agency (USEPA). 2005b. *Guidelines for Carcinogen Risk Assessment*. Risk Assessment Forum. EPA/630/P-03/001F. March.

U.S. Environmental Protection Agency (USEPA). 2006a. Provisional Peer Reviewed Toxicity Information for Iron (CASRN 7439-89-6) and Compounds Derivation of Subchronic and Chronic Oral RfDs. Superfund Health Risk Technical Support Center. National Center for Environmental Assessment. September 11.

U.S. Environmental Protection Agency (USEPA). 2006b. Provisional Peer Reviewed Toxicity Values for Aluminum (CASRN 7429-90-5). Superfund Health Risk Technical Support Center. National Center for Environmental Assessment. October 23.

U.S. Environmental Protection Agency (USEPA). 2008. Provisional Peer Reviewed Toxicity Values for Cobalt (CASRN 7440-48-4). Superfund Health Risk Technical Support Center. National Center for Environmental Assessment. August 25.

U.S. Environmental Protection Agency (USEPA). 2009a. R*isk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment).* EPA-540-R-070-002. OSWER 9285.7.82. January.

U.S. Environmental Protection Agency (USEPA). 2009b. National Recommended Water Quality Criteria. Office of Water Office of Science and Technology.

U.S. Environmental Protection Agency (USEPA). 2010. Provisional Peer-Reviewed Toxicity Values for Thallium and Compounds Metallic Thallium (7440-28-0), Thallium (I) acetate (563-68-8),Thallium (I) carbonate (6533-73-9), Thallium (I) chloride (7791-12-0),Thallium (I) nitrate (10102-45-1), Thallium (I) oxide (1314-12-1),Thallium (III) oxide (1314-32-5), Thallium (I) selenite (12039-52-0),and Thallium (I) sulfate (7446-18-6). Superfund Health Risk Technical Support Center. National Center for Environmental Assessment. October 8.

U.S. Environmental Protection Agency (USEPA). 2011a. *Regional Screening Levels for Chemical Contaminants at Superfund Sites*. June.

U.S. Environmental Protection Agency (USEPA). 2011b. ProUCL, Version 4.1.00. Prepared by Lockheed Martin Environmental Services. February.

U.S. Environmental Protection Agency (USEPA). 2011c. *Integrated Risk Information System (IRIS) Database*. http://www.epa.gov/iris/index.html.

# Attachment A
# RAGS Part D Tables

TABLE 1

SELECTION OF EXPOSURE PATHWAYS

Eagle Zinc

Hillsboro, Illinois

| Scenario Timeframe | Medium | Exposure Medium | Exposure Point | Receptor Population | Receptor Age | Exposure Route | Onsite/ Offsite | Type of Analysis | Rationale for Selection or Exclusion of Exposure Pathway |
|---|---|---|---|---|---|---|---|---|---|
| Current | Soil and Residue | Surface Soil and Residue (0-2 ft) | Exposure Area 2 Surface Soil and Residue (0-2 ft) | Trespasser | Adolescent | Dermal, Ingestion | Onsite | Quant | Trespassers may contact onsite surface soil and residue. |
| | | Ambient Air | Emissions from Surface Soil and Residue | | | Inhalation | | | Trespassers may inhale dust from surface soil and residue. |
| | Sediment | Sediment | Onsite Sediment (2) | Trespasser | Adolescent | Dermal, Ingestion | | Quant | Trespassers may contact onsite sediment. |
| | Surface Water | Surface Water | onsite Surface Water (2) | | | Dermal, Ingestion | | Quant | Trespassers may contact onsite surface water. |
| Current/Future | Soil | Surface Soil (0-2 ft) | Exposure Areas 1 and 3 Surface Soil (0-2 ft)[1] | Resident | Adult, Child | Dermal, Ingestion | Offsite | Quant | Residents may contact surface soil. |
| | | Ambient Air | Emissions from Surface Soil [1] | | | Inhalation | | | Residents may inhale dust from surface soil. |
| | Sediment | Sediment | Offsite Sediment (3) | Recreational User [4] | Adult, Child | Dermal, Ingestion | | Quant | Recreators may contact offsite sediment |
| | Surface Water | Surface Water | Offsite Surface Water (3) | | | Dermal, Ingestion | | Quant | Recreators may contact offsite surface water. |
| | | | Lake Hillsboro | Resident | Adult, Child | Dermal, Ingestion | | Qual | Residents may contact Lake Hillsboro surface water based on potential potable and recreational use of Lake Hillsboro surface water. Lake Hillsboro surface water will be qualitatively assessed based on exposure to offsite surface water. |
| | Surface Water and Sediment | Fish and Surface Water | Lake Hillsboro Fish and Surface Water | Recreational User and Potable Water User | Adult, Child | Ingestion (fish), Ingestion and dermal (potable use) | | Qual | Runoff from the eastern drainage ditch could discharge to Lake Hillsboro and impact fish and surface water in Lake Hillsboro (which is used as a potable water supply). An evaluation will be performed on surface water and sediment as they discharge into Lake Hillsboro. |
| Future | Soil | Surface Soil and Residue (0-2 ft) | Exposure Area 2 Surface Soil and Residue (0-2 ft) | Industrial Worker [5] | Adult | Dermal, Ingestion | Onsite | Quant | Industrial workers may contact onsite surface soil and residue. |
| | | Ambient Air | Emissions from Surface Soil and Residue | | | Inhalation | | | Industrial workers may inhale dust from surface soil and residue. |
| | Groundwater | Groundwater | Onsite Groundwater | Industrial Worker | Adult | None | | None | Site groundwater is Class II groundwater (non-potable). Therefore, no complete exposure pathways were identified. |
| | Soil and Residue | Total Soil and Residue (0-10 ft) | Exposure Area 2 Total Soil and Residue (0-10 ft) | Construction Worker | Adult | Dermal, Ingestion | | Quant | Construction workers may contact total soil and residue. |
| | | Ambient Air | Emissions from Total Soil and Residue | | | Inhalation | | | Construction workers may inhale dust from total soil and residue. |
| | Soil | Total Soil (0-10 ft) | Exposure Areas 1 and 3 Total Soil (0-10 ft) | Construction Worker | Adult | Dermal, Ingestion | Offsite | Quant | Construction workers may contact total soil offsite |
| | | Ambient Air | Emissions from Total Soil and Residue | | | Inhalation | | | Construction workers may inhale dust from total soil offsite |

**Notes:**

(1) Offsite Exposure Areas 1 and 3 will be evaluated separately in the HHRA.

(2) onsite features containing sediment and surface water include the eastern and western drainage ditches, the two retention basins, the southwestern pond and the small southern pond.

(3) Surface water discharges from the site via Stormwater Outfall 001 to the western drainage ditch and from Stormwater Outfall 002 to the eastern drainage ditch and Lake Hillsboro.

(4) The current/future recreator scenario in the offsite ditch (Exposure Area 3) will be used to conservatively represent potentia exposures by future City maintenance workers in the drainage ditch.

(5) The future industrial worker scenario can be used to conservatively represent potential exposures by future groundskeepers.

Residue: Waste Materials and Residue

Qual: Qualitative evaluation

Quant: Quantitative evaluation

None: No evaluation to be performed

TABLE 2.1.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current
Medium: Soil and Residue
Exposure Medium: Surface Soil (0-2 feet) (Trespasser)

| Exposure Point | CAS Number | Chemical | Minimum Concentration | Qualifier | Maximum Concentration | Qualifier | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value (2) | Screening Toxicity Value (3) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Area 2 Surface Soil and Residue (0-2 ft) | 57-12-5 | Cyanide | 0.07 | J | 0.43 | J | mg/Kg | X307 | 11 / 13 | - | 4.30E-01 | 5.00E-01 | 1.6E+02 | nc | NA | NA | No | BSL |
| | 56-55-3 | Benzo(a)anthracene | 0.051 | J | 0.088 | J | mg/kg | X307 | 2 / 11 | - | 8.80E-02 | 7.20E-01 | 1.5E-01 | ca | NA | NA | No | BSL |
| | 50-32-8 | Benzo(a)pyrene | 0.043 | J | 0.065 | J | mg/kg | X307 | 2 / 11 | - | 6.50E-02 | 9.80E-01 | 1.5E-02 | ca | NA | NA | Yes | ASL |
| | 205-99-2 | Benzo(b)fluoranthene | 0.041 | J | 0.13 | J | mg/kg | X307 | 4 / 13 | - | 1.30E-01 | 7.00E-01 | 1.5E-01 | ca | NA | NA | No | BSL |
| | 191-24-2 | Benzo(g,h,i)perylene | 0.05 | J | 0.055 | J | mg/kg | X301 | 2 / 11 | - | 5.50E-02 | 8.40E-01 | 1.7E+02 | nc | NA | NA | No | BSL |
| | 207-08-9 | Benzo(k)fluoranthene | 0.057 | J | 0.057 | J | mg/kg | X307 | 1 / 10 | - | 5.70E-02 | 6.30E-01 | 1.5E+00 | ca | NA | NA | No | BSL |
| | 218-01-9 | Chrysene | 0.04 | J | 0.15 | J | mg/kg | X307 | 4 / 13 | - | 1.50E-01 | 1.10E+00 | 1.5E+01 | ca | NA | NA | No | BSL |
| | 206-44-0 | Fluoranthene | 0.071 | J | 0.25 | J | mg/kg | X307 | 4 / 13 | - | 2.50E-01 | 1.80E+00 | 2.3E+02 | nc | NA | NA | No | BSL |
| | 85-01-8 | Phenanthrene | 0.061 | J | 0.09 | J | mg/kg | X307 | 2 / 11 | - | 9.00E-02 | 9.90E-01 | 1.7E+03 | nc | NA | NA | No | BSL |
| | 108-95-2 | Phenol | 0.048 | J | 0.048 | J | mg/kg | X301 | 1 / 10 | - | 4.80E-02 | -- | 1.8E+03 | nc | NA | NA | No | BSL |
| | 129-00-0 | Pyrene | 0.049 | J | 0.17 | J | mg/kg | X307 | 4 / 13 | - | 1.70E-01 | 1.20E+00 | 1.7E+02 | nc | NA | NA | No | BSL |
| | 7429-90-5 | Aluminum, total | 3800 | J | 75500 | | mg/kg | X310 | 51 / 51 | - | 7.55E+04 | 9.20E+03 | 7.7E+03 | nc | NA | NA | Yes | ASL |
| | 7440-36-0 | Antimony, total | 0.42 | | 665 | | mg/kg | X309 | 29 / 51 | - | 6.65E+02 | 3.30E+00 | 3.1E+00 | nc | NA | NA | Yes | ASL |
| | 7440-38-2 | Arsenic, total | 2.3 | | 200 | | mg/kg | MP1-21-050301 | 90 / 90 | 4.90E-01 - 1.00E+00 | 2.00E+02 | 1.13E+01 | 3.9E-01 | ca | NA | NA | Yes | ASL |
| | 7440-39-3 | Barium, total | 40.7 | | 4670 | | mg/kg | XRF 028 | 61 / 61 | - | 4.67E+03 | 1.22E+02 | 1.5E+03 | nc | NA | NA | Yes | ASL |
| | 7440-41-7 | Beryllium, total | 0.12 | J | 2.9 | | mg/kg | RCO-5-050301, X308 | 51 / 51 | - | 2.90E+00 | 5.60E-01 | 1.6E+01 | nc | NA | NA | No | BSL |
| | 7440-43-9 | Cadmium, total | 0.12 | | 284 | | mg/kg | XRF 033 | 78 / 91 | 2.30E-02 - 5.00E-01 | 2.84E+02 | 5.00E-01 | 7.0E+00 | nc | NA | NA | Yes | ASL |
| | 7440-70-2 | Calcium, total | 530 | | 20000 | J | mg/kg | RCO-10-050301 | 51 / 51 | - | 2.00E+04 | 5.53E+03 | NUT | -- | NA | NA | No | NUT |
| | 7440-47-3 | Chromium, total | 4.4 | | 1620 | | mg/kg | X311 | 61 / 61 | - | 1.62E+03 | 1.30E+01 | 1.2E+04 | nc | NA | NA | No | BSL |
| | 7440-48-4 | Cobalt, total | 2.1 | | 880 | | mg/kg | RR1-4-050301 | 51 / 51 | - | 8.80E+02 | 8.90E+00 | 2.3E+00 | nc | NA | NA | Yes | ASL |
| | 7440-50-8 | Copper, total | 8.4 | | 49900 | | mg/kg | XRF 043 | 91 / 91 | 2.20E-01 - 2.50E+00 | 4.99E+04 | 1.20E+01 | 3.1E+02 | nc | NA | NA | Yes | ASL |
| | 7439-89-6 | Iron, total | 5500 | | 142000 | | mg/kg | X309 | 51 / 51 | - | 1.42E+05 | 1.50E+04 | 5.5E+03 | nc | NA | NA | Yes | ASL |
| | 7439-92-1 | Lead, total* | 0.78 | J,- | 65400 | | mg/kg | 178 | 113 / 113 | 1.00E-01 - 1.70E+01 | 4.51E+03 | 2.09E+01 | 4.0E+02 | IEUBK | NA | NA | Yes | ASL |
| | 7439-95-4 | Magnesium, total | 340 | J | 6000 | J | mg/kg | RR1-4-050301 | 51 / 51 | - | 6.00E+03 | 2.70E+03 | NUT | -- | NA | NA | No | NUT |
| | 7439-96-5 | Manganese, total | 38 | | 19100 | | mg/kg | EZ-RS12 | 81 / 81 | 5.70E-02 - 6.20E+00 | 1.91E+04 | 6.30E+02 | 1.8E+02 | nc | NA | NA | Yes | ASL |
| | 7439-97-6 | Mercury, total | 0.012 | | 2.3 | | mg/kg | X301 | 47 / 51 | - | 2.30E+00 | 5.00E-02 | 2.3E+00 | nc | NA | NA | No | BSL |
| | 7440-02-0 | Nickel, total | 6.6 | | 17800 | | mg/kg | XRF 043 | 61 / 61 | - | 1.78E+04 | 1.30E+01 | 1.5E+02 | nc | NA | NA | Yes | ASL |
| | 7440-09-7 | Potassium, total | 39.5 | J | 2600 | J | mg/kg | A3-25 | 51 / 51 | - | 2.60E+03 | 1.10E+03 | NUT | -- | NA | NA | No | NUT |
| | 7782-49-2 | Selenium, total | 0.59 | J | 12.2 | J,- | mg/kg | X303 | 37 / 51 | - | 1.22E+01 | 3.70E-01 | 3.9E+01 | nc | NA | NA | No | BSL |
| | 7440-22-4 | Silver, total | 0.054 | J | 140 | | mg/kg | MP1-21-050301 | 38 / 51 | - | 1.40E+02 | 5.00E-01 | 3.9E+01 | nc | NA | NA | Yes | ASL |
| | 7440-23-5 | Sodium, total | 33 | | 23200 | J,+ | mg/kg | X313 | 46 / 51 | - | 2.32E+04 | 1.30E+02 | NUT | -- | NA | NA | No | NUT |
| | 7440-28-0 | Thallium, total | 0.053 | J | 2.1 | | mg/kg | WA-8 | 26 / 38 | - | 2.10E+00 | 4.20E-01 | 7.8E-02 | nc | NA | NA | Yes | ASL |
| | 7440-62-2 | Vanadium, total | 5.7 | | 66 | | mg/kg | A4-15 | 51 / 51 | - | 6.60E+01 | 2.50E+01 | 3.9E+01 | nc | NA | NA | Yes | ASL |
| | 7440-66-6 | Zinc, total | 50 | J | 407000 | | mg/kg | X311 | 91 / 91 | 6.00E+00 - 1.60E+01 | 4.07E+05 | 6.02E+01 | 2.3E+03 | nc | NA | NA | Yes | ASL |
| | 67-64-1 | Acetone | 0.0044 | J | 0.061 | J | mg/kg | A3-23 | 5 / 5 | - | 6.10E-02 | -- | 6.1E+03 | nc | NA | NA | No | BSL |
| | 78-93-3 | Methyl ethyl ketone (2-Butanone) | 0.0017 | J | 0.0081 | J | mg/kg | WA-8 | 3 / 4 | - | 8.10E-03 | -- | 2.8E+03 | nc | NA | NA | No | BSL |
| | 75-09-2 | Methylene chloride | 0.0016 | J | 0.0093 | J | mg/kg | A3-20 | 7 / 9 | - | 9.30E-03 | -- | 1.1E+01 | ca | NA | NA | No | BSL |

TABLE 2.1.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current
Medium: Soil and Residue
Exposure Medium: Surface Soil (0-2 feet) (Trespasser)

| Exposure Point | CAS Number | Chemical | Minimum Concentration Qualifier | Maximum Concentration Qualifier | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value (2) | Screening Toxicity Value (3) | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

*Lead summary data represents the combined sieved and unsieved lead samples.

(1) The maximum detected concentration is used for screening except for lead which uses the average detected concentration.

(2) Background concentrations outside metropolitan statistical areas. TACO Section 742, Appendix A, Table G and H.

(3) Regional Screening Levels for Residential Soil (June 2011). Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.

The SL for Anthracene was used as the SL for Phenanthrene.
The SL for Chromium (III) was used as the SL for Chromium.
The SL for Mercuric Chloride was used as the SL for Mercury.
The SL for Pyrene was used as the SL for Benzo(g,h,i)perylene.
The SL for Vanadium and Compounds was used as the SL for Vanadium.

(4) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available
SL = Screening Level
IEUBK = Integrated Exposure Uptake Biokinetic Model
HQ = Hazard Quotient
J = Estimated detection
J+ = Estimated detection, biased high
J- = Estimated detection, biased low
TACO = TIERED APPROACH TO CORRECTIVE ACTION OBJECTIVES

TABLE 2.2.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current
Medium: Sediment
Exposure Medium: Sediment (Trespasser)

| Exposure Point | CAS Number | Chemical | Minimum Concentration Qualifier | | Maximum Concentration Qualifier | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value | Screening Toxicity Value (2) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| On-Site Sediment | 7429-90-5 | Aluminum, total | 4900 | | 7600 | | mg/kg | SD-WD-9 | 3 / 3 | - | 7.60E+03 | NA | 7.7E+03 | nc | NA | NA | No | BSL |
| | 7440-36-0 | Antimony, total | 0.62 | | 2.3 | | mg/kg | SD-ED-13 | 3 / 3 | - | 2.30E+00 | NA | 3.1E+00 | nc | NA | NA | No | BSL |
| | 7440-38-2 | Arsenic, total | 2.2 | J | 17 | J | mg/kg | EZ-SD-WD-08 | 15 / 15 | 1.00E+00 - 1.00E+00 | 1.70E+01 | NA | 3.9E-01 | ca | NA | NA | Yes | ASL |
| | 7440-39-3 | Barium, total | 59 | J | 82 | J | mg/kg | SD-ED-12 | 3 / 3 | - | 8.20E+01 | NA | 1.5E+03 | nc | NA | NA | No | BSL |
| | 7440-41-7 | Beryllium, total | 0.36 | J | 0.67 | J | mg/kg | SD-WD-9 | 3 / 3 | - | 6.70E-01 | NA | 1.6E+01 | nc | NA | NA | No | BSL |
| | 7440-43-9 | Cadmium, total | 2.4 | | 550 | | mg/kg | SD-WD-9 | 14 / 15 | 5.00E-01 - 5.00E-01 | 5.50E+02 | NA | 7.0E+00 | nc | NA | NA | Yes | ASL |
| | 7440-70-2 | Calcium, total | 1300 | | 23000 | | mg/kg | SD-ED-13 | 3 / 3 | - | 2.30E+04 | NA | NUT | -- | NA | NA | No | NUT |
| | 7440-47-3 | Chromium, total | 8.5 | J | 17 | J | mg/kg | SD-WD-9 | 3 / 3 | - | 1.70E+01 | NA | 1.2E+04 | nc | NA | NA | No | BSL |
| | 7440-48-4 | Cobalt, total | 1.2 | | 11 | | mg/kg | SD-WD-9 | 3 / 3 | - | 1.10E+01 | NA | 2.3E+00 | nc | NA | NA | Yes | ASL |
| | 7440-50-8 | Copper, total | 8.9 | | 204 | J,+ | mg/kg | EZ-SD-ED-24 | 15 / 15 | 2.50E+00 - 2.50E+00 | 2.04E+02 | NA | 3.1E+02 | nc | NA | NA | No | BSL |
| | 7439-89-6 | Iron, total | 5100 | | 29000 | | mg/kg | SD-WD-9 | 3 / 3 | - | 2.90E+04 | NA | 5.5E+03 | nc | NA | NA | Yes | ASL |
| | 7439-92-1 | Lead, total | 13.4 | J | 1070 | J | mg/kg | EZ-SD-WD-17 | 15 / 15 | 1.00E+00 - 1.00E+00 | 2.68E+02 | NA | 4.0E+02 | IEUBK | NA | NA | No | BSL |
| | 7439-95-4 | Magnesium, total | 760 | J | 5400 | J | mg/kg | SD-ED-13 | 3 / 3 | - | 5.40E+03 | NA | NUT | -- | NA | NA | No | NUT |
| | 7439-96-5 | Manganese, total | 36.1 | J | 1530 | J | mg/kg | EZ-SD-WD-08 | 15 / 15 | 1.50E+00 - 1.50E+00 | 1.53E+03 | NA | 1.8E+02 | nc | NA | NA | Yes | ASL |
| | 7439-97-6 | Mercury, total | 0.019 | | 1.7 | | mg/kg | SD-WD-9 | 3 / 3 | - | 1.70E+00 | NA | 2.3E+00 | nc | NA | NA | No | BSL |
| | 7440-02-0 | Nickel, total | 4.6 | | 29 | | mg/kg | SD-WD-9 | 3 / 3 | - | 2.90E+01 | NA | 1.5E+02 | nc | NA | NA | No | BSL |
| | 7440-09-7 | Potassium, total | 530 | J | 730 | J | mg/kg | SD-WD-9 | 3 / 3 | - | 7.30E+02 | NA | NUT | -- | NA | NA | No | NUT |
| | 7782-49-2 | Selenium, total | 1.1 | J | 1.1 | J | mg/kg | SD-WD-9 | 1 / 3 | - | 1.10E+00 | NA | 3.9E+01 | nc | NA | NA | No | BSL |
| | 7440-22-4 | Silver, total | 0.38 | | 0.39 | | mg/kg | SD-ED-13 | 2 / 3 | - | 3.90E-01 | NA | 3.9E+01 | nc | NA | NA | No | BSL |
| | 7440-62-2 | Vanadium, total | 13 | J | 34 | J | mg/kg | SD-WD-9 | 3 / 3 | - | 3.40E+01 | NA | 3.9E+01 | nc | NA | NA | No | BSL |
| | 7440-66-6 | Zinc, total | 241 | J | 24000 | J | mg/kg | EZ-SD-ED-24 | 15 / 15 | 6.00E+00 - 6.00E+00 | 2.40E+04 | NA | 2.3E+03 | nc | NA | NA | Yes | ASL |
| | 67-64-1 | Acetone | 0.049 | J | 0.049 | J | mg/kg | SD-WD-9 | 1 / 3 | - | 4.90E-02 | NA | 6.1E+03 | nc | NA | NA | No | BSL |
| | 156-59-2 | cis-1,2-Dichloroethylene | 0.086 | J | 0.086 | J | mg/kg | SD-WD-9 | 1 / 5 | - | 8.60E-02 | NA | 1.6E+01 | nc | NA | NA | No | BSL |
| | 78-93-3 | Methyl ethyl ketone (2-Butanone) | 0.02 | J | 0.02 | J | mg/kg | SD-WD-9 | 1 / 3 | - | 2.00E-02 | NA | 2.8E+03 | nc | NA | NA | No | BSL |
| | 156-60-5 | trans-1,2-Dichloroethene | 0.02 | J | 0.02 | J | mg/kg | SD-WD-9 | 1 / 5 | - | 2.00E-02 | NA | 1.5E+01 | nc | NA | NA | No | BSL |
| | 79-01-6 | Trichloroethylene (TCE) | 0.0045 | J | 0.013 | J | mg/kg | SD-WD-20 | 3 / 5 | - | 1.30E-02 | NA | 4.4E-01 | nc | NA | NA | No | BSL |
| | 75-01-4 | Vinyl chloride | 0.013 | J | 0.013 | J | mg/kg | SD-WD-9 | 1 / 5 | - | 1.30E-02 | NA | 6.0E-02 | ca | NA | NA | No | BSL |

(1) The maximum detected concentration is used for screening except for lead which uses the average detected concentration.

(2) Regional Screening Levels for Residential Soil (June 2011). Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.

The SL for Chromium (III) was used as the SL for Chromium.
The SL for Mercuric Chloride was used as the SL for Mercury.
The SL for Vanadium and Compounds was used as the SL for Vanadium.
The SL for Trichloroethylene (TCE) was calculated using the updated toxicity values published in September 2011.

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available
SL = Screening Level
IEUBK = Integrated Exposure Uptake Biokinetic Model
HQ = Hazard Quotient
J = Estimated detection
J+ = Estimated detection, biased high

TABLE 2.3.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current
Medium: Surface Water
Exposure Medium: Surface Water (Trespasser)

| Exposure Point | CAS Number | Chemical | Minimum Concentration Qualifier | | Maximum Concentration Qualifier | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value | Screening Toxicity Value (2) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| On-Site Surface Water | 7429-90-5 | Aluminum, total | 31 | | 37 | ug/L | SW-WD-PN | 2 / 5 | - | 3.70E+01 | NA | 3.7E+03 | nc | NA | NA | No | BSL |
| | 7440-39-3 | Barium, total | 24 | | 71 | ug/L | SW-ED-13 | 5 / 5 | - | 7.10E+01 | NA | 7.3E+02 | nc | NA | NA | No | BSL |
| | 7440-43-9 | Cadmium, total | 1.3 | J | 230 | ug/L | SW-WD-9 | 19 / 23 | 5.00E+00 - 5.00E+00 | 2.30E+02 | NA | 1.8E+00 | nc | NA | NA | Yes | ASL |
| | 7440-70-2 | Calcium, total | 80000 | | 130000 | ug/L | SW-WD-8 | 5 / 5 | - | 1.30E+05 | NA | NUT | -- | NA | NA | No | NUT |
| | 7440-48-4 | Cobalt, total | 0.92 | | 2.4 | ug/L | SW-WD-PN | 3 / 5 | - | 2.40E+00 | NA | 1.1E+00 | nc | NA | NA | Yes | ASL |
| | 7440-50-8 | Copper, total | 1.1 | | 33 | ug/L | EZ-SD-WD-23 | 15 / 23 | 2.50E+01 - 2.50E+01 | 3.30E+01 | NA | 1.5E+02 | nc | NA | NA | No | BSL |
| | 7439-89-6 | Iron, total | 56 | | 3200 | ug/L | SW-WD-8 | 5 / 5 | - | 3.20E+03 | NA | 2.6E+03 | nc | NA | NA | Yes | ASL |
| | 7439-92-1 | Lead, total | 2.2 | | 40.1 | ug/L | EZ-SD-WD-10 | 10 / 23 | 1.00E+01 - 1.00E+01 | 4.01E+01 | NA | 1.5E+01 | AL | NA | NA | Yes | ASL |
| | 7439-95-4 | Magnesium, total | 27000 | | 38000 | ug/L | W-WD-9, SW-WD-PN | 5 / 5 | - | 3.80E+04 | NA | NUT | -- | NA | NA | No | NUT |
| | 7439-96-5 | Manganese, total | 7.6 | J | 1100 | ug/L | EZ-SD-ED-13 | 20 / 23 | 1.50E+01 - 1.50E+01 | 1.10E+03 | NA | 8.8E+01 | nc | NA | NA | Yes | ASL |
| | 7440-02-0 | Nickel, total | 2.9 | | 36 | ug/L | SW-WD-9 | 5 / 5 | - | 3.60E+01 | NA | 7.3E+01 | nc | NA | NA | No | BSL |
| | 7440-09-7 | Potassium, total | 3600 | | 17000 | ug/L | SW-WD-9 | 5 / 5 | - | 1.70E+04 | NA | NUT | -- | NA | NA | No | NUT |
| | 7440-23-5 | Sodium, total | 41000 | | 57000 | ug/L | SW-WD-9 | 5 / 5 | - | 5.70E+04 | NA | NUT | -- | NA | NA | No | NUT |
| | 7440-66-6 | Zinc, total | 179 | | 26000 | ug/L | SW-WD-9 | 23 / 23 | 6.00E+01 - 6.00E+01 | 2.60E+04 | NA | 1.1E+03 | nc | NA | NA | Yes | ASL |
| | 156-59-2 | cis-1,2-Dichloroethylene | 1.1 | | 2.2 | ug/L | SW-WD-PN | 6 / 7 | - | 2.20E+00 | NA | 7.3E+00 | nc | NA | NA | No | BSL |
| | 79-01-6 | Trichloroethylene (TCE) | 1.4 | | 6.3 | ug/L | SW-WD-9 | 6 / 7 | - | 6.30E+00 | NA | 2.3E-01 | ca | NA | NA | Yes | ASL |

(1) Maximum concentration is used for screening.

(2) Regional Screening Levels for Tapwater (June 2011). Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.

The Lead action level was used as the SL for Lead.
The SL for Trichloroethylene (TCE) was calculated using the updated toxicity values published in September 2011.

(3) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available
SL = Screening Level
AL = Lead Action Level
J = Estimated detection

TABLE 2.4.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil (0-2 feet) (Residential)

| Exposure Point | CAS Number | Chemical | Minimum Concentration | Qualifier | Maximum Concentration | Qualifier | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value (2) | Screening Toxicity Value (3) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Area 1 Surface Soil (0-2 ft) | 7440-38-2 | Arsenic, total | 4.5 | | 17.8 | | mg/kg | EZ-SS03 | 9 / 9 | 1.00E+00 - 1.00E+00 | 1.78E+01 | 1.13E+01 | 3.9E-01 | ca | NA | NA | Yes | ASL |
| | 7440-43-9 | Cadmium, total | 0.53 | J | 1.9 | | mg/kg | EZ-SB03 | 9 / 9 | 5.00E-01 - 5.00E-01 | 1.90E+00 | 5.00E-01 | 7.0E+00 | nc | NA | NA | No | BSL |
| | 7440-50-8 | Copper, total | 9.6 | J | 23.1 | J | mg/kg | EZ-SB01 | 9 / 9 | 2.50E+00 - 2.50E+00 | 2.31E+01 | 1.20E+01 | 3.1E+02 | nc | NA | NA | No | BSL |
| | 7439-92-1 | Lead, total* | 10.3 | | 46 | J | mg/kg | EZ-SB06 | 15 / 15 | 1.00E-01 - 1.00E+00 | 2.43E+01 | 2.09E+01 | 4.0E+02 | IEUBK | NA | NA | No | BSL |
| | 7439-96-5 | Manganese, total | 363 | | 2490 | J | mg/kg | EZ-SB02 | 9 / 9 | 1.50E+00 - 1.50E+00 | 2.49E+03 | 6.30E+02 | 1.8E+02 | nc | NA | NA | Yes | ASL |
| | 7440-66-6 | Zinc, total | 164 | J | 738 | J | mg/kg | EZ-SS03 | 9 / 9 | 6.00E+00 - 6.00E+00 | 7.38E+02 | 6.02E+01 | 2.3E+03 | nc | NA | NA | No | BSL |

*Lead summary data represents the combined sieved and unsieved lead samples.

(1) The maximum detected concentration is used for screening except for lead which uses the average detected concentration.

(2) Background concentrations outside metropolitan statistical areas. TACO Section 742, Appendix A, Table G and H.

(3) Regional Screening Levels for Residential Soil (June 2011). Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.

(4) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available
SL = Screening Level
IEUBK = Integrated Exposure Uptake Biokinetic Model
HQ = Hazard Quotient
J = Estimated detection

TABLE 2.5.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil (0-2 feet) (Residential)

| Exposure Point | CAS Number | Chemical | Minimum Concentration Qualifier | | Maximum Concentration Qualifier | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value (2) | Screening Toxicity Value (3) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Area 3 Surface Soil (0-2 ft) | 7440-38-2 | Arsenic, total | 6.4 | | 14.5 | | mg/kg | EZ-SB09 | 3 / 3 | 1.00E+00 - 1.00E+00 | 1.45E+01 | 1.13E+01 | 3.9E-01 | ca | NA | NA | Yes | ASL |
| | 7440-43-9 | Cadmium, total | 0.89 | J | 1.1 | J | mg/kg | EZ-SB09 | 3 / 3 | 5.00E-01 - 5.00E-01 | 1.10E+00 | 5.00E-01 | 7.0E+00 | nc | NA | NA | No | BSL |
| | 7440-50-8 | Copper, total | 9.9 | J | 24.3 | J | mg/kg | EZ-SB09 | 3 / 3 | 2.50E+00 - 2.50E+00 | 2.43E+01 | 1.20E+01 | 3.1E+02 | nc | NA | NA | No | BSL |
| | 7439-92-1 | Lead, total* | 12.5 | J | 61.8 | | mg/kg | EZ-SB09 | 6 / 6 | 1.00E-01 - 1.00E+00 | 2.55E+01 | 2.09E+01 | 4.0E+02 | IEUBK | NA | NA | No | BSL |
| | 7439-96-5 | Manganese, total | 625 | J | 1340 | J | mg/kg | EZ-SB08 | 3 / 3 | 1.50E+00 - 1.50E+00 | 1.34E+03 | 6.30E+02 | 1.8E+02 | nc | NA | NA | Yes | ASL |
| | 7440-66-6 | Zinc, total | 665 | | 793 | | mg/kg | EZ-SB07 | 3 / 3 | 6.00E+00 - 6.00E+00 | 7.93E+02 | 6.02E+01 | 2.3E+03 | nc | NA | NA | No | BSL |

*Lead summary data represents the combined sieved and unsieved lead samples.

(1) The maximum detected concentration is used for screening except for lead which uses the average detected concentration.

(2) Background concentrations outside metropolitan statistical areas. TACO Section 742, Appendix A, Table G and H.

(3) Regional Screening Levels for Residential Soil (June 2011). Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.

(4) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available
SL = Screening Level
IEUBK = Integrated Exposure Uptake Biokinetic Model
HQ = Hazard Quotient
J = Estimated detection

TABLE 2.6.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment (Recreational User)

| Exposure Point | CAS Number | Chemical | Minimum Concentration Qualifier | | Maximum Concentration Qualifier | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value (2) | Screening Toxicity Value (3) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-site Sediment | 7429-90-5 | Aluminum, total | 2300 | | 19000 | | mg/kg | SD-WD-8 | 10 / 10 | - | 1.90E+04 | NA | 7.7E+03 | nc | NA | NA | Yes | ASL |
| | 7440-36-0 | Antimony, total | 0.48 | | 12 | | mg/kg | SD-WD-7 | 9 / 10 | - | 1.20E+01 | NA | 3.1E+00 | nc | NA | NA | Yes | ASL |
| | 7440-38-2 | Arsenic, total | 2.5 | J | 25 | J | mg/kg | SD-WD-7 | 13 / 13 | 1.00E+00 - 1.00E+00 | 2.50E+01 | NA | 3.9E-01 | ca | NA | NA | Yes | ASL |
| | 7440-39-3 | Barium, total | 30 | J | 190 | J | mg/kg | SD-WD-7 | 10 / 10 | - | 1.90E+02 | NA | 1.5E+03 | nc | NA | NA | No | BSL |
| | 7440-41-7 | Beryllium, total | 0.27 | J | 1.1 | J | mg/kg | SD-WD-8 | 10 / 10 | - | 1.10E+00 | NA | 1.6E+01 | nc | NA | NA | No | BSL |
| | 7440-43-9 | Cadmium, total | 0.65 | | 96 | | mg/kg | SD-WD-7 | 13 / 13 | 5.00E-01 - 5.00E-01 | 9.60E+01 | NA | 7.0E+00 | nc | NA | NA | Yes | ASL |
| | 7440-70-2 | Calcium, total | 2600 | | 15000 | | mg/kg | SD-ED-14 | 10 / 10 | - | 1.50E+04 | NA | NUT | -- | NA | NA | No | NUT |
| | 7440-47-3 | Chromium, total | 5.9 | J | 26 | J | mg/kg | SD-WD-8 | 10 / 10 | - | 2.60E+01 | NA | 1.2E+04 | nc | NA | NA | No | BSL |
| | 7440-48-4 | Cobalt, total | 1.9 | | 14 | | mg/kg | SD-WD-8 | 10 / 10 | - | 1.40E+01 | NA | 2.3E+00 | nc | NA | NA | Yes | ASL |
| | 7440-50-8 | Copper, total | 4.8 | | 320 | | mg/kg | SD-WD-7 | 13 / 13 | 2.50E+00 - 2.50E+00 | 3.20E+02 | NA | 3.1E+02 | nc | NA | NA | Yes | ASL |
| | 7439-89-6 | Iron, total | 6900 | | 45000 | | mg/kg | SD-WD-7 | 10 / 10 | - | 4.50E+04 | NA | 5.5E+03 | nc | NA | NA | Yes | ASL |
| | 7439-92-1 | Lead, total | 20 | | 2700 | | mg/kg | SD-WD-7 | 13 / 13 | 1.00E+00 - 1.00E+00 | 3.21E+02 | NA | 4.0E+02 | IEUBK | NA | NA | No | BSL |
| | 7439-95-4 | Magnesium, total | 1000 | | 3500 | J | mg/kg | SD-ED-15 | 10 / 10 | - | 3.50E+03 | NA | NUT | -- | NA | NA | No | NUT |
| | 7439-96-5 | Manganese, total | 91.2 | J | 750 | | mg/kg | SD-ED-14 | 13 / 13 | 1.50E+00 - 1.50E+00 | 7.50E+02 | NA | 1.8E+02 | nc | NA | NA | Yes | ASL |
| | 7439-97-6 | Mercury, total | 0.012 | | 1.4 | | mg/kg | SD-WD-8 | 9 / 10 | - | 1.40E+00 | NA | 2.3E+00 | nc | NA | NA | No | BSL |
| | 7440-02-0 | Nickel, total | 4.2 | | 27 | | mg/kg | SD-WD-7 | 10 / 10 | - | 2.70E+01 | NA | 1.5E+02 | nc | NA | NA | No | BSL |
| | 7440-09-7 | Potassium, total | 270 | J | 1400 | J | mg/kg | SD-WD-8 | 10 / 10 | - | 1.40E+03 | NA | NUT | -- | NA | NA | No | NUT |
| | 7782-49-2 | Selenium, total | 1.4 | J | 1.4 | J | mg/kg | SD-WD-7 | 1 / 10 | - | 1.40E+00 | NA | 3.9E+01 | nc | NA | NA | No | BSL |
| | 7440-22-4 | Silver, total | 0.089 | | 2.4 | | mg/kg | SD-WD-7 | 5 / 10 | - | 2.40E+00 | NA | 3.9E+01 | nc | NA | NA | No | BSL |
| | 7440-62-2 | Vanadium, total | 7.8 | J | 30 | J | mg/kg | SD-WD-8 | 10 / 10 | - | 3.00E+01 | NA | 3.9E+01 | nc | NA | NA | No | BSL |
| | 7440-66-6 | Zinc, total | 400 | J | 23000 | J | mg/kg | SD-WD-7 | 13 / 13 | 6.00E+00 - 6.00E+00 | 2.30E+04 | NA | 2.3E+03 | nc | NA | NA | Yes | ASL |

(1) The maximum detected concentration is used for screening except for lead which uses the average detected concentration.

(2) Regional Screening Levels for Residential Soil (June 2011). Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.

The SL for Chromium (III) was used as the SL for Chromium.
The SL for Mercuric Chloride was used as the SL for Mercury.
The SL for Vanadium and Compounds was used as the SL for Vanadium.

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available
SL = Screening Level
IEUBK = Integrated Exposure Uptake Biokinetic Model
HQ = Hazard Quotient
J = Estimated detection

TABLE 2.7.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Point | CAS Number | Chemical | Minimum Concentration Qualifier | | Maximum Concentration Qualifier | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value | Screening Toxicity Value (2) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-site Surface Water | 7429-90-5 | Aluminum, total | 47 | | 1400 | | ug/L | SW-WD-12 | 4 / 6 | - | 1.40E+03 | NA | 3.7E+03 | nc | NA | NA | No | BSL |
| | 7440-36-0 | Antimony, total | 0.3 | J | 0.32 | J | ug/L | SW-WD-12 | 3 / 6 | - | 3.20E-01 | NA | 1.5E+00 | nc | NA | NA | No | BSL |
| | 7440-38-2 | Arsenic, total | 1.2 | J | 2.3 | J | ug/L | SW-WD-11 | 3 / 9 | 1.00E+01 - 1.00E+01 | 2.30E+00 | NA | 4.5E-02 | ca | NA | NA | Yes | ASL |
| | 7440-39-3 | Barium, total | 21 | | 89 | | ug/L | SW-WD-12 | 6 / 6 | - | 8.90E+01 | NA | 7.3E+02 | nc | NA | NA | No | BSL |
| | 7440-41-7 | Beryllium, total | 0.18 | J | 0.21 | J | ug/L | SW-WD-11 | 2 / 6 | - | 2.10E-01 | NA | 7.3E+00 | nc | NA | NA | No | BSL |
| | 7440-43-9 | Cadmium, total | 0.19 | J | 34 | | ug/L | SW-WD-7 | 8 / 9 | 5.00E+00 - 5.00E+00 | 3.40E+01 | NA | 1.8E+00 | nc | NA | NA | Yes | ASL |
| | 7440-70-2 | Calcium, total | 38000 | | 150000 | | ug/L | SW-WD-6 | 6 / 6 | - | 1.50E+05 | NA | NUT | -- | NA | NA | No | NUT |
| | 7440-47-3 | Chromium, total | 0.62 | J | 1.8 | J | ug/L | SW-WD-12 | 4 / 6 | - | 1.80E+00 | NA | 5.5E+03 | nc | NA | NA | No | BSL |
| | 7440-48-4 | Cobalt, total | 0.81 | J | 1.6 | | ug/L | SW-WD-6 | 4 / 6 | - | 1.60E+00 | NA | 1.1E+00 | nc | NA | NA | Yes | ASL |
| | 7440-50-8 | Copper, total | 1.6 | | 5.2 | J | ug/L | EZ-SD-WD-06 | 8 / 9 | 2.50E+01 - 2.50E+01 | 5.20E+00 | NA | 1.5E+02 | nc | NA | NA | No | BSL |
| | 7439-89-6 | Iron, total | 230 | | 1600 | | ug/L | SW-WD-12 | 6 / 6 | - | 1.60E+03 | NA | 2.6E+03 | nc | NA | NA | No | BSL |
| | 7439-92-1 | Lead, total | 2.3 | | 18.9 | J,+ | ug/L | EZ-SD-WD-06 | 5 / 9 | 1.00E+01 - 1.00E+01 | 1.89E+01 | NA | 1.5E+01 | AL | NA | NA | Yes | ASL |
| | 7439-95-4 | Magnesium, total | 11000 | | 36000 | | ug/L | SW-WD-6 | 6 / 6 | - | 3.60E+04 | NA | NUT | -- | NA | NA | No | NUT |
| | 7439-96-5 | Manganese, total | 78 | | 1130 | | ug/L | EZ-SD-ED-16 | 9 / 9 | 1.50E+01 - 1.50E+01 | 1.13E+03 | NA | 8.8E+01 | nc | NA | NA | Yes | ASL |
| | 7439-97-6 | Mercury, total | 0.03 | J | 0.03 | J | ug/L | SW-WD-6 | 1 / 6 | - | 3.00E-02 | NA | 1.1E+00 | nc | NA | NA | No | BSL |
| | 7440-02-0 | Nickel, total | 1.8 | | 19 | | ug/L | SW-WD-7 | 6 / 6 | - | 1.90E+01 | NA | 7.3E+01 | nc | NA | NA | No | BSL |
| | 7440-09-7 | Potassium, total | 5000 | | 9200 | | ug/L | SW-WD-7 | 6 / 6 | - | 9.20E+03 | NA | NUT | -- | NA | NA | No | NUT |
| | 7782-49-2 | Selenium, total | 1.3 | J | 2 | J | ug/L | SW-WD-6 | 3 / 6 | - | 2.00E+00 | NA | 1.8E+01 | nc | NA | NA | No | BSL |
| | 7440-22-4 | Silver, total | 0.06 | J | 0.08 | J | ug/L | SW-WD-11 | 3 / 6 | - | 8.00E-02 | NA | 1.8E+01 | nc | NA | NA | No | BSL |
| | 7440-23-5 | Sodium, total | 15000 | | 60000 | | ug/L | SW-WD-7 | 6 / 6 | - | 6.00E+04 | NA | NUT | -- | NA | NA | No | NUT |
| | 7440-62-2 | Vanadium, total | 0.7 | J | 5.1 | | ug/L | SW-WD-12 | 4 / 6 | - | 5.10E+00 | NA | 1.8E+01 | nc | NA | NA | No | BSL |
| | 7440-66-6 | Zinc, total | 710 | | 26000 | | ug/L | SW-WD-7 | 8 / 9 | 6.00E+01 - 6.00E+01 | 2.60E+04 | NA | 1.1E+03 | nc | NA | NA | Yes | ASL |

(1) Maximum concentration is used for screening.

(2) Regional Screening Levels for Tapwater (June 2011). Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.

The Lead action level was used as the SL for Lead.
The SL for Chromium (III) was used as the SL for Chromium.
The SL for Mercuric Chloride was used as the SL for Mercury.
The SL for Vanadium and Compounds was used as the SL for Vanadium.

(3) Rationale Codes

| | |
|---|---|
| Selection Reason: | Above Screening Levels (ASL) |
| Deletion Reason: | Below Screening Level (BSL) |
| | Essential Nutrient (NUT) |

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available
SL = Screening Level
AL = Lead Action Level
J = Estimated detection
J+ = Estimated detection, biased high

TABLE 2.8.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Surface Soil (0-2 feet) (Industrial Worker)

| Exposure Point | CAS Number | Chemical | Minimum Concentration Qualifier | | Maximum Concentration Qualifier | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value (2) | Screening Toxicity Value (3) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Area 2 Surface Soil and Residue (0-2 ft) | 57-12-5 | Cyanide | 7.00E-02 | J | 4.30E-01 | J | mg/Kg | X307 | 11 / 13 | - | 4.30E-01 | 5.00E-01 | 2.0E+03 | nc | NA | NA | No | BSL |
| | 56-55-3 | Benzo(a)anthracene | 5.10E-02 | J | 8.80E-02 | J | mg/kg | X307 | 2 / 11 | - | 8.80E-02 | 7.20E-01 | 2.1E+00 | ca | NA | NA | No | BSL |
| | 50-32-8 | Benzo(a)pyrene | 4.30E-02 | J | 6.50E-02 | J | mg/kg | X307 | 2 / 11 | - | 6.50E-02 | 9.80E-01 | 2.1E-01 | ca | NA | NA | No | BSL |
| | 205-99-2 | Benzo(b)fluoranthene | 4.10E-02 | J | 1.30E-01 | J | mg/kg | X307 | 4 / 13 | - | 1.30E-01 | 7.00E-01 | 2.1E+00 | ca | NA | NA | No | BSL |
| | 191-24-2 | Benzo(g,h,i)perylene | 5.00E-02 | J | 5.50E-02 | J | mg/kg | X301 | 2 / 11 | - | 5.50E-02 | 8.40E-01 | 1.7E+03 | nc | NA | NA | No | BSL |
| | 207-08-9 | Benzo(k)fluoranthene | 5.70E-02 | J | 5.70E-02 | J | mg/kg | X307 | 1 / 10 | - | 5.70E-02 | 6.30E-01 | 2.1E+01 | ca | NA | NA | No | BSL |
| | 218-01-9 | Chrysene | 4.00E-02 | J | 1.50E-01 | J | mg/kg | X307 | 4 / 13 | - | 1.50E-01 | 1.10E+00 | 2.1E+02 | ca | NA | NA | No | BSL |
| | 206-44-0 | Fluoranthene | 7.10E-02 | J | 2.50E-01 | J | mg/kg | X307 | 4 / 13 | - | 2.50E-01 | 1.80E+00 | 2.2E+03 | nc | NA | NA | No | BSL |
| | 85-01-8 | Phenanthrene | 6.10E-02 | J | 9.00E-02 | J | mg/kg | X307 | 2 / 11 | - | 9.00E-02 | 9.90E-01 | 1.7E+04 | nc | NA | NA | No | BSL |
| | 108-95-2 | Phenol | 4.80E-02 | J | 4.80E-02 | J | mg/kg | X301 | 1 / 10 | - | 4.80E-02 | -- | 1.8E+04 | nc | NA | NA | No | BSL |
| | 129-00-0 | Pyrene | 4.90E-02 | J | 1.70E-01 | J | mg/kg | X307 | 4 / 13 | - | 1.70E-01 | 1.20E+00 | 1.7E+03 | nc | NA | NA | No | BSL |
| | 7429-90-5 | Aluminum, total | 3.80E+03 | J | 7.55E+04 | | mg/kg | X310 | 51 / 51 | - | 7.55E+04 | 9.20E+03 | 9.9E+04 | nc | NA | NA | No | BSL |
| | 7440-36-0 | Antimony, total | 4.20E-01 | | 6.65E+02 | | mg/kg | X309 | 29 / 51 | - | 6.65E+02 | 3.30E+00 | 4.1E+01 | nc | NA | NA | Yes | ASL |
| | 7440-38-2 | Arsenic, total | 2.30E+00 | | 2.00E+02 | | mg/kg | MP1-21-050301 | 90 / 90 | 4.90E-01 - 1.00E+00 | 2.00E+02 | 1.13E+01 | 1.6E+00 | ca | NA | NA | Yes | ASL |
| | 7440-39-3 | Barium, total | 4.07E+01 | | 4.67E+03 | | mg/kg | XRF 028 | 61 / 61 | - | 4.67E+03 | 1.22E+02 | 1.9E+04 | nc | NA | NA | No | BSL |
| | 7440-41-7 | Beryllium, total | 1.20E-01 | J | 2.90E+00 | | mg/kg | RCO-5-050301, X308 | 51 / 51 | - | 2.90E+00 | 5.60E-01 | 2.0E+02 | nc | NA | NA | No | BSL |
| | 7440-43-9 | Cadmium, total | 1.20E-01 | | 2.84E+02 | | mg/kg | XRF 033 | 78 / 91 | 2.30E-02 - 5.00E-01 | 2.84E+02 | 5.00E-01 | 8.0E+01 | nc | NA | NA | Yes | ASL |
| | 7440-70-2 | Calcium, total | 5.30E+02 | | 2.00E+04 | J | mg/kg | RCO-10-050301 | 51 / 51 | - | 2.00E+04 | 5.53E+03 | NUT | -- | NA | NA | No | NUT |
| | 7440-47-3 | Chromium, total | 4.40E+00 | | 1.62E+03 | | mg/kg | X311 | 61 / 61 | - | 1.62E+03 | 1.30E+01 | 1.0E+05 | max | NA | NA | No | BSL |
| | 7440-48-4 | Cobalt, total | 2.10E+00 | | 8.80E+02 | | mg/kg | RR1-4-050301 | 51 / 51 | - | 8.80E+02 | 8.90E+00 | 3.0E+01 | nc | NA | NA | Yes | ASL |
| | 7440-50-8 | Copper, total | 8.40E+00 | | 4.99E+04 | | mg/kg | XRF 043 | 91 / 91 | 2.20E-01 - 2.50E+00 | 4.99E+04 | 1.20E+01 | 4.1E+03 | nc | NA | NA | Yes | ASL |
| | 7439-89-6 | Iron, total | 5.50E+03 | | 1.42E+05 | | mg/kg | X309 | 51 / 51 | - | 1.42E+05 | 1.50E+04 | 7.2E+04 | nc | NA | NA | Yes | ASL |
| | 7439-92-1 | Lead, total* | 7.80E-01 | J,- | 6.54E+04 | | mg/kg | 178 | 113 / 113 | 1.00E-01 - 1.70E+01 | 4.51E+03 | 2.09E+01 | 8.0E+02 | ALM | NA | NA | Yes | ASL |
| | 7439-95-4 | Magnesium, total | 3.40E+02 | J | 6.00E+03 | J | mg/kg | RR1-4-050301 | 51 / 51 | - | 6.00E+03 | 2.70E+03 | NUT | -- | NA | NA | No | NUT |
| | 7439-96-5 | Manganese, total | 3.80E+01 | | 1.91E+04 | | mg/kg | EZ-RS12 | 81 / 81 | 5.70E-02 - 6.20E+00 | 1.91E+04 | 6.30E+02 | 2.3E+03 | nc | NA | NA | Yes | ASL |
| | 7439-97-6 | Mercury, total | 1.20E-02 | | 2.30E+00 | | mg/kg | X301 | 47 / 51 | - | 2.30E+00 | 5.00E-02 | 3.1E+01 | nc | NA | NA | No | BSL |
| | 7440-02-0 | Nickel, total | 6.60E+00 | | 1.78E+04 | | mg/kg | XRF 043 | 61 / 61 | - | 1.78E+04 | 1.30E+01 | 2.0E+03 | nc | NA | NA | Yes | ASL |
| | 7440-09-7 | Potassium, total | 3.95E+01 | J | 2.60E+03 | J | mg/kg | A3-25 | 51 / 51 | - | 2.60E+03 | 1.10E+03 | NUT | -- | NA | NA | No | NUT |
| | 7782-49-2 | Selenium, total | 5.90E-01 | J | 1.22E+01 | J,- | mg/kg | X303 | 37 / 51 | - | 1.22E+01 | 3.70E-01 | 5.1E+02 | nc | NA | NA | No | BSL |
| | 7440-22-4 | Silver, total | 5.40E-02 | J | 1.40E+02 | | mg/kg | MP1-21-050301 | 38 / 51 | - | 1.40E+02 | 5.00E-01 | 5.1E+02 | nc | NA | NA | No | BSL |
| | 7440-23-5 | Sodium, total | 3.30E+01 | | 2.32E+04 | J,+ | mg/kg | X313 | 46 / 51 | - | 2.32E+04 | 1.30E+02 | NUT | -- | NA | NA | No | NUT |
| | 7440-28-0 | Thallium, total | 5.30E-02 | J | 2.10E+00 | | mg/kg | WA-8 | 26 / 38 | - | 2.10E+00 | 4.20E-01 | 1.0E+00 | nc | NA | NA | Yes | ASL |
| | 7440-62-2 | Vanadium, total | 5.70E+00 | | 6.60E+01 | | mg/kg | A4-15 | 51 / 51 | - | 6.60E+01 | 2.50E+01 | 5.2E+02 | nc | NA | NA | No | BSL |
| | 7440-66-6 | Zinc, total | 5.00E+01 | J | 4.07E+05 | | mg/kg | X311 | 91 / 91 | 6.00E+00 - 1.60E+01 | 4.07E+05 | 6.02E+01 | 3.1E+04 | nc | NA | NA | Yes | ASL |
| | 67-64-1 | Acetone | 4.40E-03 | J | 6.10E-02 | J | mg/kg | A3-23 | 5 / 5 | - | 6.10E-02 | -- | 6.3E+04 | nc | NA | NA | No | BSL |
| | 78-93-3 | Methyl ethyl ketone (2-Butanone) | 1.70E-03 | J | 8.10E-03 | J | mg/kg | WA-8 | 3 / 4 | - | 8.10E-03 | -- | 2.0E+04 | nc | NA | NA | No | BSL |
| | 75-09-2 | Methylene chloride | 1.60E-03 | J | 9.30E-03 | J | mg/kg | A3-20 | 7 / 9 | - | 9.30E-03 | -- | 5.3E+01 | ca | NA | NA | No | BSL |

*Lead summary data represents the combined sieved and unsieved lead samples.

(1) The maximum detected concentration is used for screening except for lead which uses the average detected concentration.

(2) Background concentrations outside metropolitan statistical areas. TACO Section 742, Appendix A, Table G and H.

(3) Regional Screening Levels for Industrial Soil (June 2011). Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.

The SL for Chromium (III) was used as the SL for Chromium.
The SL for Mercuric Chloride was used as the SL for Mercury.
The SL for Vanadium and Compounds was used as the SL for Vanadium.

(4) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available
SL = Screening Level
ALM = Adult Lead Methodology
HQ = Hazard Quotient
J = Estimated detection
J+ = Estimated detection, biased high
J- = Estimated detection, biased low
max = concentration exceeds 100,000 mg/kg

TABLE 2.9.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Total Soil and Residue (0-10 feet) (Construction Worker)

| Exposure Point | CAS Number | Chemical | Minimum Concentration Qualifier | | Maximum Concentration Qualifier | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value (2) | Screening Toxicity Value (3) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Area 2 Total Soil and Residue (0-10 ft) | 57-12-5 | Cyanide | 7.00E-02 | J | 4.30E-01 | J | mg/Kg | X307 | 11 / 13 | - | 4.30E-01 | 5.00E-01 | 2.0E+03 | nc | NA | NA | No | BSL |
| | 56-55-3 | Benzo(a)anthracene | 5.10E-02 | J | 8.80E-02 | J | mg/kg | X307 | 2 / 15 | - | 8.80E-02 | 7.20E-01 | 2.1E+00 | ca | NA | NA | No | BSL |
| | 50-32-8 | Benzo(a)pyrene | 4.30E-02 | J | 6.50E-02 | J | mg/kg | X307 | 2 / 15 | - | 6.50E-02 | 9.80E-01 | 2.1E-01 | ca | NA | NA | No | BSL |
| | 205-99-2 | Benzo(b)fluoranthene | 4.10E-02 | J | 1.30E-01 | J | mg/kg | X307 | 4 / 17 | - | 1.30E-01 | 7.00E-01 | 2.1E+00 | ca | NA | NA | No | BSL |
| | 191-24-2 | Benzo(g,h,i)perylene | 5.00E-02 | J | 5.50E-02 | J | mg/kg | X301 | 2 / 15 | - | 5.50E-02 | 8.40E-01 | 1.7E+03 | nc | NA | NA | No | BSL |
| | 207-08-9 | Benzo(k)fluoranthene | 5.70E-02 | J | 5.70E-02 | J | mg/kg | X307 | 1 / 14 | - | 5.70E-02 | 6.30E-01 | 2.1E+01 | ca | NA | NA | No | BSL |
| | 218-01-9 | Chrysene | 4.00E-02 | J | 1.50E-01 | J | mg/kg | X307 | 4 / 17 | - | 1.50E-01 | 1.10E+00 | 2.1E+02 | ca | NA | NA | No | BSL |
| | 206-44-0 | Fluoranthene | 7.10E-02 | J | 2.50E-01 | J | mg/kg | X307 | 4 / 17 | - | 2.50E-01 | 1.80E+00 | 2.2E+03 | nc | NA | NA | No | BSL |
| | 85-01-8 | Phenanthrene | 6.10E-02 | J | 9.00E-02 | J | mg/kg | X307 | 2 / 15 | - | 9.00E-02 | 9.90E-01 | 1.7E+04 | nc | NA | NA | No | BSL |
| | 108-95-2 | Phenol | 4.80E-02 | J | 4.80E-02 | J | mg/kg | X301 | 1 / 14 | - | 4.80E-02 | -- | 1.8E+04 | nc | NA | NA | No | BSL |
| | 129-00-0 | Pyrene | 4.90E-02 | J | 1.70E-01 | J | mg/kg | X307 | 4 / 17 | - | 1.70E-01 | 1.20E+00 | 1.7E+03 | nc | NA | NA | No | BSL |
| | 7429-90-5 | Aluminum, total | 3.80E+03 | J | 7.55E+04 | | mg/kg | X310 | 63 / 63 | - | 7.55E+04 | 9.20E+03 | 9.9E+04 | nc | NA | NA | No | BSL |
| | 7440-36-0 | Antimony, total | 3.40E-01 | | 6.65E+02 | | mg/kg | X309 | 36 / 63 | - | 6.65E+02 | 3.30E+00 | 4.1E+01 | nc | NA | NA | Yes | ASL |
| | 7440-38-2 | Arsenic, total | 1.70E+00 | J | 2.00E+02 | | mg/kg | MP1-21-050301 | 122 / 122 | 4.90E-01 - 1.00E+00 | 2.00E+02 | 1.13E+01 | 1.6E+00 | ca | NA | NA | Yes | ASL |
| | 7440-39-3 | Barium, total | 4.07E+01 | | 4.67E+03 | | mg/kg | XRF 028 | 73 / 73 | - | 4.67E+03 | 1.22E+02 | 1.9E+04 | nc | NA | NA | No | BSL |
| | 7440-41-7 | Beryllium, total | 1.20E-01 | J | 2.90E+00 | | mg/kg | RCO-5-050301, X308 | 63 / 63 | - | 2.90E+00 | 5.60E-01 | 2.0E+02 | nc | NA | NA | No | BSL |
| | 7440-43-9 | Cadmium, total | 1.20E-01 | | 2.84E+02 | | mg/kg | XRF 033 | 109 / 123 | 2.30E-02 - 5.00E-01 | 2.84E+02 | 5.00E-01 | 8.0E+01 | nc | NA | NA | Yes | ASL |
| | 7440-70-2 | Calcium, total | 5.30E+02 | | 3.60E+04 | | mg/kg | A1-6 | 63 / 63 | - | 3.60E+04 | 5.53E+03 | NUT | -- | NA | NA | No | NUT |
| | 7440-47-3 | Chromium, total | 4.40E+00 | | 1.62E+03 | | mg/kg | X311 | 73 / 73 | - | 1.62E+03 | 1.30E+01 | 1.0E+06 | max | NA | NA | No | BSL |
| | 7440-48-4 | Cobalt, total | 2.10E+00 | | 8.80E+02 | | mg/kg | RR1-4-050301 | 63 / 63 | - | 8.80E+02 | 8.90E+00 | 3.0E+01 | nc | NA | NA | Yes | ASL |
| | 7440-50-8 | Copper, total | 6.60E+00 | J | 4.99E+04 | | mg/kg | XRF 043 | 123 / 123 | 2.20E-01 - 2.50E+00 | 4.99E+04 | 1.20E+01 | 4.1E+03 | nc | NA | NA | Yes | ASL |
| | 7439-89-6 | Iron, total | 5.50E+03 | | 1.42E+05 | | mg/kg | X309 | 63 / 63 | - | 1.42E+05 | 1.50E+04 | 7.2E+04 | nc | NA | NA | Yes | ASL |
| | 7439-92-1 | Lead, total* | 7.80E-01 | J,- | 6.54E+04 | | mg/kg | 178 | 164 / 165 | 1.00E-01 - 1.70E+01 | 3.11E+03 | 2.09E+01 | 8.0E+02 | ALM | NA | NA | Yes | ASL |
| | 7439-95-4 | Magnesium, total | 3.40E+02 | J | 2.20E+04 | | mg/kg | A1-6 | 63 / 63 | - | 2.20E+04 | 2.70E+03 | NUT | -- | NA | NA | No | NUT |
| | 7439-96-5 | Manganese, total | 3.71E+01 | J,+ | 1.91E+04 | | mg/kg | EZ-RS12 | 113 / 113 | 5.70E-02 - 6.20E+00 | 1.91E+04 | 6.30E+02 | 2.3E+03 | nc | NA | NA | Yes | ASL |
| | 7439-97-6 | Mercury, total | 6.40E-03 | | 2.30E+00 | | mg/kg | X301 | 57 / 63 | - | 2.30E+00 | 5.00E-02 | 3.1E+01 | nc | NA | NA | No | BSL |
| | 7440-02-0 | Nickel, total | 6.60E+00 | | 1.78E+04 | | mg/kg | XRF 043 | 73 / 73 | - | 1.78E+04 | 1.30E+01 | 2.0E+03 | nc | NA | NA | Yes | ASL |
| | 7440-09-7 | Potassium, total | 3.95E+01 | J | 2.60E+03 | J | mg/kg | A3-25 | 63 / 63 | - | 2.60E+03 | 1.10E+03 | NUT | -- | NA | NA | No | NUT |
| | 7782-49-2 | Selenium, total | 5.90E-01 | J | 1.22E+01 | J,- | mg/kg | X303 | 38 / 63 | - | 1.22E+01 | 3.70E-01 | 5.1E+02 | nc | NA | NA | No | BSL |
| | 7440-22-4 | Silver, total | 5.40E-02 | J | 1.40E+02 | | mg/kg | MP1-21-050301 | 38 / 63 | - | 1.40E+02 | 5.00E-01 | 5.1E+02 | nc | NA | NA | No | BSL |
| | 7440-23-5 | Sodium, total | 3.30E+01 | | 2.32E+04 | J,+ | mg/kg | X313 | 52 / 63 | - | 2.32E+04 | 1.30E+02 | NUT | -- | NA | NA | No | NUT |
| | 7440-28-0 | Thallium, total | 5.30E-02 | J | 2.10E+00 | | mg/kg | WA-8 | 36 / 50 | - | 2.10E+00 | 4.20E-01 | 1.0E+00 | nc | NA | NA | Yes | ASL |
| | 7440-62-2 | Vanadium, total | 5.70E+00 | | 7.20E+01 | | mg/kg | A3-19 | 63 / 63 | - | 7.20E+01 | 2.50E+01 | 5.2E+02 | nc | NA | NA | No | BSL |

TABLE 2.9.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Total Soil and Residue (0-10 feet) (Construction Worker)

| Exposure Point | CAS Number | Chemical | Minimum Concentration Qualifier | | Maximum Concentration Qualifier | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value (2) | Screening Toxicity Value (3) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7440-66-6 | Zinc, total | 5.00E+01 | J | 4.07E+05 | | mg/kg | X311 | 123 / 123 | 6.00E+00 - 1.60E+01 | 4.07E+05 | 6.02E+01 | 3.1E+04 | nc | NA | NA | Yes | ASL |
| | 67-64-1 | Acetone | 4.40E-03 | J | 6.10E-02 | J | mg/kg | A3-23 | 5 / 5 | - | 6.10E-02 | -- | 6.3E+04 | nc | NA | NA | No | BSL |
| | 78-93-3 | Methyl ethyl ketone (2-Butanone) | 1.70E-03 | J | 8.10E-03 | J | mg/kg | WA-8 | 3 / 6 | - | 8.10E-03 | -- | 2.0E+04 | nc | NA | NA | No | BSL |
| | 75-09-2 | Methylene chloride | 1.60E-03 | J | 9.30E-03 | J | mg/kg | A3-20 | 11 / 13 | - | 9.30E-03 | -- | 5.3E+01 | ca | NA | NA | No | BSL |

*Lead summary data represents the combined sieved and unsieved lead samples.

(1) The maximum detected concentration is used for screening except for lead which uses the average detected concentration.

(2) Background concentrations outside metropolitan statistical areas. TACO Section 742, Appendix A, Table G and H.

(3) Regional Screening Levels for Industrial Soil (June 2011). Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.

The SL for Anthracene was used as the SL for Phenanthrene.
The SL for Chromium (III) was used as the SL for Chromium.
The SL for Mercuric Chloride was used as the SL for Mercury.
The SL for Pyrene was used as the SL for Benzo(g,h,i)perylene.
The SL for Vanadium and Compounds was used as the SL for Vanadium.

(4) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available
SL = Screening Level
ALM = Adult Lead Methodology
HQ = Hazard Quotient
J = Estimated detection
J+ = Estimated detection, biased high
J- = Estimated detection, biased low
max = concentration exceeds 100,000 mg/kg

TABLE 2.10.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Total Soil (0-10 feet) (Construction Worker)

| Exposure Point | CAS Number | Chemical | Minimum Concentration Qualifier | | Maximum Concentration Qualifier | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value (2) | Screening Toxicity Value (3) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Area 1 Total Soil (0-10 ft) | 7440-38-2 | Arsenic, total | 3.90E+00 | J | 1.78E+01 | | mg/kg | EZ-SS03 | 21 / 21 | 1.00E+00 - 1.00E+00 | 1.78E+01 | 1.13E+01 | 1.6E+00 | ca | NA | NA | Yes | ASL |
| | 7440-43-9 | Cadmium, total | 8.80E-02 | J | 1.90E+00 | | mg/kg | EZ-SB03 | 16 / 21 | 5.00E-01 - 5.00E-01 | 1.90E+00 | 5.00E-01 | 8.0E+01 | nc | NA | NA | No | BSL |
| | 7440-50-8 | Copper, total | 6.40E+00 | J | 2.31E+01 | J | mg/kg | EZ-SB01 | 21 / 21 | 2.50E+00 - 2.50E+00 | 2.31E+01 | 1.20E+01 | 4.1E+03 | nc | NA | NA | No | BSL |
| | 7439-92-1 | Lead, total* | 7.90E+00 | | 4.60E+01 | J | mg/kg | EZ-SB06 | 39 / 39 | 1.00E-01 - 1.00E+00 | 1.75E+01 | 2.09E+01 | 8.0E+02 | ALM | NA | NA | No | BSL |
| | 7439-96-5 | Manganese, total | 2.66E+02 | J | 2.49E+03 | J | mg/kg | EZ-SB02 | 21 / 21 | 1.50E+00 - 1.50E+00 | 2.49E+03 | 6.30E+02 | 2.3E+03 | nc | NA | NA | Yes | ASL |
| | 7440-66-6 | Zinc, total | 2.22E+01 | J | 7.38E+02 | J | mg/kg | EZ-SS03 | 21 / 21 | 6.00E+00 - 6.00E+00 | 7.38E+02 | 6.02E+01 | 3.1E+04 | nc | NA | NA | No | BSL |

*Lead summary data represents the combined sieved and unsieved lead samples.

(1) The maximum detected concentration is used for screening except for lead which uses the average detected concentration.

(2) Background concentrations outside metropolitan statistical areas. TACO Section 742, Appendix A, Table G and H.

(3) Regional Screening Levels for Industrial Soil (June 2011). Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.

(4) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available
SL = Screening Level
ALM = Adult Lead Methodology
HQ = Hazard Quotient
J = Estimated detection

TABLE 2.11.RME
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Total Soil (0-10 feet) (Construction Worker)

| Exposure Point | CAS Number | Chemical | Minimum Concentration Qualifier | | Maximum Concentration Qualifier | | Units | Location of Maximum Concentration | Detection Frequency | Range of Detection Limits | Concentration Used for Screening (1) | Background Value (2) | Screening Toxicity Value (3) | | Potential ARAR/TBC Value | Potential ARAR/TBC Source | COPC Flag | Rationale for Selection or Deletion (4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Area 3 Total Soil (0-10 ft) | 7440-38-2 | Arsenic, total | 1.90E+00 | J | 1.82E+01 | | mg/kg | EZ-SB07 | 9 / 9 | 1.00E+00 - 1.00E+00 | 1.82E+01 | 1.13E+01 | 1.6E+00 | ca | NA | NA | Yes | ASL |
| | 7440-43-9 | Cadmium, total | 7.70E-02 | J | 1.10E+00 | J | mg/kg | EZ-SB09 | 7 / 9 | 5.00E-01 - 5.00E-01 | 1.10E+00 | 5.00E-01 | 8.0E+01 | nc | NA | NA | No | BSL |
| | 7440-50-8 | Copper, total | 7.20E+00 | J | 2.43E+01 | J | mg/kg | EZ-SB09 | 9 / 9 | 2.50E+00 - 2.50E+00 | 2.43E+01 | 1.20E+01 | 4.1E+03 | nc | NA | NA | No | BSL |
| | 7439-92-1 | Lead, total* | 8.80E+00 | | 6.18E+01 | | mg/kg | EZ-SB09 | 18 / 18 | 1.00E-01 - 1.00E+00 | 1.61E+01 | 2.09E+01 | 8.0E+02 | ALM | NA | NA | No | BSL |
| | 7439-96-5 | Manganese, total | 1.71E+01 | J | 1.34E+03 | J | mg/kg | EZ-SB08 | 9 / 9 | 1.50E+00 - 1.50E+00 | 1.34E+03 | 6.30E+02 | 2.3E+03 | nc | NA | NA | No | BSL |
| | 7440-66-6 | Zinc, total | 1.57E+01 | J | 7.93E+02 | | mg/kg | EZ-SB07 | 9 / 9 | 6.00E+00 - 6.00E+00 | 7.93E+02 | 6.02E+01 | 3.1E+04 | nc | NA | NA | No | BSL |

*Lead summary data represents the combined sieved and unsieved lead samples.

(1) The maximum detected concentration is used for screening except for lead which uses the average detected concentration.

(2) Background concentrations outside metropolitan statistical areas. TACO Section 742, Appendix A, Table G and H.

(3) Regional Screening Levels for Industrial Soil (June 2011). Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1.

(4) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available
SL = Screening Level
ALM = Adult Lead Methodology
HQ = Hazard Quotient
J = Estimated detection

TABLE 3.1.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Current
Medium: Soil and Residue
Exposure Medium: Surface Soil (0-2 feet) (Trespasser)

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean | 95% UCL (NR/T/G) | | Maximum Concentration (Qualifier) | | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Value | Units | Statistic | Rationale |
| Exposure Area 2 Surface Soil and Residue (0-2 ft) | Benzo(a)pyrene | mg/kg | 5.4E-02 | 5.0E-02 | | 6.5E-02 | J | 6.5E-02 | mg/kg | Maximum Detected Concentration | (5) |
| | Aluminum, total | mg/kg | 1.7E+04 | 2.2E+04 | T | 7.6E+04 | | 2.2E+04 | mg/kg | 95% H-UCL | (4) |
| | Antimony, total | mg/kg | 1.6E+02 | 3.6E+02 | | 6.7E+02 | | 3.6E+02 | mg/kg | 99% KM (Chebyshev) | (1) |
| | Arsenic, total | mg/kg | 2.4E+01 | 4.1E+01 | | 2.0E+02 | | 4.1E+01 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Barium, total | mg/kg | 3.1E+02 | 6.6E+02 | | 4.7E+03 | | 6.6E+02 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Cadmium, total | mg/kg | 3.1E+01 | 5.7E+01 | | 2.8E+02 | | 5.7E+01 | mg/kg | 97.5% KM (Chebyshev) | (1) |
| | Cobalt, total | mg/kg | 1.2E+02 | 2.5E+02 | | 8.8E+02 | | 2.5E+02 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Copper, total | mg/kg | 3.9E+03 | 8.2E+03 | | 5.0E+04 | | 8.2E+03 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Iron, total | mg/kg | 4.2E+04 | 5.1E+04 | G | 1.4E+05 | | 5.1E+04 | mg/kg | 95% Approximate Gamma UCL | (3) |
| | Lead, total | mg/kg | 4.5E+03 | -- | | 6.5E+04 | | 4.5E+03 | mg/kg | Average Detected Concentration | (6) |
| | Manganese, total | mg/kg | 8.9E+02 | 9.3E+02 | T | 1.9E+04 | | 9.3E+02 | mg/kg | 95% H-UCL | (4) |
| | Nickel, total | mg/kg | 2.1E+03 | 4.7E+03 | | 1.8E+04 | | 4.7E+03 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Silver, total | mg/kg | 1.9E+01 | 3.0E+01 | | 1.4E+02 | | 3.0E+01 | mg/kg | 95% KM (Chebyshev) | (1) |
| | Thallium, total | mg/kg | 4.5E-01 | 8.2E-01 | | 2.1E+00 | | 8.2E-01 | mg/kg | 97.5% KM (Chebyshev) | (1) |
| | Vanadium, total | mg/kg | 2.9E+01 | 3.3E+01 | G | 6.6E+01 | | 3.3E+01 | mg/kg | 95% Approximate Gamma UCL | (3) |
| | Zinc, total | mg/kg | 1.0E+05 | 1.6E+05 | | 4.1E+05 | | 1.6E+05 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |

ProUCL, Version 4.1.00 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate exposure point concentration, following recommendations based on distribution and standard deviation in users guide (USEPA. February 2011. ProUCL, Version 4.1.00. Prepared by Lockheed Martin Environmental Services).

(1) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).

(2) Shapiro-Wilk W/Lilliefors Test indicates data are normally distributed.

(3) Anderson-Darling and/or Kolmogorov-Smirnov Tests indicate data are gamma distributed.

(4) Shapiro-Wilk W/Lilliefors Test indicates data are log-normally distributed.

(5) The maximum detected concentration was used as the EPC because (a) there are less than 8 samples (b) there are less than 4 detects (c) the calculated UCL exceeded the maximum detected concentration.

(6) The detected mean concentration was used as the exposure point concentration for lead.

mg/kg= milligrams/kilogram

NR = Normal distribution.

T = Log-normal distribution.

G = Gamma distribution.

J = Estimated detection

TABLE 3.1.a.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Current
Medium: Soil and Residue
Exposure Medium: Ambient Air

| Exposure Point | Chemical of Potential Concern | Exposure Point Concentration in Soil | | Exposure Point Concentration in Ambient Air | |
|---|---|---|---|---|---|
| | | Value (1) | Units | Value (2) | Units |
| Exposure Area 2 Emissions from Surface Soil and Residue | Benzo(a)pyrene | 6.5E-02 | mg/kg | 3.5E-11 | $mg/m^3$ |
| | Aluminum, total | 2.2E+04 | mg/kg | 1.2E-05 | $mg/m^3$ |
| | Antimony, total | 3.6E+02 | mg/kg | 1.9E-07 | $mg/m^3$ |
| | Arsenic, total | 4.1E+01 | mg/kg | 2.2E-08 | $mg/m^3$ |
| | Barium, total | 6.6E+02 | mg/kg | 3.6E-07 | $mg/m^3$ |
| | Cadmium, total | 5.7E+01 | mg/kg | 3.1E-08 | $mg/m^3$ |
| | Cobalt, total | 2.5E+02 | mg/kg | 1.3E-07 | $mg/m^3$ |
| | Copper, total | 8.2E+03 | mg/kg | 4.4E-06 | $mg/m^3$ |
| | Iron, total | 5.1E+04 | mg/kg | 2.7E-05 | $mg/m^3$ |
| | Lead, total | 4.5E+03 | mg/kg | 2.4E-06 | $mg/m^3$ |
| | Manganese, total | 9.3E+02 | mg/kg | 5.0E-07 | $mg/m^3$ |
| | Nickel, total | 4.7E+03 | mg/kg | 2.5E-06 | $mg/m^3$ |
| | Silver, total | 3.0E+01 | mg/kg | 1.6E-08 | $mg/m^3$ |
| | Thallium, total | 8.2E-01 | mg/kg | 4.4E-10 | $mg/m^3$ |
| | Vanadium, total | 3.3E+01 | mg/kg | 1.8E-08 | $mg/m^3$ |
| | Zinc, total | 1.6E+05 | mg/kg | 8.6E-05 | $mg/m^3$ |

(1) Selection of exposure point concentrations presented on Table 3.1.RME.

(2) Ambient air exposure point concentration calculated for trespassers using a Particulate Emission Factor (PEF) of $1.86 \times 10^9$ $m^3/kg$ as shown below. Derivation of PEF is presented on Table 4 Supplement C-1.

Concentration in ambient air ($mg/m^3$) = Concentration in soil (mg/kg) / (PEF) ($m^3/kg$)

mg/kg= milligrams/kilogram
$mg/m^3$ = milligram per cubic meter

TABLE 3.2.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Current
Medium: Sediment
Exposure Medium: Sediment (Trespasser)

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean | 95% UCL (NR/T/G) | | Maximum Concentration (Qualifier) | | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Value | Units | Statistic | Rationale |
| On-Site Sediment | Arsenic, total | mg/kg | 8.1E+00 | 1.0E+01 | NR | 1.7E+01 | J | 1.0E+01 | mg/kg | 95% Student's-t UCL | (2) |
| | Cadmium, total | mg/kg | 5.2E+01 | 2.7E+02 | | 5.5E+02 | | 2.7E+02 | mg/kg | 97.5% KM (Chebyshev) | (1) |
| | Cobalt, total | mg/kg | 6.5E+00 | NA | | 1.1E+01 | | 1.1E+01 | mg/kg | Maximum Detected Concentration | (5) |
| | Iron, total | mg/kg | 1.6E+04 | NA | | 2.9E+04 | | 2.9E+04 | mg/kg | Maximum Detected Concentration | (5) |
| | Manganese, total | mg/kg | 4.0E+02 | 6.2E+02 | G | 1.5E+03 | J | 6.2E+02 | mg/kg | 95% Approximate Gamma UCL | (3) |
| | Zinc, total | mg/kg | 7.6E+03 | 1.3E+04 | G | 2.4E+04 | J | 1.3E+04 | mg/kg | 95% Approximate Gamma UCL | (3) |

ProUCL, Version 4.1.00 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate exposure point concentration, following recommendations based on distribution and standard deviation in users guide (USEPA. February 2011. ProUCL, Version 4.1.00. Prepared by Lockheed Martin Environmental Services).

(1) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).

(2) Shapiro-Wilk W/Lilliefors Test indicates data are normally distributed.

(3) Anderson-Darling and/or Kolmogorov-Smirnov Tests indicate data are gamma distributed.

(4) Shapiro-Wilk W/Lilliefors Test indicates data are log-normally distributed.

(5) The maximum detected concentration was used as the EPC because (a) there are less than 8 samples (b) there are less than 4 detects (c) the calculated UCL exceeded the maximum detected concentration.

mg/kg= milligrams/kilogram

NR = Normal distribution.

T = Log-normal distribution.

G = Gamma distribution.

J = Estimated detection

TABLE 3.3.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Current
Medium: Surface Water
Exposure Medium: Surface Water (Trespasser)

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean | 95% UCL (NR/T/G) | | Maximum Concentration (Qualifier) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Value | Units | Statistic | Rationale |
| On-Site Surface Water | Cadmium, total | ug/L | 4.5E+01 | 8.7E+01 | | 2.3E+02 | 8.7E+01 | ug/L | 95% KM (Chebyshev) | (1) |
| | Cobalt, total | ug/L | 1.7E+00 | 2.1E+00 | | 2.4E+00 | 2.4E+00 | ug/L | Maximum Detected Concentration | (4) |
| | Iron, total | ug/L | 7.7E+02 | 4.8E+03 | | 3.2E+03 | 3.2E+03 | ug/L | Maximum Detected Concentration | (4) |
| | Lead, total | ug/L | 1.3E+01 | 1.1E+01 | NR | 4.0E+01 | 1.3E+01 | ug/L | Mean Detected Concentration | (5) |
| | Manganese, total | ug/L | 2.7E+02 | 7.6E+02 | | 1.1E+03 | 7.6E+02 | ug/L | 99% KM (Chebyshev) | (1) |
| | Zinc, total | ug/L | 5.9E+03 | 9.1E+03 | G | 2.6E+04 | 9.1E+03 | ug/L | 95% Approximate Gamma | (3) |
| | Trichloroethylene (TCE) | ug/L | 3.2E+00 | 4.1E+00 | | 6.3E+00 | 6.3E+00 | ug/L | Maximum Detected Concentration | (4) |

ProUCL, Version 4.1.00 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate exposure point concentration, following recommendations based on distribution and standard deviation in users guide (USEPA. February 2011. ProUCL, Version 4.1.00. Prepared by Lockheed Martin Environmental Services).

(1) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).

(2) Shapiro-Wilk W/Lilliefors Test indicates data are normally distributed.

(3) Anderson-Darling and/or Kolmogorov-Smirnov Tests indicate data are gamma distributed.

(4) The maximum detected concentration was used as the EPC because (a) there are less than 8 samples (b) there are less than 4 detects (c) the calculated UCL exceeded the maximum detected concentration.

(5) The detected mean concentration was used as the exposure point concentration for lead.

ug/L = micrograms/liter

NR = Normal distribution.

T = Log-normal distribution.

G = Gamma distribution.

TABLE 3.4.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment (Recreational User)

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean | 95% UCL (NR/T/G) | | Maximum Concentration (Qualifier) | | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Value | Units | Statistic | Rationale |
| Off-site Sediment | Aluminum, total | mg/kg | 6.8E+03 | 1.0E+04 | G | 1.9E+04 | | 1.0E+04 | mg/kg | 95% Approximate Gamma | (3) |
| | Antimony, total | mg/kg | 2.5E+00 | 7.2E+00 | | 1.2E+01 | | 7.2E+00 | mg/kg | 95% KM (Chebyshev) | (1) |
| | Arsenic, total | mg/kg | 6.9E+00 | 9.8E+00 | G | 2.5E+01 | J | 9.8E+00 | mg/kg | 95% Approximate Gamma | (3) |
| | Cadmium, total | mg/kg | 1.5E+01 | 3.3E+01 | G | 9.6E+01 | | 3.3E+01 | mg/kg | 95% Approximate Gamma | (3) |
| | Cobalt, total | mg/kg | 6.1E+00 | 8.4E+00 | NR | 1.4E+01 | | 8.4E+00 | mg/kg | 95% Student's-t | (2) |
| | Copper, total | mg/kg | 5.4E+01 | 1.0E+02 | G | 3.2E+02 | | 1.0E+02 | mg/kg | 95% Approximate Gamma | (3) |
| | Iron, total | mg/kg | 1.5E+04 | 2.3E+04 | G | 4.5E+04 | | 2.3E+04 | mg/kg | 95% Approximate Gamma | (3) |
| | Manganese, total | mg/kg | 3.7E+02 | 4.7E+02 | NR | 7.5E+02 | | 4.7E+02 | mg/kg | 95% Student's-t | (2) |
| | Zinc, total | mg/kg | 5.4E+03 | 1.1E+04 | G | 2.3E+04 | J | 1.1E+04 | mg/kg | 95% Approximate Gamma | (3) |

ProUCL, Version 4.1.00 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate exposure point concentration, following recommendations based on distribution and standard deviation in users guide (USEPA. February 2011. ProUCL, Version 4.1.00. Prepared by Lockheed Martin Environmental Services).

(1) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).

(2) Shapiro-Wilk W/Lilliefors Test indicates data are normally distributed.

(3) Anderson-Darling and/or Kolmogorov-Smirnov Tests indicate data are gamma distributed.

(4) The maximum detected concentration was used as the EPC because (a) there are less than 8 samples (b) there are less than 4 detects (c) the calculated UCL exceeded the maximum detected concentration.

(5) The detected mean concentration was used as the exposure point concentration for lead.

mg/kg= milligrams/kilogram

NR = Normal distribution.

T = Log-normal distribution.

G = Gamma distribution.

J = Estimated detection

TABLE 3.5.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean | 95% UCL (NR/T/G) | | Maximum Concentration (Qualifier) | | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Value | Units | Statistic | Rationale |
| Off-site Surface Water | Arsenic, total | ug/L | 1.9E+00 | 2.6E+00 | | 2.3E+00 | J | 2.3E+00 | ug/L | Maximum Detected Concentration | (4) |
| | Cadmium, total | ug/L | 1.2E+01 | 1.8E+01 | | 3.4E+01 | | 1.8E+01 | ug/L | 95% KM (t) UCL | (1) |
| | Cobalt, total | ug/L | 1.0E+00 | 1.3E+00 | | 1.6E+00 | | 1.6E+00 | ug/L | Maximum Detected Concentration | (4) |
| | Lead, total | ug/L | 6.6E+00 | 8.8E+00 | NR | 1.9E+01 | J,+ | 6.6E+00 | ug/L | Mean Detected Concentration | (5) |
| | Manganese, total | ug/L | 4.0E+02 | 6.0E+02 | NR | 1.1E+03 | | 6.0E+02 | ug/L | Use 95% Student's-t UCL | (2) |
| | Zinc, total | ug/L | 7.8E+03 | 1.9E+04 | | 2.6E+04 | | 1.9E+04 | ug/L | 95% KM (Chebyshev) UCL | (1) |

ProUCL, Version 4.1.00 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate exposure point concentration, following recommendations based on distribution and standard deviation in users guide (USEPA. February 2011. ProUCL, Version 4.1.00. Prepared by Lockheed Martin Environmental Services).

(1) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).

(2) Shapiro-Wilk W/Lilliefors Test indicates data are normally distributed.

(3) Anderson-Darling and/or Kolmogorov-Smirnov Tests indicate data are gamma distributed.

(4) The maximum detected concentration was used as the EPC because (a) there are less than 8 samples (b) there are less than 4 detects (c) the calculated UCL exceeded the maximum detected concentration.

(5) The detected mean concentration was used as the exposure point concentration for lead.

ug/L = micrograms/liter

NR = Normal distribution.

T = Log-normal distribution.

G = Gamma distribution.

J = Estimated detection

J+ = Estimated detection, biased high

TABLE 3.6.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Surface Soil (0-2 feet) (Industrial Worker)

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean | 95% UCL (NR/T/G) | | Maximum Concentration (Qualifier) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Value | Units | Statistic | Rationale |
| Exposure Area 2 Surface Soil and Residue (0-2 ft) | Antimony, total | mg/kg | 1.6E+02 | 3.6E+02 | | 6.7E+02 | 3.6E+02 | mg/kg | 99% KM (Chebyshev) | (1) |
| | Arsenic, total | mg/kg | 2.4E+01 | 4.1E+01 | | 2.0E+02 | 4.1E+01 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Cadmium, total | mg/kg | 3.1E+01 | 5.7E+01 | | 2.8E+02 | 5.7E+01 | mg/kg | 97.5% KM (Chebyshev) | (1) |
| | Cobalt, total | mg/kg | 1.2E+02 | 2.5E+02 | | 8.8E+02 | 2.5E+02 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Copper, total | mg/kg | 3.9E+03 | 8.2E+03 | | 5.0E+04 | 8.2E+03 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Iron, total | mg/kg | 4.2E+04 | 5.1E+04 | G | 1.4E+05 | 5.1E+04 | mg/kg | 95% Approximate Gamma UCL | (3) |
| | Lead, total | mg/kg | 4.5E+03 | -- | | 6.5E+04 | 4.5E+03 | mg/kg | Average Detected Concentration | (6) |
| | Manganese, total | mg/kg | 8.9E+02 | 9.3E+02 | T | 1.9E+04 | 9.3E+02 | mg/kg | 95% H-UCL | (4) |
| | Nickel, total | mg/kg | 2.1E+03 | 4.7E+03 | | 1.8E+04 | 4.7E+03 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Thallium, total | mg/kg | 4.5E-01 | 8.2E-01 | | 2.1E+00 | 8.2E-01 | mg/kg | 97.5% KM (Chebyshev) | (1) |
| | Zinc, total | mg/kg | 1.0E+05 | 1.6E+05 | | 4.1E+05 | 1.6E+05 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |

ProUCL, Version 4.1.00 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate exposure point concentration, following recommendations based on distribution and standard deviation in users guide (USEPA. February 2011. ProUCL, Version 4.1.00. Prepared by Lockheed Martin Environmental Services).

(1) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).

(2) Shapiro-Wilk W/Lilliefors Test indicates data are normally distributed.

(3) Anderson-Darling and/or Kolmogorov-Smirnov Tests indicate data are gamma distributed.

(4) Shapiro-Wilk W/Lilliefors Test indicates data are log-normally distributed.

(5) The maximum detected concentration was used as the EPC because (a) there are less than 8 samples (b) there are less than 4 detects (c) the calculated UCL exceeded the maximum detected concentration.

(6) The detected mean concentration was used as the exposure point concentration for lead.

mg/kg= milligrams/kilogram

NR = Normal distribution.

T = Log-normal distribution.

G = Gamma distribution.

TABLE 3.6.a.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Ambient Air

| Exposure Point | Chemical of Potential Concern | Exposure Point Concentration in Soil | | Exposure Point Concentration in Ambient Air | |
|---|---|---|---|---|---|
| | | Value (1) | Units | Value (2) | Units |
| Exposure Area 2 Emissions from Surface Soil and Residue | Antimony, total | 3.6E+02 | mg/kg | 1.9E-07 | $mg/m^3$ |
| | Arsenic, total | 4.1E+01 | mg/kg | 2.2E-08 | $mg/m^3$ |
| | Cadmium, total | 5.7E+01 | mg/kg | 3.1E-08 | $mg/m^3$ |
| | Cobalt, total | 2.5E+02 | mg/kg | 1.3E-07 | $mg/m^3$ |
| | Copper, total | 8.2E+03 | mg/kg | 4.4E-06 | $mg/m^3$ |
| | Iron, total | 5.1E+04 | mg/kg | 2.7E-05 | $mg/m^3$ |
| | Lead, total | 4.5E+03 | mg/kg | 2.4E-06 | $mg/m^3$ |
| | Manganese, total | 9.3E+02 | mg/kg | 5.0E-07 | $mg/m^3$ |
| | Nickel, total | 4.7E+03 | mg/kg | 2.5E-06 | $mg/m^3$ |
| | Thallium, total | 8.2E-01 | mg/kg | 4.4E-10 | $mg/m^3$ |
| | Zinc, total | 1.6E+05 | mg/kg | 8.6E-05 | $mg/m^3$ |

(1) Selection of exposure point concentrations presented on Table 3.6.RME.

(2) Ambient air exposure point concentration calculated for industrial workers using a Particulate Emission Factor (PEF) of $1.86 \times 10^9$ $m^3/kg$ as shown below. Derivation of PEF is presented on Table 4 Supplement C-1.

Concentration in ambient air ($mg/m^3$) = Concentration in soil (mg/kg) / (PEF) ($m^3/kg$)

mg/kg= milligrams/kilogram
$mg/m^3$ = milligram per cubic meter

TABLE 3.7.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Total Soil and Residue (0-10 feet) (Construction Worker)

| Exposure Point | Chemical of Potential Concern | Units | Arithmetic Mean | 95% UCL (NR/T/G) | | Maximum Concentration (Qualifier) | Exposure Point Concentration | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Value | Units | Statistic | Rationale |
| Exposure Area 2 Total Soil and Residue (0-10 ft) | Antimony, total | mg/kg | 1.3E+02 | 2.1E+02 | | 6.7E+02 | 2.1E+02 | mg/kg | 97.5% KM (Chebyshev) | (1) |
| | Arsenic, total | mg/kg | 1.9E+01 | 3.2E+01 | | 2.0E+02 | 3.2E+01 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Cadmium, total | mg/kg | 3.0E+01 | 5.2E+01 | | 2.8E+02 | 5.2E+01 | mg/kg | 97.5% KM (Chebyshev) | (1) |
| | Cobalt, total | mg/kg | 9.6E+01 | 2.0E+02 | | 8.8E+02 | 2.0E+02 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Copper, total | mg/kg | 2.9E+03 | 6.2E+03 | | 5.0E+04 | 6.2E+03 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Iron, total | mg/kg | 3.8E+04 | 4.7E+04 | T | 1.4E+05 | 4.7E+04 | mg/kg | 95% H-UCL | (4) |
| | Lead, total | mg/kg | 3.1E+03 | -- | | 6.5E+04 | 3.1E+03 | mg/kg | Average Detected Concentration | (6) |
| | Manganese, total | mg/kg | 7.6E+02 | 7.7E+02 | T | 1.9E+04 | 7.7E+02 | mg/kg | 95% H-UCL | (4) |
| | Nickel, total | mg/kg | 1.8E+03 | 4.0E+03 | | 1.8E+04 | 4.0E+03 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |
| | Thallium, total | mg/kg | 5.4E-01 | 5.4E-01 | | 2.1E+00 | 5.4E-01 | mg/kg | 95% KM (Percentile Bootstrap) | (1) |
| | Zinc, total | mg/kg | 7.6E+04 | 1.2E+05 | | 4.1E+05 | 1.2E+05 | mg/kg | 95% Chebyshev (Mean, Sd) | (1) |

ProUCL, Version 4.1.00 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate exposure point concentration, following recommendations based on distribution and standard deviation in users guide (USEPA. February 2011. ProUCL, Version 4.1.00. Prepared by Lockheed Martin Environmental Services).

(1) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).

(2) Shapiro-Wilk W/Lilliefors Test indicates data are normally distributed.

(3) Anderson-Darling and/or Kolmogorov-Smirnov Tests indicate data are gamma distributed.

(4) Shapiro-Wilk W/Lilliefors Test indicates data are log-normally distributed.

(5) The maximum detected concentration was used as the EPC because (a) there are less than 8 samples (b) there are less than 4 detects (c) the calculated UCL exceeded the maximum detected concentration.

(6) The detected mean concentration was used as the exposure point concentration for lead.

mg/kg= milligrams/kilogram

NR = Normal distribution.

T = Log-normal distribution.

G = Gamma distribution.

TABLE 3.7.a.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Ambient Air

| Exposure Point | Chemical of Potential Concern | Exposure Point Concentration in Soil | | Exposure Point Concentration in Ambient Air | |
|---|---|---|---|---|---|
| | | Value (1) | Units | Value (2) | Units |
| Exposure Area 2 Emissions from Total Soil and Residue | Antimony, total | 2.1E+02 | mg/kg | 2.2E-05 | $mg/m^3$ |
| | Arsenic, total | 3.2E+01 | mg/kg | 3.2E-06 | $mg/m^3$ |
| | Cadmium, total | 5.2E+01 | mg/kg | 5.2E-06 | $mg/m^3$ |
| | Cobalt, total | 2.0E+02 | mg/kg | 2.0E-05 | $mg/m^3$ |
| | Copper, total | 6.2E+03 | mg/kg | 6.2E-04 | $mg/m^3$ |
| | Iron, total | 4.7E+04 | mg/kg | 4.7E-03 | $mg/m^3$ |
| | Lead, total | 3.1E+03 | mg/kg | 3.1E-04 | $mg/m^3$ |
| | Manganese, total | 7.7E+02 | mg/kg | 7.8E-05 | $mg/m^3$ |
| | Nickel, total | 4.0E+03 | mg/kg | 4.0E-04 | $mg/m^3$ |
| | Thallium, total | 5.4E-01 | mg/kg | 5.4E-08 | $mg/m^3$ |
| | Zinc, total | 1.2E+05 | mg/kg | 1.2E-02 | $mg/m^3$ |

(1) Selection of exposure point concentrations presented on Table 3.8.RME.

(2) Ambient air exposure point concentration calculated for construction workers using a Particulate Emission Factor (PEF) of $9.97 \times 10^6$ $m^3/kg$ as shown below. Derivation of PEF is presented on Table 4 Supplement C-2.

Concentration in ambient air ($mg/m^3$) = Concentration in soil (mg/kg) / (PEF) ($m^3/kg$)

mg/kg= milligrams/kilogram
$mg/m^3$ = milligram per cubic meter

TABLE 4 RME Supplement A
DERMAL ABSORPTION FRACTION FROM SOIL
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc Site
Hillsboro, Illinois

| Chemical Group | CAS Number | Chemical | Dermal Absorption Fraction | Note |
|---|---|---|---|---|
| Metal | 7429-90-5 | Aluminum | NA | (1) |
| Metal | 7440-36-0 | Antimony | NA | (1) |
| Metal | 7440-38-2 | Arsenic | 0.03 | USEPA, 2004 |
| Metal | 7440-39-3 | Barium | NA | (1) |
| Metal | 7440-41-7 | Beryllium | NA | (1) |
| Metal | 7440-43-9 | Cadmium | 0.001 | USEPA, 2004 |
| Metal | 7440-47-3 | Chromium | NA | (1) |
| Metal | 7440-48-4 | Cobalt | NA | (1) |
| Metal | 7440-50-8 | Copper | NA | (1) |
| Metal | 7439-89-6 | Iron | NA | (1) |
| Metal | 7439-96-5 | Manganese | NA | (1) |
| Metal | 7440-02-0 | Nickel | NA | (1) |
| Metal | 7440-22-4 | Silver | NA | (1) |
| Metal | 7440-28-0 | Thallium | NA | (1) |
| Metal | 7440-62-2 | Vanadium | NA | (1) |
| Metal | 7440-66-6 | Zinc | NA | (1) |
| PAH | 50-32-8 | Benzo(a)pyrene | 0.13 | USEPA, 2004 (2) |
| VOC | 79-01-6 | Trichloroethylene (TCE) | NA | USEPA, 2004 (3) |

Notes:
Dermal Absorption Fractions are obtained from EPA RAGS Part E Exhibit 3-4 (USEPA, 2004)

(1) No default dermal absorption values are currently available for inorganics due to the lack of speciation-specific absorption data. Therefore, consistent with EPA RAGS Part E (USEPA, 2004) and RSL Table (USEPA, 2011), dermal exposure is not assessed for these constituents.

(2) Dermal absorption fraction for benzo(a)pyrene.
(3) No default dermal absorption values are available for volatile inorganic chemicals.

Sources:
USEPA, 2004: 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. July 2004.
USEPA, 2011: Regional Screening Levels for Chemical Contaminants at Superfund Sites.

TABLE 4 RME Supplement B-1
Particulate Emission Factor - Trespasser, Industrial Worker
Eagle Zinc
Hillsboro, Illinois

**PEF Equations:**

$$Q/C_{wind} = A \times \exp\left[\frac{(\ln A_{site} - B)^2}{C}\right]$$

**Exhibit D-2 (USEPA, 2002)**

$$PEF = Q/C_{wind} \times \frac{3{,}600 \text{sec/hr}}{0.036 \times (1-V) \times \left(U_m/U_t\right)^3 \times F(x)}$$

**Equation 4-5 (USEPA, 2002)**

**PEF and Box Model Input Parameters**

| Parameter | Definition | Value | Units | Source |
|---|---|---|---|---|
| $Q/C_{wind}$ | inverse ratio of the geometric mean air concentration to the emission flux at the center of a square source | **98** | m | calculated |
| A | Constant for Zone 7 (Chicago, IL) | 16.8653 | unitless | Exhibit D-2 (USEPA, 2002) |
| B | Constant for Zone 7 (Chicago, IL) | 18.7848 | unitless | Exhibit D-2 (USEPA, 2002) |
| C | Constant for Zone 7 (Chicago, IL) | 215.0624 | unitless | Exhibit D-2 (USEPA, 2002) |
| $A_{site}$ | Areal extent of site contamination | 0.5 | acres | site-specific |
| PEF | particulate emission factor | **1.86E+09** | $m^3$/kg | calculated |
| V | fraction of vegetative cover | 0.5 | unitless | Default (Eqn. 4-5) |
| Um | mean annual windspeed | 4.29 | m/s | NCDC (2010) |
| Ut | equivalent threshold value of windspeed at 7 m | 11.32 | m/s | Default (Eqn. 4-5) |
| F(x) | function dependent on Um/Ut derived using Cowherd et al. (1985) | 0.194 | unitless | Default (Eqn. 4-5) |

Sources:

USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, EPA Office of Solid Waste and Emergency Response. OSWER 9355.4-24. December.

Mean annual windspeed for Indianapolis, Indiana from National Climatic Data Center (NCDC) website:
http://lwf.ncdc.noaa.gov/oa/climate/online/ccd/avgwind.html

Table 4 RME Supplement B-2
Particulate Emission Factor - Construction Worker
Eagle Zinc
Hillsboro, Illinois

**PEF Equations:**

$$Q/C_{Sr} = A \times \exp\left[\frac{(\ln A_{site} - B)^2}{C}\right]$$

**Equation 5-6 (USEPA, 2002)**

$$PEF_{SC} = Q/C_{Sr} \times \frac{1}{F_D} \frac{T \times A_R}{556 \times (W/3)^{0.4} \times \left(\frac{365\ d/yr - p}{365\ d/yr}\right) \times \sum VKT}$$

**Equation 5-5 (USEPA, 2002)**

$$F_D = 0.1852 + \frac{5.3537}{t_c} + \frac{-9.6318}{t_c^{\ 2}}$$

**Equation E-16 (USEPA, 2002)**

**PEF and Box Model Input Parameters**

| Parameter | Definition | Value | Units | Source |
|---|---|---|---|---|
| $Q/C_{Sr}$ | inverse ratio of the geometric mean air concentration to the emission flux at the center of a square source | **23.0** | m | calculated |
| A | Constant | 12.9351 | unitless | default (Eqn. 5-6) |
| B | Constant | 5.7383 | unitless | default (Eqn. 5-6) |
| C | Constant | 71.7711 | unitless | default (Eqn. 5-6) |
| $A_{site}$ | Areal extent of site contamination | 0.5 | acres | site-specific |
| $PEF_{SC}$ | subchronic road particulate emission factor | **9.97E+06** | $m^3$/kg | calculated |
| $F_D$ | Dispersion correction factor | 0.188 | unitless | calculated |
| $t_c$ | duration of construction (250 days for 8 hr/day) | 2,000 | hr | assumed |
| T | total time over which construction occurs ($t_c$ x 3600 s/hr) | 7,200,000 | s | assumed |
| $A_R$ | surface area of contaminated road segment (square root of site surface contamination configured as a square x default width of road segment of 20 ft) | 274.18 | $m^2$ | calculated |
| W | mean weight of vehicle [(1 car @ 2 tons/car) + (2 trucks @ 20 tons/truck)] / 3 vehicles) | 14 | tons | assumed |
| p | number of days with at least 0.01 inches of precipitation (based on measured 2005 data) | 110 | days/yr | Exhibit 5-2. (EPA, 2002) |
| VKT | sum of fleet vehicle kilometers traveled during the exposure duration (assumed 3 vehicles x 0.045km/day x 250 days) | 33.7 | km | assumed |

Source:

USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, EPA Office of Solid Waste and Emergency Response. OSWER 9355.4-24. December.

TABLE 4.1.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Current
Medium: Soil and Residue
Exposure Medium: Surface Soil and Residue (0-2 ft)

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Trespasser | Adolescent | Exposure Area 2 Surface Soil and Residue (0-2 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | IR-S | Ingestion Rate of Soil | 100 | mg/day | USEPA, 2002 | CS x IR-S x EF x ED x CF x 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 52 | days/year | (1) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 39 | kg | USEPA 2004 (2) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (3) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (4) | |
| Dermal | Trespasser | Adolescent | Exposure Area 2 Surface Soil and Residue (0-2 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | SA | Skin Surface Area Available for Contact | 4,100 | $cm^2$ | USEPA, 2004 (5) | CS x SA x SSAF x DABS x CF x EF x |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.2 | $mg/cm^2$-day | USEPA, 2004 | ED x 1/BW x 1/AT |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 52 | days/year | (1) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | BW | Body Weight | 39 | kg | USEPA 2004 (2) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (3) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (4) | |

Notes:
(1) Based on best professional judgment.
(2) Adolescents from 6 to 16 years of age. Body weight is average of the mean values for boys and girls for the ages 6 through 16.
(3) Calculated as the product of ED (years) x 365 days/year.
(4) Calculated as the product of 70 years assumed human lifetime (EPA, 1989) x 365 days/year.
(5) SA includes head, hands, forearms, and lower legs.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
USEPA, 2004. Risk Assessment Guidance for Superfund (RAGS) Volume I: Human Health Evaluation Manual. Part E Supplemental Guidance for Dermal Risk Assessment) Final.

$cm^2$ = Square centimeter
kg = Kilogram
kg/mg = Kilogram per milligram
mg/kg = Milligram per kilogram
mg/kg-day = Milligram per kilogram per day
$mg/cm^2$-day = Milligram per square centimeter per day
mg/day = Milligram per day

TABLE 4.2.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Current
Medium: Soil and Residue
Exposure Medium: Ambient Air

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Inhalation | Trespasser | Adolescent | Emissions from Surface Soil and Residue | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | Exposure Concentration (EC) ($mg/m^3$) = |
| | | | | CA | Chemical Concentration in Air | calculated | $mg/m^3$ | See Table 3s.RME | CA x ET x EF x ED x CF x 1/AT |
| | | | | PEF | Particulate Emission Factor | 1.86E+09 | $m^3/kg$ | See Table 4 Suppl B-1 | |
| | | | | ET | Exposure Time | 4 | hr/day | (1) | CA ($mg/m^3$) = CS (1/PEF) |
| | | | | EF | Exposure Frequency | 52 | days/year | (1) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | CF | Conversion Factor 1 | 1/24 | day/hr | - - | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (2) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (3) | |

Notes:

(1) Based on best professional judgment.

(2) Calculated as the product of ED (years) x 365 days/year.

(3) Calculated as the product of 70 years assumed human lifetime (EPA, 1989) x 365 days/year.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.

mg/kg = Milligram per kilogram

$mg/m^3$ = Milligram per cubic meter

$m^3/kg$ = Cubic meter per kilogram

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current & Current/Future
Medium: Sediment
Exposure Medium: Sediment

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Trespasser | Adolescent | Onsite Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | IR-Sed | Ingestion Rate of Sediment | 10 | mg/day | USEPA, 1991 (1) | $C_{sed}$ x IR-Sed x EF x ED x CF x 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 52 | days/year | (2) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 39 | kg | USEPA 2004 (3) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (4) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | |
| | Recreational User | Adult | Offsite Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | IR-Sed | Ingestion Rate of Sediment | 10 | mg/day | USEPA, 2002 (1) | $C_{sed}$ x IR-Sed x EF x ED x CF x 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 8,760 | days | (4) | |
| | | Child | Offsite Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | IR-Sed | Ingestion Rate of Sediment | 20 | mg/day | USEPA, 2002 (1) | $C_{sed}$ x IR-Sed x EF x ED x CF x 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 15 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 2,190 | days | (4) | |
| | | Child/Adult | Offsite Sediment | CS | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | IR-S-Adj | Ingestion Rate of Sediment, Age-adjusted | 11.43 | mg-year/kg-day | calculated | CS x IR-S-Adj x EF x CF x 1/AT |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | IR-S-Adj (mg-year/kg-day) = |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | (ED-C x IR-S-C / BW-C) + (ED-A x IR-S-A / BW-A) |
| Dermal | Trespasser | Adolescent | Onsite Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | SA | Skin Surface Area Available for Contact | 5,000 | $cm^2$ | USEPA, 2004 (7) | $C_{sed}$ x SA x SSAF x DABS x CF x EF x |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.2 | $mg/cm^2$-day | USEPA, 2004 (8) | ED x 1/BW x 1/AT |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 52 | days/year | (2) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | BW | Body Weight | 39 | kg | USEPA 2004 (3) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (4) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | |

TABLE 4.3.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Current & Current/Future
Medium: Sediment
Exposure Medium: Sediment

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| | Recreational User | Adult | Offsite Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | SA | Skin Surface Area Available for Contact | 5,700 | $cm^2$ | USEPA, 2004 (9) | $C_{sed}$ x SA x SSAF x DABS x CF x EF x |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.2 | $mg/cm^2$-day | USEPA, 2004 (8) | ED x 1/BW x 1/AT |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 70 | kg | USEPA 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 8,760 | days | (4) | |
| | | Child | Offsite Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | SA | Skin Surface Area Available for Contact | 2,800 | $cm^2$ | USEPA, 2004 (7) | $C_{sed}$ x SA x SSAF x DABS x CF x EF x |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.2 | $mg/cm^2$-day | USEPA, 2004 (8) | ED x 1/BW x 1/AT |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 15 | kg | USEPA 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 2,190 | days | (4) | |
| | | Child/Adult | Offsite Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | DA-Adj | Dermal Absorption, Age-adjusted | 615 | mg-year/kg-day | calculated | CS x DA-Adj x DABS x CF x EF x 1/AT |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | DA-Adj (mg-year/kg-day) = |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | (ED-C x SA-C x SSAF-C / BW-C) + (ED-A x SA-A x |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | SSAF-A / BW-A) |

Notes:
(1) Assumed sediment ingestion rate is equal to 1/10 of the incidental soil ingestion rate.
(2) Values based on professional judgment assuming 1 days per week for 52 weeks per year.
(3) Adolescents from 6 to 16 years of age. Body weight is average of the mean values for boys and girls for the ages 6 through 16.
(4) Calculated as the product of ED (years) x 365 days/year.
(5) Calculated as the product of 70 years assumed human lifetime (EPA, 1989) x 365 days/year.
(6) Values based on professional judgment assuming 2 days per week for 52 weeks per year.
(7) SA includes head, hands, forearms, lower legs, and feet.
(8) Adherence factor for children playing in wet soil, based on the geometric mean (Exhibit C-3 [EPA, 2004]).
(9) SA includes head, hands, forearms, and lower legs.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
USEPA, 2004: Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment (Final). EPA/540/R/99/005. July 2004.

TABLE 4.4.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current & Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Trespasser | Adolescent | Onsite Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | IR-SW | Ingestion Rate of Water | 0.01 | L/hr | USEPA, 1989 (1) | CSW x IR-SW x ET x EF x ED x CF1 x |
| | | | | ET | Exposure Time | 4 | hr/day | (2) | 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 52 | days/year | (2) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | mg/µg | - - | |
| | | | | BW | Body Weight | 39 | kg | USEPA, 2004 (3) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (4) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | |
| | Recreational User | Adult | Offsite Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | IR-SW | Ingestion Rate of Water | 0.01 | L/hr | USEPA, 1989 (1) | CSW x IR-SW x ET x EF x ED x CF1 x |
| | | | | ET | Exposure Time | 4 | hr/day | (6) | 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 2002 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | mg/µg | - - | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 8,760 | days | (4) | |
| | | Child | Offsite Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | IR-SW | Ingestion Rate of Surface Water | 0.01 | L/hr | USEPA, 1989 (1) | CSW x IR-SW x ET x EF x ED x CF1 x |
| | | | | ET | Exposure Time | 4 | hr/day | (6) | 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 2002 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | mg/µg | - - | |
| | | | | BW | Body Weight | 15 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 2,190 | days | (4) | |
| | | Child/Adult Aggregate | Offsite Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day)= |
| | | | | IR-SW-Adj | Ingestion Rate of Surface Water, Age-adjusted | 0.03 | L-years/day-kg | calculated | CSW x IR-SW-Adj x EF x CF1 x 1/AT-C |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | mg/µg | - - | IR-SW-Adj = ($IR\text{-}SW_a$ x $ET_a$ x $ED_a/BW_a$) |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | + ($IR\text{-}SW_c$ x $ET_c$ x $ED_c/BW_c$) |

TABLE 4.4.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current & Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal | Trespasser | Adolescent | Onsite Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | DAevent | Dermally Absorbed Dose per Event | calculated | mg/cm$^2$-event | See Table 7s.RME | DAevent x SA x EV x EF x ED x 1/BW x 1/AT |
| | | | | SA | Skin Surface Area Available for Contact | 5,000 | cm$^2$ | USEPA, 2004 (7) | |
| | | | | EV | Event Frequency | 1 | events/day | USEPA, 2004 | |
| | | | | $t_{event}$ | Event Duration | 4 | hr/event | (2) | |
| | | | | EF | Exposure Frequency | 52 | days/year | (2) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | BW | Body Weight | 39 | kg | USEPA, 2004 (3) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (4) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | |
| | Recreational User | Adult | Offsite Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | DAevent | Dermally Absorbed Dose per Event | calculated | mg/cm$^2$-event | See Table 7s.RME | DAevent x SA x EV x EF x ED x 1/BW x 1/AT |
| | | | | SA | Skin Surface Area Available for Contact | 5,700 | cm$^2$ | USEPA, 2004 (8) | |
| | | | | EV | Event Frequency | 1 | events/day | USEPA, 2004 | |
| | | | | $t_{event}$ | Event Duration | 4 | hr/event | (6) | |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 8,760 | days | (4) | |
| | | Child | Offsite Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | DAevent | Dermally Absorbed Dose per Event | calculated | mg/cm$^2$-event | See Table 7s.RME | DAevent x SA x EV x EF x ED x 1/BW x 1/AT |
| | | | | SA | Skin Surface Area Available for Contact | 2,800 | cm$^2$ | USEPA, 2004 (7) | |
| | | | | EV | Event Frequency | 1 | events/day | USEPA, 2004 | |
| | | | | $t_{event}$ | Event Duration | 4 | hr/event | (6) | |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 15 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 2,190 | days | (4) | |

TABLE 4.4.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Current & Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal (cont.) | Recreational User | Child/Adult Aggregate | Offsite Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/l | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | DA-Adj | Dermally Absorbed Dose, Age-adjusted | calculated | mg-year/event-kg | See Table 7s.RME | DA-Adj x EF x EV x 1/AT |
| | | | | EV | Event Frequency | 1 | events/day | USEPA, 2004 | DA-Adj = (DAevent-A x SA-A x ED-A x 1/BW-A) |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | + (Daevent-C x SA-C x ED-C x 1/BW-C) |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | |
| | | | | FA | Fraction absorbed water | chemical-specific | dimensionless | USEPA, 2004 | Organics: DAevent (mg/cm$^2$-event) = |
| | | | | $K_p$ | Permeability Coefficient | chemical-specific | cm/hr | USEPA, 2004 | $t_{event}$<t*: DAevent (mg/cm$^2$-event) = |
| | | | | $\tau_{event}$ | Lag Time per event | chemical-specific | hr/event | USEPA, 2004 | 2 x FA x $K_p$ x $C_{sw}$ x (sqrt((6 x $\tau_{event}$ x $t_{event}$)/π)) |
| | | | | t* | Time to Reach Steady-state | chemical-specific | hours | USEPA, 2004 | x CF1 x CF2 |
| | | | | B | Ratio of Permeability of Stratum Corneum to Epidermis | chemical-specific | dimensionless | USEPA, 2004 | $t_{event}$>t*: DAevent (mg/cm$^2$-event) = |
| | | | | CF1 | Conversion Factor 1 | 0.001 | mg/µg | - - | FA x $K_p$ x $C_{sw}$ x ( $t_{event}$/(1+B) + 2 x $\tau_{event}$ x |
| | | | | CF2 | Conversion Factor 2 | 0.001 | L/cm$^3$ | - - | ((1 + 3B + 3B$^2$)/(1+B)$^2$)) x CF1 x CF2 |
| | | | | | | | | | Inorganics: DAevent (mg/cm$^2$-event) = |
| | | | | | | | | | Kp x CW x $t_{event}$ x CF1 x CF2 |

Notes:

(1) Best professional judgment. Water is only deep enough for wading. Assumed 20% of swimming value [0.05 L/hr (USEPA, 1989)].
(2) Values based on professional judgment assuming 4 hour per day and 1 days per week for 52 weeks per year.
(3) Adolescents from 6 to 16 years of age. Body weight is average of the mean values for boys and girls for the ages 6 through 16.
(4) Calculated as the product of ED (years) x 365 days/year.
(5) Calculated as the product of 70 years assumed human lifetime (EPA, 1989) x 365 days/year.
(6) Values based on professional judgment assuming 4 hour per day and 2 days per week for 52 weeks per year.
(7) Surface area includes head, hands, forearms, lower legs, and feet.
(8) SA includes head, hands, forearms, and lower legs.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
USEPA, 2004: Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment (Final). EPA/540/R/99/005. July 2004.

TABLE 4.5.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Surface Soil and Residue (0-2 ft)

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Industrial Worker | Adult | Exposure Area 2 Surface Soil and Residue (0-2 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR-S x EF x ED x CF x 1/BW x 1/AT |
| | | | | IR-S | Ingestion Rate of Soil | 100 | mg/day | USEPA, 2002 | |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 25 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 9125 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25550 | days | (2) | |
| Dermal | Industrial Worker | Adult | Exposure Area 2 Surface Soil and Residue (0-2 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = CS x SA x SSAF x DABS x CF x EF x ED x 1/BW x 1/AT |
| | | | | SA | Skin Surface Area Available for Contact | 3,300 | $cm^2$ | USEPA, 2004 (3) | |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.2 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 25 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 9,125 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |

Notes:
(1) Calculated as the product of ED (years) x 365 days/year.
(2) Calculated as the product of 70 years assumed human lifetime (USEPA, 1989) x 365 days/year.
(3) SA includes head, hands, and forearms.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
USEPA, 2004: Risk Assessment Guidance for Superfund (RAGS) Volume I: Human Health Evaluation Manual. Part E Supplemental Guidance for Dermal Risk Assessment) Final.

$cm^2$ = Square centimeter
kg = Kilogram
kg/mg = Kilogram per milligram
$mg/cm^2$-day = Milligram per square centimeter per day
mg/day = Milligram per day
mg/kg = Milligram per kilogram
mg/kg-day = Milligram per kilogram per day

TABLE 4.6.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Ambient Air

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Inhalation | Industrial Worker | Adult | Emissions from Surface Soil and Residue | CS | Chemical Concentration in Soil | See Table 3s RME | mg/kg | See Table 3s RME | Exposure Concentration ($mg/m^3$) = |
| | | | | CA | Chemical Concentration in Air | See Table 3s RME | $mg/m^3$ | See Table 3s RME | CA x ET x EF x ED x CF x 1/AT |
| | | | | PEF | Particulate Emission Factor | 1.86E+09 | $m^3/kg$ | See Table 4 Suppl B-1 | |
| | | | | ET | Exposure Time | 8 | hr/day | USEPA, 2011 | CA ($mg/m^3$) = CS (1/PEF) |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 25 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 1/24 | day/hr | - - | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 9,125 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |

Notes:
(1) Calculated as the product of ED (years) x 365 days/year.
(2) Calculated as the product of 70 years assumed human lifetime (USEPA, 1989) x 365 days/year.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
USEPA, 2011: Regional Screening Levels for Chemical Contaminants at Superfund Sites.

mg/kg = Milligram per kilogram
$mg/m^3$ = Milligram per cubic meter
$m^3/kg$ = Cubic meters per kilogram

TABLE 4.7.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Industrial Worker | Adult | Onsite Groundwater | CW | Chemical Concentration in Water | See Table 3s.RME | µg/L | See Table 3s.RME | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | IR-W | Ingestion Rate of Water | 1 | L/day | USEPA, 1991 | CW x IR-W x EF x ED x CF x 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 25 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 0.001 | mg/µg | - - | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 9,125 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |
| Dermal | Industrial Worker | Adult | Onsite Groundwater | CW | Chemical Concentration in Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | $DA_{event}$ | Dermally Absorbed Dose per Event | calculated | $mg/cm^2$-event | calculated | DAevent x SA x EV x EF x ED x 1/BW x 1/AT |
| | | | | $t_{event}$ | Event Duration | 0.58 | hr/event | (3) | |
| | | | | SA | Skin Surface Area Available for Contact | 18,000 | $cm^2$ | USEPA, 2004 | |
| | | | | EV | Event Frequency | 1 | events/day | USEPA, 1991 | |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 25 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 9,125 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |
| | | | | FA | Fraction absorbed water | chemical-specific | dimensionless | USEPA, 2004 | Organics: DAevent ($mg/cm^2$-event) = |
| | | | | $K_p$ | Permeability Coefficient | chemical-specific | cm/hr | USEPA, 2004 | $t_{event} \leq t^*$: DAevent ($mg/cm^2$-event) = |
| | | | | $\tau_{event}$ | Lag Time per event | chemical-specific | hr/event | USEPA, 2004 | $2 \times FA \times K_p \times C_w \times (sqrt((6 \times \tau_{event} \times t_{event})/\pi))$ |
| | | | | t* | Time to Reach Steady-state | chemical-specific | hours | USEPA, 2004 | x CF1 x CF2 |
| | | | | B | Ratio of Permeability of Stratum Corneum to Epidermis | chemical-specific | dimensionless | USEPA, 2004 | $t_{event} > t^*$: DAevent ($mg/cm^2$-event) = |
| | | | | CF1 | Conversion Factor 1 | 0.001 | mg/µg | - - | $FA \times K_p \times C_w \times ( t_{event}/(1+B) + 2 \times \tau_{event} \times$ |
| | | | | CF2 | Conversion Factor 2 | 0.001 | $L/cm^3$ | - - | $((1 + 3B + 3B^2)/(1+B)^2)) \times CF1 \times CF2$ |
| | | | | | | | | | Inorganics: DAevent ($mg/cm^2$-event) = |
| | | | | | | | | | $K_p \times C_w \times t_{event} \times CF1 \times CF2$ |

Notes:
(1) Calculated as the product of ED (years) x 365 days/year.
(2) Calculated as the product of 70 years assumed human lifetime (EPA, 1989) x 365 days/year.
(3) EPA Region 2 and the Andelman model as modified by Schaum et. al.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
USEPA, 2004: Risk Assessment Guidance for Superfund (RAGS) Volume I: Human Health Evaluation Manual. Part E Supplemental Guidance for Dermal Risk Assessment) Final.

TABLE 4.8.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Total Soil and Residue (0-10 ft)

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Construction Worker | Adult | Exposure Area 2 Total Soil and Residue (0-10 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | Subchronic Daily Intake (SDI) (mg/kg-day) = |
| | | | | IR-S | Ingestion Rate of Soil | 330 | mg/day | USEPA, 2002 | CS x IR-S x EF x ED x CF x 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 1 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 365 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |
| Dermal | Construction Worker | Adult | Exposure Area 2 Total Soil and Residue (0-10 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | SDI (mg/kg-day) = |
| | | | | SA | Skin Surface Area Available for Contact | 3,300 | $cm^2$ | USEPA, 2004 (3) | CS x SA x SSAF x DABS x CF x EF x |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.3 | $mg/cm^2$-day | USEPA, 2004 | ED x 1/BW x 1/AT |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 1 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 365 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |

Notes:
(1) Calculated as the product of ED (years) x 365 days/year.
(2) Calculated as the product of 70 years assumed human lifetime (USEPA, 1989) x 365 days/year.
(3) SA includes head, hands, and forearms.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
USEPA, 2004: Risk Assessment Guidance for Superfund (RAGS) Volume I: Human Health Evaluation Manual. Part E Supplemental Guidance for Dermal Risk Assessment) Final.

$cm^2$ = Square centimeter
kg = Kilogram
kg/mg = Kilogram per milligram
$mg/cm^2$-day = Milligram per square centimeter per day
mg/day = Milligram per day
mg/kg = Milligram per kilogram
mg/kg-day = Milligram per kilogram per day

TABLE 4.9.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Ambient Air

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Inhalation | Construction Worker | Adult | Emissions from Total Soil and Residue | CS | Chemical Concentration in Soil | See Table 3s RME | mg/kg | See Table 3s RME | Exposure Concentration (EC) ($mg/m^3$) = |
| | | | | CA | Chemical Concentration in Air | See Table 3s RME | $mg/m^3$ | See Table 3s RME | CA x ET x EF x ED x CF x 1/AT |
| | | | | PEF | Particulate Emission Factor | 9.97E+06 | $m^3/kg$ | See Table 4 Suppl B-2 | |
| | | | | ET | Exposure Time | 8 | hr/day | USEPA, 2011 | CA ($mg/m^3$) = CS (1/PEF) |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 1 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 1/24 | day/hr | - - | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 365 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |

Notes:
(1) Calculated as the product of ED (years) x 365 days/year.
(2) Calculated as the product of 70 years assumed human lifetime (USEPA, 1989) x 365 days/year.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
USEPA, 2011: Regional Screening Levels for Chemical Contaminants at Superfund Sites.

mg/kg = Milligram per kilogram
$mg/m^3$ = Milligram per cubic meter
$m^3/kg$ = Cubic meters per kilogram

TABLE 4.1.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Current
Medium: Soil and Residue
Exposure Medium: Surface Soil and Residue (0-2 ft)

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Trespasser | Adolescent | Exposure Area 2 Surface Soil and Residue (0-2 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | IR-S | Ingestion Rate of Soil | 100 | mg/day | USEPA, 2002 | CS x IR-S x EF x ED x CF x 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 52 | days/year | (1) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 39 | kg | USEPA 2004 (2) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (3) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (4) | |
| Dermal | Trespasser | Adolescent | Exposure Area 2 Surface Soil and Residue (0-2 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | SA | Skin Surface Area Available for Contact | 4,100 | $cm^2$ | USEPA, 2004 (5) | CS x SA x SSAF x DABS x CF x EF x |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.2 | $mg/cm^2$-day | USEPA, 2004 | ED x 1/BW x 1/AT |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 52 | days/year | (1) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | BW | Body Weight | 39 | kg | USEPA 2004 (2) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (3) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (4) | |

Notes:
(1) Based on best professional judgment.
(2) Adolescents from 6 to 16 years of age. Body weight is average of the mean values for boys and girls for the ages 6 through 16.
(3) Calculated as the product of ED (years) x 365 days/year.
(4) Calculated as the product of 70 years assumed human lifetime (EPA, 1989) x 365 days/year.
(5) SA includes head, hands, forearms, and lower legs.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
USEPA, 2004. Risk Assessment Guidance for Superfund (RAGS) Volume I: Human Health Evaluation Manual. Part E Supplemental Guidance for Dermal Risk Assessment) Final.

$cm^2$ = Square centimeter
kg = Kilogram
kg/mg = Kilogram per milligram
mg/kg = Milligram per kilogram
mg/kg-day = Milligram per kilogram per day
$mg/cm^2$-day = Milligram per square centimeter per day
mg/day = Milligram per day

TABLE 4.2.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Current
Medium: Soil and Residue
Exposure Medium: Ambient Air

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Inhalation | Trespasser | Adolescent | Emissions from Surface Soil and Residue | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | Exposure Concentration (EC) ($mg/m^3$) = |
| | | | | CA | Chemical Concentration in Air | calculated | $mg/m^3$ | See Table 3s.RME | CA x ET x EF x ED x CF x 1/AT |
| | | | | PEF | Particulate Emission Factor | 1.86E+09 | $m^3/kg$ | See Table 4 Suppl B-1 | |
| | | | | ET | Exposure Time | 4 | hr/day | (1) | CA ($mg/m^3$) = CS (1/PEF) |
| | | | | EF | Exposure Frequency | 52 | days/year | (1) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | CF | Conversion Factor 1 | 1/24 | day/hr | - - | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (2) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (3) | |

Notes:

(1) Based on best professional judgment.

(2) Calculated as the product of ED (years) x 365 days/year.

(3) Calculated as the product of 70 years assumed human lifetime (EPA, 1989) x 365 days/year.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.

mg/kg = Milligram per kilogram

$mg/m^3$ = Milligram per cubic meter

$m^3/kg$ = Cubic meter per kilogram

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current & Current/Future
Medium: Sediment
Exposure Medium: Sediment

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Trespasser | Adolescent | On-Site Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | IR-Sed | Ingestion Rate of Sediment | 10 | mg/day | USEPA, 1991 (1) | $C_{sed}$ x IR-Sed x EF x ED x CF x 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 52 | days/year | (2) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 39 | kg | USEPA 2004 (3) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (4) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | |
| | Recreational User | Adult | Off-Site Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | IR-Sed | Ingestion Rate of Sediment | 10 | mg/day | USEPA, 2002 (1) | $C_{sed}$ x IR-Sed x EF x ED x CF x 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 8,760 | days | (4) | |
| | | Child | Off-Site Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | IR-Sed | Ingestion Rate of Sediment | 20 | mg/day | USEPA, 2002 (1) | $C_{sed}$ x IR-Sed x EF x ED x CF x 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 15 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 2,190 | days | (4) | |
| | | Child/Adult | Off-Site Sediment | CS | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | IR-S-Adj | Ingestion Rate of Sediment, Age-adjusted | 11.43 | mg-year/kg-day | calculated | CS x IR-S-Adj x EF x CF x 1/AT |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | IR-S-Adj (mg-year/kg-day) = |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | (ED-C x IR-S-C / BW-C) + (ED-A x IR-S-A / BW-A) |

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro, Illinois

Scenario Timeframe: Current & Current/Future
Medium: Sediment
Exposure Medium: Sediment

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal | Trespasser | Adolescent | On-Site Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | SA | Skin Surface Area Available for Contact | 5,000 | $cm^2$ | USEPA, 2004 (7) | $C_{sed}$ x SA x SSAF x DABS x CF x EF x |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.2 | $mg/cm^2$-day | USEPA, 2004 (8) | ED x 1/BW x 1/AT |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 52 | days/year | (2) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | BW | Body Weight | 39 | kg | USEPA 2004 (3) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (4) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | |
| | Recreational User | Adult | Off-Site Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | SA | Skin Surface Area Available for Contact | 5,700 | $cm^2$ | USEPA, 2004 (9) | $C_{sed}$ x SA x SSAF x DABS x CF x EF x |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.2 | $mg/cm^2$-day | USEPA, 2004 (8) | ED x 1/BW x 1/AT |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 70 | kg | USEPA 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 8,760 | days | (4) | |
| | | Child | Off-Site Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | SA | Skin Surface Area Available for Contact | 2,800 | $cm^2$ | USEPA, 2004 (7) | $C_{sed}$ x SA x SSAF x DABS x CF x EF x |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.2 | $mg/cm^2$-day | USEPA, 2004 (8) | ED x 1/BW x 1/AT |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 15 | kg | USEPA 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 2,190 | days | (4) | |
| | | Child/Adult | Off-Site Sediment | $C_{sed}$ | Chemical Concentration in Sediment | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | DA-Adj | Dermal Absorption, Age-adjusted | 615 | mg-year/kg-day | calculated | CS x DA-Adj x DABS x CF x EF x 1/AT |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | DA-Adj (mg-year/kg-day) = |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | (ED-C x SA-C x SSAF-C / BW-C) + (ED-A x SA-A x SSAF-A / BW-A) |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | |

TABLE 4.3.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Current & Current/Future

Medium: Sediment

Exposure Medium: Sediment

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|

Notes:

(1) Assumed sediment ingestion rate is equal to 1/10 of the incidental soil ingestion rate.

(2) Values based on professional judgment assuming 1 days per week for 52 weeks per year.

(3) Adolescents from 6 to 16 years of age. Body weight is average of the mean values for boys and girls for the ages 6 through 16.

(4) Calculated as the product of ED (years) x 365 days/year.

(5) Calculated as the product of 70 years assumed human lifetime (EPA, 1989) x 365 days/year.

(6) Values based on professional judgment assuming 2 days per week for 52 weeks per year.

(7) SA includes head, hands, forearms, lower legs, and feet.

(8) Adherence factor for children playing in wet soil, based on the geometric mean (Exhibit C-3 [EPA, 2004]).

(9) SA includes head, hands, forearms, and lower legs.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.

USEPA, 2004: Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment (Final). EPA/540/R/99/005. July 2004.

TABLE 4.4.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Current & Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Trespasser | Adolescent | On-Site Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | Chronic Daily Intake (CDI) (mg/kg-day) = |
| | | | | IR-SW | Ingestion Rate of Water | 0.01 | L/hr | USEPA, 1989 (1) | CSW x IR-SW x ET x EF x ED x CF1 x |
| | | | | ET | Exposure Time | 4 | hr/day | (2) | 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 52 | days/year | (2) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | mg/µg | - - | |
| | | | | BW | Body Weight | 39 | kg | USEPA, 2004 (3) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (4) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | |
| | Recreational User | Adult | Off-Site Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | IR-SW | Ingestion Rate of Water | 0.01 | L/hr | USEPA, 1989 (1) | CSW x IR-SW x ET x EF x ED x CF1 x |
| | | | | ET | Exposure Time | 4 | hr/day | (6) | 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 2002 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | mg/µg | - - | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 8,760 | days | (4) | |
| | | Child | Off-Site Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | IR-SW | Ingestion Rate of Surface Water | 0.01 | L/hr | USEPA, 1989 (1) | CSW x IR-SW x ET x EF x ED x CF1 x |
| | | | | ET | Exposure Time | 4 | hr/day | (6) | 1/BW x 1/AT |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 2002 | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | mg/µg | - - | |
| | | | | BW | Body Weight | 15 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 2,190 | days | (4) | |
| | | Child/Adult Aggregate | Off-Site Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day)= |
| | | | | IR-SW-Adj | Ingestion Rate of Surface Water, Age-adjusted | 0.03 | L-years/day-kg | calculated | CSW x IR-SW-Adj x EF x CF1 x 1/AT-C |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | CF1 | Conversion Factor 1 | 0.001 | mg/µg | - - | IR-SW-Adj = ($IR\text{-}SW_a$ x $ET_a$ x $ED_a/BW_a$) |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | + ($IR\text{-}SW_c$ x $ET_c$ x $ED_c/BW_c$) |

TABLE 4.4.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Current & Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal | Trespasser | Adolescent | On-Site Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | DAevent | Dermally Absorbed Dose per Event | calculated | mg/cm$^2$-event | See Table 7s.RME | DAevent x SA x EV x EF x ED x 1/BW x 1/AT |
| | | | | SA | Skin Surface Area Available for Contact | 5,000 | cm$^2$ | USEPA, 2004 (7) | |
| | | | | EV | Event Frequency | 1 | events/day | USEPA, 2004 | |
| | | | | $t_{event}$ | Event Duration | 4 | hr/event | (2) | |
| | | | | EF | Exposure Frequency | 52 | days/year | (2) | |
| | | | | ED | Exposure Duration | 10 | years | USEPA, 1991 | |
| | | | | BW | Body Weight | 39 | kg | USEPA, 2004 (3) | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 3,650 | days | (4) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | |
| | Recreational User | Adult | Off-Site Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | DAevent | Dermally Absorbed Dose per Event | calculated | mg/cm$^2$-event | See Table 7s.RME | DAevent x SA x EV x EF x ED x 1/BW x 1/AT |
| | | | | SA | Skin Surface Area Available for Contact | 5,700 | cm$^2$ | USEPA, 2004 (8) | |
| | | | | EV | Event Frequency | 1 | events/day | USEPA, 2004 | |
| | | | | $t_{event}$ | Event Duration | 4 | hr/event | (6) | |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 24 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 8,760 | days | (4) | |
| | | Child | Off-Site Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/L | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | DAevent | Dermally Absorbed Dose per Event | calculated | mg/cm$^2$-event | See Table 7s.RME | DAevent x SA x EV x EF x ED x 1/BW x 1/AT |
| | | | | SA | Skin Surface Area Available for Contact | 2,800 | cm$^2$ | USEPA, 2004 (7) | |
| | | | | EV | Event Frequency | 1 | events/day | USEPA, 2004 | |
| | | | | $t_{event}$ | Event Duration | 4 | hr/event | (6) | |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | |
| | | | | ED | Exposure Duration | 6 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 15 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 2,190 | days | (4) | |

TABLE 4.4.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Current & Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Dermal (cont.) | Recreational User | Child/Adult Aggregate | Off-Site Surface Water | $C_{sw}$ | Chemical Concentration in Surface Water | See Table 3s.RME | µg/l | See Table 3s.RME | CDI (mg/kg-day) = |
| | | | | DA-Adj | Dermally Absorbed Dose, Age-adjusted | calculated | mg-year/event-kg | See Table 7s.RME | DA-Adj x EF x EV x 1/AT |
| | | | | EV | Event Frequency | 1 | events/day | USEPA, 2004 | DA-Adj = (DAevent-A x SA-A x ED-A x 1/BW-A) |
| | | | | EF | Exposure Frequency | 104 | days/year | (6) | + (Daevent-C x SA-C x ED-C x 1/BW-C) |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (5) | |
| | | | | FA | Fraction absorbed water | chemical-specific | dimensionless | USEPA, 2004 | Organics: DAevent (mg/cm$^2$-event) = |
| | | | | $K_p$ | Permeability Coefficient | chemical-specific | cm/hr | USEPA, 2004 | $t_{event} \leq t^*$: DAevent (mg/cm$^2$-event) = |
| | | | | $\tau_{event}$ | Lag Time per event | chemical-specific | hr/event | USEPA, 2004 | 2 x FA x $K_p$ x $C_{sw}$ x (sqrt((6 x $\tau_{event}$ x $t_{event}$)/$\pi$)) |
| | | | | t* | Time to Reach Steady-state | chemical-specific | hours | USEPA, 2004 | x CF1 x CF2 |
| | | | | B | Ratio of Permeability of Stratum Corneum to Epidermis | chemical-specific | dimensionless | USEPA, 2004 | $t_{event} > t^*$: DAevent (mg/cm$^2$-event) = |
| | | | | CF1 | Conversion Factor 1 | 0.001 | mg/µg | - - | FA x $K_p$ x $C_{sw}$ x ( $t_{event}$/(1+B) + 2 x $\tau_{event}$ x |
| | | | | CF2 | Conversion Factor 2 | 0.001 | L/cm$^3$ | - - | ((1 + 3B + 3B$^2$)/(1+B)$^2$)) x CF1 x CF2 |
| | | | | | | | | | Inorganics: DAevent (mg/cm$^2$-event) = |
| | | | | | | | | | Kp x CW x $t_{event}$ x CF1 x CF2 |

Notes:

(1) Best professional judgement. Water is only deep enough for wading. Assumed 20% of swimming value [0.05 L/hr (USEPA, 1989)].
(2) Values based on professional judgment assuming 4 hour per day and 1 days per week for 52 weeks per year.
(3) Adolescents from 6 to 16 years of age. Body weight is average of the mean values for boys and girls for the ages 6 through 16.
(4) Calculated as the product of ED (years) x 365 days/year.
(5) Calculated as the product of 70 years assumed human lifetime (EPA, 1989) x 365 days/year.
(6) Values based on professional judgment assuming 4 hour per day and 2 days per week for 52 weeks per year.
(7) Surface area includes head, hands, forearms, lower legs, and feet.
(8) SA includes head, hands, forearms, and lower legs.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
USEPA, 2004: Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment (Final). EPA/540/R/99/005. July 2004.

TABLE 4.5.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Surface Soil and Residue (0-2 ft)

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Industrial Worker | Adult | Exposure Area 2 Surface Soil and Residue (0-2 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR-S x EF x ED x CF x 1/BW x 1/AT |
| | | | | IR-S | Ingestion Rate of Soil | 100 | mg/day | USEPA, 2002 | |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 25 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 9125 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25550 | days | (2) | |
| Dermal | Industrial Worker | Adult | Exposure Area 2 Surface Soil and Residue (0-2 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | CDI (mg/kg-day) = CS x SA x SSAF x DABS x CF x EF x ED x 1/BW x 1/AT |
| | | | | SA | Skin Surface Area Available for Contact | 3,300 | $cm^2$ | USEPA, 2004 (3) | |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.2 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 25 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 9,125 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |

Notes:
(1) Calculated as the product of ED (years) x 365 days/year.
(2) Calculated as the product of 70 years assumed human lifetime (USEPA, 1989) x 365 days/year.
(3) SA includes head, hands, and forearms.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
USEPA, 2004: Risk Assessment Guidance for Superfund (RAGS) Volume I: Human Health Evaluation Manual. Part E Supplemental Guidance for Dermal Risk Assessment) Final.

$cm^2$ = Square centimeter
kg = Kilogram
kg/mg = Kilogram per milligram
$mg/cm^2$-day = Milligram per square centimeter per day
mg/day = Milligram per day
mg/kg = Milligram per kilogram
mg/kg-day = Milligram per kilogram per day

TABLE 4.6.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Ambient Air

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Inhalation | Industrial Worker | Adult | Emissions from Surface Soil and Residue | CS | Chemical Concentration in Soil | See Table 3s RME | mg/kg | See Table 3s RME | Exposure Concentration ($mg/m^3$) = |
| | | | | CA | Chemical Concentration in Air | See Table 3s RME | $mg/m^3$ | See Table 3s RME | CA x ET x EF x ED x CF x 1/AT |
| | | | | PEF | Particulate Emission Factor | 1.86E+09 | $m^3/kg$ | See Table 4 Suppl B-1 | |
| | | | | ET | Exposure Time | 8 | hr/day | USEPA, 2011 | CA ($mg/m^3$) = CS (1/PEF) |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 25 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 1/24 | day/hr | - - | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 9,125 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |

Notes:

(1) Calculated as the product of ED (years) x 365 days/year.

(2) Calculated as the product of 70 years assumed human lifetime (USEPA, 1989) x 365 days/year.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.

USEPA, 2011: Regional Screening Levels for Chemical Contaminants at Superfund Sites.

mg/kg = Milligram per kilogram

$mg/m^3$ = milligram per cubic meter

$m^3/kg$ = Cubic meters per kilogram

TABLE 4.7.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Total Soil and Residue (0-10 ft)

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Construction Worker | Adult | Exposure Area 2 Total Soil and Residue (0-10 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | Subchronic Daily Intake (SDI) (mg/kg-day) = CS x IR-S x EF x ED x CF x 1/BW x 1/AT |
| | | | | IR-S | Ingestion Rate of Soil | 330 | mg/day | USEPA, 2002 | |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 1 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 365 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |
| Dermal | Construction Worker | Adult | Exposure Area 2 Total Soil and Residue (0-10 ft) | CS | Chemical Concentration in Soil | See Table 3s.RME | mg/kg | See Table 3s.RME | SDI (mg/kg-day) = CS x SA x SSAF x DABS x CF x EF x ED x 1/BW x 1/AT |
| | | | | SA | Skin Surface Area Available for Contact | 3,300 | $cm^2$ | USEPA, 2004 (3) | |
| | | | | SSAF | Soil to Skin Adherence Factor | 0.3 | $mg/cm^2$-day | USEPA, 2004 | |
| | | | | DABS | Dermal Absorption Factor Solids | chemical-specific | -- | See Table 4 Suppl A | |
| | | | | CF | Conversion Factor | 0.000001 | kg/mg | - - | |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 1 | years | USEPA, 2002 | |
| | | | | BW | Body Weight | 70 | kg | USEPA, 2002 | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 365 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |

Notes:
(1) Calculated as the product of ED (years) x 365 days/year.
(2) Calculated as the product of 70 years assumed human lifetime (USEPA, 1989) x 365 days/year.
(3) SA includes head, hands, and forearms.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
USEPA, 2004: Risk Assessment Guidance for Superfund (RAGS) Volume I: Human Health Evaluation Manual. Part E Supplemental Guidance for Dermal Risk Assessment) Final.

$cm^2$ = Square centimeter
kg = Kilogram
kg/mg = Kilogram per milligram
$mg/cm^2$-day = Milligram per square centimeter per day
mg/day = Milligram per day
mg/kg = Milligram per kilogram
mg/kg-day = Milligram per kilogram per day

TABLE 4.8.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro, Illinois

Scenario Timeframe: Future
Medium: Soil and Residue
Exposure Medium: Ambient Air

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Intake Equation/ Model Name |
|---|---|---|---|---|---|---|---|---|---|
| Inhalation | Construction Worker | Adult | Emissions from Total Soil and Residue | CS | Chemical Concentration in Soil | See Table 3s RME | mg/kg | See Table 3s RME | Exposure Concentration (EC) ($mg/m^3$) = |
| | | | | CA | Chemical Concentration in Air | See Table 3s RME | $mg/m^3$ | See Table 3s RME | CA x ET x EF x ED x CF x 1/AT |
| | | | | PEF | Particulate Emission Factor | 9.97E+06 | $m^3/kg$ | See Table 4 Suppl B-2 | |
| | | | | ET | Exposure Time | 8 | hr/day | USEPA, 2011 | CA ($mg/m^3$) = CS (1/PEF) |
| | | | | EF | Exposure Frequency | 250 | days/year | USEPA, 2002 | |
| | | | | ED | Exposure Duration | 1 | years | USEPA, 2002 | |
| | | | | CF | Conversion Factor | 1/24 | day/hr | - - | |
| | | | | AT-N | Averaging Time (Non-Cancer) | 365 | days | (1) | |
| | | | | AT-C | Averaging Time (Cancer) | 25,550 | days | (2) | |

Notes:
(1) Calculated as the product of ED (years) x 365 days/year.
(2) Calculated as the product of 70 years assumed human lifetime (USEPA, 1989) x 365 days/year.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December, 2002.
USEPA, 2011: Regional Screening Levels for Chemical Contaminants at Superfund Sites.

mg/kg = Milligram per kilogram
$mg/m^3$ = milligram per cubic meter
$m^3/kg$ = Cubic meters per kilogram

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
Eagle Zinc Site
Hillsboro, Illinois

| Chemical of Potential Concern | Chronic/ Subchronic | Oral RfD | | Oral Absorption Efficiency for Dermal (1) | Absorbed RfD for Dermal (2) | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfD:Target Organ(s) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |
| Aluminum | Chronic | 1.0E+00 | mg/kg-day | >50% | 1.0E+00 | mg/kg-day | Neurotoxicity | 100 | PPRTV (3) | 6/15/2011 |
| Aluminum | Subchronic | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antimony | Chronic | 4.0E-04 | mg/kg-day | 15% | 6.0E-05 | mg/kg-day | Longevity, blood glucose, and cholesterol | 1000 / 1 | IRIS | 7/12/2011 |
| Antimony | Subchronic | 4.0E-04 | mg/kg-day | 15% | 6.0E-05 | mg/kg-day | Increased mortality, Altered blood chemistries | 1000 | HEAST | 7/31/1997 |
| Arsenic | Chronic | 3.0E-04 | mg/kg-day | 95% | 3.0E-04 | mg/kg-day | Skin, Vascular | 3 / 1 | IRIS | 7/12/2011 |
| Arsenic | Subchronic | 3.0E-04 | mg/kg-day | 95% | 3.0E-04 | mg/kg-day | Skin | 3 | HEAST | 7/31/1997 |
| Barium | Chronic | 2.0E-01 | mg/kg-day | 7% | 1.4E-02 | mg/kg-day | Nephropathy | 300 / 1 | IRIS | 7/12/2011 |
| Barium | Subchronic | 7.0E-02 | mg/kg-day | 7% | 4.9E-03 | mg/kg-day | Increased blood pressure | 3 | HEAST | 7/31/1997 |
| Benzo(a)pyrene | Chronic / Subchronic | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Cadmium (diet) | Chronic | 1.0E-03 | mg/kg-day | 2.5% | 2.5E-05 | mg/kg-day | Significant proteinuria (Kidney) | 10/1 | IRIS | 7/12/2011 |
| Cadmium (diet) | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Cadmium (water) | Chronic | 5.0E-04 | mg/kg-day | 5% | 2.5E-05 | mg/kg-day | Significant proteinuria (Kidney) | 10/1 | IRIS | 7/12/2011 |
| Cadmium (water) | Subchronic | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Cobalt | Chronic | 3.0E-04 | mg/kg-day | >50% | 3.0E-04 | mg/kg-day | Thyroid | 3000 | PPRTV (3) | 6/15/2011 |
| Cobalt | Subchronic | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Copper | Chronic/Subchronic | 4.0E-02 | mg/kg-day | >50% | 4.0E-02 | mg/kg-day | Gastrointestinal | NA | HEAST (3) | 6/15/2011 |
| Iron | Chronic | 7.0E-01 | mg/kg-day | >50% | 7.0E-01 | mg/kg-day | GI System | 1.5 | PPRTV (3) | 6/15/2011 |
| Iron | Subchronic | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Manganese (non-diet) | Chronic | 2.4E-02 | mg/kg-day | >50% | 2.4E-02 | mg/kg-day | CNS | 1 | IRIS (4) | 6/15/2011 |
| Manganese (non-diet) | Subchronic | 2.4E-02 | mg/kg-day | >50% | 2.4E-02 | mg/kg-day | CNS | 1 | HEAST (4) | 7/31/1997 |
| Nickel | Chronic | 2.0E-02 | mg/kg-day | 4% | 8.0E-04 | mg/kg-day | Decreased Body Weight, Decreased Organ Weights | 300/1 | IRIS | 7/12/2011 |
| Nickel | Subchronic | 2.0E-02 | mg/kg-day | 4% | 8.0E-04 | mg/kg-day | Decreased Body Weight, Decreased Organ Weights | 300 | HEAST | 7/1/1997 |
| Silver | Chronic | 5.0E-03 | mg/kg-day | 4% | 2.0E-04 | mg/kg-day | Argyria (Skin) | 3 / 1 | IRIS | 7/12/2011 |
| Silver | Subchronic | 5.0E-03 | mg/kg-day | 4% | 2.0E-04 | mg/kg-day | Argyria (Skin) | 3 | HEAST | 7/31/1997 |
| Thallium | Chronic | 1.0E-05 | mg/kg-day | >50% | 1.0E-05 | mg/kg-day | Hair follicle atrophy | 3000 | PPRTV (3) | 6/15/2011 |
| Thallium | Subchronic | 4.0E-05 | mg/kg-day | >50% | 4.0E-05 | mg/kg-day | Hair follicle atrophy | 1000 | PPRTV | 10/8/2010 |
| Trichloroethylene (TCE) | Chronic | 5.0E-04 | mg/kg-day | >50% | 5.0E-04 | mg/kg-day | Immune system, Cardiovascular, Developmental | 10-1000 | IRIS | 9/28/2011 |
| Trichloroethylene (TCE) | Subchronic | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | Chronic | 5.0E-03 | mg/kg-day | 2.6% | 1.3E-04 | mg/kg-day | hair cystine | 100 / 1 | IRIS (3) | 6/15/2011 |
| Vanadium | Subchronic | 7.0E-03 | mg/kg-day | 2.6% | 1.8E-04 | mg/kg-day | NA | 100 | HEAST | 7/31/1997 |
| Zinc | Chronic | 3.0E-01 | mg/kg-day | Variable | 3.0E-01 | mg/kg-day | Blood | 3 | IRIS | 7/12/2011 |
| Zinc | Subchronic | 3.0E-01 | mg/kg-day | Variable | 3.0E-01 | mg/kg-day | Blood | 3 | HEAST | 7/1/1997 |

Note:

(1) Source: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. Section 4.2 and Exhibit 4-1. USEPA recommends that the oral RfD should not be adjusted to estimate the absorbed dose for compounds when the absorption efficiency is greater than 50%. Constituents that do not have oral absorption efficiencies reported on this table were assumed to have an oral absorption efficiency of 100%.

(2) Adjusted based on RAGS Part E.

(3) As cited in Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites (USEPA, 2011).

(4) The RfD (0.14 mg/kg-day) presented in IRIS and HEAST includes manganese from all sources, including diet. This RfD was adjusted by subtracting the dietary contribution from the normal U.S. diet (an upper limit of 5 mg/day) and applying a modifying factor of 3 to address uncertainties associated with non-food manganese exposure sources.

Definitions:
CNS = Central Nervous System
GI System = Gastrointestinal System
HEAST = Health Effects Assessment Summary Tables
IRIS = Integrated Risk Information System
NA = Not Available
NOE = No Observed Effects
PPRTV = Provisional Peer-Reviewed Toxicity Value

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
Eagle Zinc Site
Hillsboro, Illinois

| Chemical of Potential Concern | Chronic/ Subchronic | Inhalation RfC | | Primary Target Organ(s) | Combined Uncertainty/Modifying Factors | RfC : Target Organ(s) | |
|---|---|---|---|---|---|---|---|
| | | Value | Units | | | Source(s) | Date(s) (MM/DD/YYYY) |
| Aluminum | Chronic | 5.0E-03 | $mg/m^3$ | Neurotoxicity | 300 | PPRTV (1) | 6/15/2011 |
| Aluminum | Subchronic | NA | NA | NA | NA | NA | NA |
| Antimony | Chronic/Subchronic | NA | NA | NA | NA | NA | NA |
| Arsenic | Chronic | 1.5E-05 | $mg/m^3$ | Cardiovascular, Nervous, Development | NA | Cal/EPA (1) | 6/15/2011 |
| Arsenic | Subchronic | NA | NA | NA | NA | NA | NA |
| Barium | Chronic | 5.0E-04 | $mg/m^3$ | Fetotoxicity | 1000 | HEAST | 7/31/1997 |
| Barium | Subchronic | 5.0E-03 | $mg/m^3$ | Fetotoxicity | 100 | HEAST | 7/31/1997 |
| Benzo(a)pyrene | Subchronic | NA | NA | NA | NA | NA | NA |
| Cadmium | Chronic | 2.0E-05 | $mg/m^3$ | Kidney | NA | Cal/EPA (1) | 6/15/2011 |
| Cadmium | Subchronic | NA | NA | NA | NA | NA | NA |
| Cobalt | Chronic | 6.0E-06 | $mg/m^3$ | Respiratory | 300 | PPRTV (1) | 6/15/2011 |
| Cobalt | Subchronic | NA | NA | NA | NA | NA | NA |
| Copper | Chronic/Subchronic | NA | NA | NA | NA | NA | NA |
| Iron | Chronic/Subchronic | NA | NA | NA | NA | NA | NA |
| Manganese | Chronic | 5.0E-05 | $mg/m^3$ | Nervous System | 1000 / 1 | IRIS | 7/12/2011 |
| Manganese | Subchronic | NA | NA | NA | NA | NA | NA |
| Nickel | Chronic | 9.0E-05 | $mg/m^3$ | Respiratory System | NA | ATSDR (1) | 6/15/2011 |
| Nickel | Subchronic | NA | NA | NA | NA | NA | NA |
| Silver | Chronic/Subchronic | NA | NA | NA | NA | NA | NA |
| Thallium | Chronic/Subchronic | NA | NA | NA | NA | NA | NA |
| Trichloroethylene (TCE)(2) | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | Chronic/Subchronic | NA | NA | NA | NA | NA | NA |
| Zinc | Chronic/Subchronic | NA | NA | NA | NA | NA | NA |

(1) As cited in Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites (USEPA, 2011).
(2) Chemical identifed as a COPC in a medium for which the inhalation exposure pathway will not be assessed.

Definitions:
ATSDR = Agency for Toxic Substances & Disease Registry Minimal Risk Levels
Cal/EPA = California Environmental Protection Agency
HEAST = Health Effects Assessment Summary Tables
IRIS = Integrated Risk Information System
NA = Not Available
PPRTV = Provisional Peer-Reviewed Toxicity Value

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
Eagle Zinc Site
Hillsboro, Illinois

| Chemical of Potential Concern | Oral Cancer Slope Factor | | Oral Absorption Efficiency for Dermal (1) | Absorbed Cancer Slope Factor for Dermal (2) | | Weight of Evidence/ Cancer Guideline Description | Oral CSF | |
|---|---|---|---|---|---|---|---|---|
| | Value | Units | | Value | Units | | Source(s) | Date(s) (MM/DD/YYYY) |
| Aluminum | NA | NA | NA | NA | NA | NA | NA | NA |
| Antimony | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 1.5E+00 | $(mg/kg\text{-}day)^{-1}$ | 95% | 1.5E+00 | $(mg/kg\text{-}day)^{-1}$ | A | IRIS | 7/12/2011 |
| Barium | NA | NA | NA | NA | NA | D | NA | NA |
| Benzo(a)pyrene (3) | 7.3E+00 | $(mg/kg\text{-}day)^{-1}$ | 58-89% | 7.3E+00 | $(mg/kg\text{-}day)^{-1}$ | B2 | IRIS | 7/12/2011 |
| Cadmium | NA | NA | NA | NA | NA | NA | NA | NA |
| Cobalt | NA | NA | NA | NA | NA | NA | NA | NA |
| Copper | NA | NA | NA | NA | NA | NA | NA | NA |
| Iron | NA | NA | NA | NA | NA | NA | NA | NA |
| Manganese | NA | NA | NA | NA | NA | D | IRIS | 7/12/2011 |
| Nickel | NA | NA | NA | NA | NA | D | IRIS | 7/12/2011 |
| Silver | NA | NA | NA | NA | NA | D | NA | NA |
| Thallium | NA | NA | NA | NA | NA | NA | NA | NA |
| Trichloroethylene (TCE) (3) | 4.6E-02 | $(mg/kg\text{-}day)^{-1}$ | >50% | 4.6E-02 | $(mg/kg\text{-}day)^{-1}$ | (4) | IRIS | 9/28/2011 |
| Vanadium | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc | NA | NA | NA | NA | NA | NA | NA | NA |

(1) Source: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. Section 4.2 and Exhibit 4-1. USEPA recommends that the oral slope factor should not be adjusted to estimate the absorbed dose for compounds when the absorption efficiency is greater than 50%. Constituents that do not have oral absorption efficiencies reported on this table were assumed to have an oral absorption efficiency of 100%.

(2) Adjusted based on RAGS Part E.

Definitions:
Cal/EPA = California Environmental Protection Agency
IRIS = Integrated Risk Information System
NA = Not Available

(3) This chemical operates with a mutagenic mode of action (USEPA 2005).
Chemical-specific data are not available, thus, USEPA (2005) default age-dependant adjustment factors (ADAF) will be applied to the slope factor as follows:

| AGE | AGE ADAF |
|---|---|
| 0-<2 | 10 |
| 2-<16 | 3 |
| 16-<30 | 1 |

(4) Following USEPA (2005) Guidelines for Carcinogen Risk Assessment, trichloroethylene (TCE) is characterized as "carcinogenic to humans."

Weight of Evidence definitions:
Group A (known human carcinogens): agents with sufficient evidence to support the causal association between exposure to the agents in humans and cancer.
Group B1 (probable human carcinogens): agents with limited evidence of possible carcinogenicity in humans.
Group B2 (probable human carcinogens): agents with sufficient evidence of carcinogenicity in animals but inadequate or a lack of evidence in humans.
Group C (possible human carcinogens): agents with limited evidence of carcinogenicity in animals and inadequate or a lack of human data.
Group D (not classifiable as to human carcinogenicity): agents with inadequate human and animal evidence of carcinogenicity or for which no data are available.
Group E (evidence of noncarcinogenicity in humans): agents with no evidence of carcinogenicity from human or animal studies, or both.

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
Eagle Zinc Site
Hillsboro, Illinois

| Chemical of Potential Concern | Unit Risk | | Weight of Evidence/ Cancer Guideline Description | Unit Risk : Inhalation CSF | |
|---|---|---|---|---|---|
| | Value | Units | | Source(s) | Date(s) (MM/DD/YYYY) |
| Aluminum | NA | NA | NA | NA | NA |
| Antimony | NA | NA | NA | NA | NA |
| Arsenic | 4.3E-03 | $(ug/m^3)^{-1}$ | A | IRIS | 7/12/2011 |
| Barium | NA | NA | NA | NA | NA |
| Benzo(a)pyrene (1) | 1.1E-03 | $(ug/m^3)^{-1}$ | B2 | Cal/EPA (2) | 6/15/2011 |
| Cadmium | 1.8E-03 | $(ug/m^3)^{-1}$ | B1 | IRIS | 7/12/2011 |
| Cobalt | 9.0E-03 | $(ug/m^3)^{-1}$ | NA | PPRTV (2) | 6/15/2011 |
| Copper | NA | NA | NA | NA | NA |
| Iron | NA | NA | NA | NA | NA |
| Manganese | NA | NA | NA | NA | NA |
| Nickel | NA | NA | NA | NA | NA |
| Silver | NA | NA | NA | NA | NA |
| Thallium | NA | NA | NA | NA | NA |
| Trichloroethylene (TCE) (1,3) | NA | NA | NA | NA | NA |
| Vanadium | NA | NA | NA | NA | NA |
| Zinc | NA | NA | NA | NA | NA |

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION

Definitions:

NA = Not Available

IRIS = Integrated Risk Information System
Cal/EPA = California Environmental Protection Agency
PPRTV = Provisional Peer-Reviewed Toxicity Value

(1) This chemical operates with a mutagenic mode of action (USEPA 2005).
Chemical-specific data are not available, thus, USEPA (2005) default age-dependant adjustment factors (ADAF) will be applied to the slope factor as follows:

| AGE | AGE ADAF |
|---|---|
| 0-<2 | 10 |
| 2-<16 | 3 |
| 16-<30 | 1 |

(2) As cited in Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites (USEPA, 2011).
(3) Chemical identifed as a COPC in a mediun for which the inhalation exposure pathway will not be assessed.

Weight of Evidence definitions:
Group A (known human carcinogens): agents with sufficient evidence to support the causal association between exposure to the agents in humans and cancer.
Group B1 (probable human carcinogens): agents with limited evidence of possible carcinogenicity in humans.
Group B2 (probable human carcinogens): agents with sufficient evidence of carcinogenicity in animals but inadequate or a lack of evidence in humans.
Group C (possible human carcinogens): agents with limited evidence of carcinogenicity in animals and inadequate or a lack of human data.
Group D (not classifiable as to human carcinogenicity): agents with inadequate human and animal evidence of carcinogenicity or for which no data are available.
Group E (evidence of noncarcinogenicity in humans): agents with no evidence of carcinogenicity from human or animal studies, or both.

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil and Residue | Surface Soil and Residue (0-2 feet) | Exposure Area 2 Surface Soil and Residue (0-2 ft) | Ingestion | Benzo(a)pyrene | 6.5E-02 | mg/kg | 3.4E-09 | mg/kg-day | 2.2E+01 | 1/(mg/kg-day) | 7.4E-08 | 2.4E-08 | mg/kg-day | NA | NA | NA |
| | | | | Aluminum, total | 2.2E+04 | mg/kg | 1.2E-03 | mg/kg-day | NA | NA | NA | 8.1E-03 | mg/kg-day | 1.0E+00 | mg/kg-day | 8.1E-03 |
| | | | | Antimony, total | 3.6E+02 | mg/kg | 1.9E-05 | mg/kg-day | NA | NA | NA | 1.3E-04 | mg/kg-day | 4.0E-04 | mg/kg-day | 3.3E-01 |
| | | | | Arsenic, total | 4.1E+01 | mg/kg | 2.1E-06 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 3.2E-06 | 1.5E-05 | mg/kg-day | 3.0E-04 | mg/kg-day | 5.0E-02 |
| | | | | Barium, total | 6.6E+02 | mg/kg | 3.5E-05 | mg/kg-day | NA | NA | NA | 2.4E-04 | mg/kg-day | 2.0E-01 | mg/kg-day | 1.2E-03 |
| | | | | Cadmium, total | 5.7E+01 | mg/kg | 3.0E-06 | mg/kg-day | NA | NA | NA | 2.1E-05 | mg/kg-day | 1.0E-03 | mg/kg-day | 2.1E-02 |
| | | | | Cobalt, total | 2.5E+02 | mg/kg | 1.3E-05 | mg/kg-day | NA | NA | NA | 9.0E-05 | mg/kg-day | 3.0E-04 | mg/kg-day | 3.0E-01 |
| | | | | Copper, total | 8.2E+03 | mg/kg | 4.3E-04 | mg/kg-day | NA | NA | NA | 3.0E-03 | mg/kg-day | 4.0E-02 | mg/kg-day | 7.5E-02 |
| | | | | Iron, total | 5.1E+04 | mg/kg | 2.6E-03 | mg/kg-day | NA | NA | NA | 1.9E-02 | mg/kg-day | 7.0E-01 | mg/kg-day | 2.6E-02 |
| | | | | Manganese, total | 9.3E+02 | mg/kg | 4.8E-05 | mg/kg-day | NA | NA | NA | 3.4E-04 | mg/kg-day | 2.4E-02 | mg/kg-day | 1.4E-02 |
| | | | | Nickel, total | 4.7E+03 | mg/kg | 2.5E-04 | mg/kg-day | NA | NA | NA | 1.7E-03 | mg/kg-day | 2.0E-02 | mg/kg-day | 8.6E-02 |
| | | | | Silver, total | 3.0E+01 | mg/kg | 1.6E-06 | mg/kg-day | NA | NA | NA | 1.1E-05 | mg/kg-day | 5.0E-03 | mg/kg-day | 2.2E-03 |
| | | | | Thallium, total | 8.2E-01 | mg/kg | 4.3E-08 | mg/kg-day | NA | NA | NA | 3.0E-07 | mg/kg-day | 1.0E-05 | mg/kg-day | 3.0E-02 |
| | | | | Vanadium, total | 3.3E+01 | mg/kg | 1.7E-06 | mg/kg-day | NA | NA | NA | 1.2E-05 | mg/kg-day | 5.0E-03 | mg/kg-day | 2.4E-03 |
| | | | | Zinc, total | 1.6E+05 | mg/kg | 8.3E-03 | mg/kg-day | NA | NA | NA | 5.8E-02 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.9E-01 |
| | | | Exp. Route Total | | | | | | | | 3.3E-06 | | | | | 1.1E+00 |
| Soil and Residue | Surface Soil and Residue (0-2 feet) | Exposure Area 2 Surface Soil and Residue (0-2 ft) | Dermal | Benzo(a)pyrene | 6.5E-02 | mg/kg | 3.6E-09 | mg/kg-day | 2.2E+01 | 1/(mg/kg-day) | 7.9E-08 | 2.5E-08 | mg/kg-day | NA | NA | NA |
| | | | | Aluminum, total | 2.2E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 1.0E+00 | mg/kg-day | NA |
| | | | | Antimony, total | 3.6E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 6.0E-05 | mg/kg-day | NA |
| | | | | Arsenic, total | 4.1E+01 | mg/kg | 5.2E-07 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 7.8E-07 | 3.7E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.2E-02 |
| | | | | Barium, total | 6.6E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 1.4E-02 | mg/kg-day | NA |
| | | | | Cadmium, total | 5.7E+01 | mg/kg | 2.4E-08 | mg/kg-day | NA | NA | NA | 1.7E-07 | mg/kg-day | 2.5E-05 | mg/kg-day | 6.8E-03 |
| | | | | Cobalt, total | 2.5E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-04 | mg/kg-day | NA |
| | | | | Copper, total | 8.2E+03 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 4.0E-02 | mg/kg-day | NA |
| | | | | Iron, total | 5.1E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 7.0E-01 | mg/kg-day | NA |
| | | | | Manganese, total | 9.3E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 2.4E-02 | mg/kg-day | NA |
| | | | | Nickel, total | 4.7E+03 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 8.0E-04 | mg/kg-day | NA |
| | | | | Silver, total | 3.0E+01 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 2.0E-04 | mg/kg-day | NA |
| | | | | Thallium, total | 8.2E-01 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 1.0E-05 | mg/kg-day | NA |
| | | | | Vanadium, total | 3.3E+01 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 1.3E-04 | mg/kg-day | NA |
| | | | | Zinc, total | 1.6E+05 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-01 | mg/kg-day | NA |
| | | | Exp. Route Total | | | | | | | | 8.6E-07 | | | | | 1.9E-02 |
| | | Exposure Point Total | | | | | | | | | 4.1E-06 | | | | | 1.2E+00 |
| | Exposure Medium Total | | | | | | | | | | 4.1E-06 | | | | | 1.2E+00 |
| Soil and Residue | Ambient Air | Exposure Area 2 Emissions from Surface Soil | Inhalation | Benzo(a)pyrene | 3.5E-11 | $mg/m^3$ | 1.2E-13 | $mg/m^3$ | 3.3E-03 | 1/(ug/m3) | 3.9E-13 | 8.3E-13 | $mg/m^3$ | NA | NA | NA |
| | | | | Aluminum, total | 1.2E-05 | $mg/m^3$ | 4.1E-08 | $mg/m^3$ | NA | NA | NA | 2.8E-07 | $mg/m^3$ | 5.0E-03 | mg/m3 | 5.7E-05 |
| | | | | Antimony, total | 1.9E-07 | $mg/m^3$ | 6.6E-10 | $mg/m^3$ | NA | NA | NA | 4.6E-09 | $mg/m^3$ | NA | NA | NA |

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | and Residue | | Arsenic, total | 2.2E-08 | mg/m$^3$ | 7.4E-11 | mg/m$^3$ | 4.3E-03 | 1/(ug/m3) | 3.2E-10 | 5.2E-10 | mg/m$^3$ | 1.5E-05 | mg/m3 | 3.5E-05 |
| | | | | Barium, total | 3.6E-07 | mg/m$^3$ | 1.2E-09 | mg/m$^3$ | NA | NA | NA | 8.5E-09 | mg/m$^3$ | 5.0E-04 | mg/m3 | 1.7E-05 |
| | | | | Cadmium, total | 3.1E-08 | mg/m$^3$ | 1.0E-10 | mg/m$^3$ | 1.8E-03 | 1/(ug/m3) | 1.9E-10 | 7.2E-10 | mg/m$^3$ | 2.0E-05 | mg/m3 | 3.6E-05 |
| | | | | Cobalt, total | 1.3E-07 | mg/m$^3$ | 4.5E-10 | mg/m$^3$ | 9.0E-03 | 1/(ug/m3) | 4.0E-09 | 3.1E-09 | mg/m$^3$ | 6.0E-06 | mg/m3 | 5.2E-04 |
| | | | | Copper, total | 4.4E-06 | mg/m$^3$ | 1.5E-08 | mg/m$^3$ | NA | NA | NA | 1.0E-07 | mg/m$^3$ | NA | NA | NA |
| | | | | Iron, total | 2.7E-05 | mg/m$^3$ | 9.2E-08 | mg/m$^3$ | NA | NA | NA | 6.5E-07 | mg/m$^3$ | NA | NA | NA |
| | | | | Manganese, total | 5.0E-07 | mg/m$^3$ | 1.7E-09 | mg/m$^3$ | NA | NA | NA | 1.2E-08 | mg/m$^3$ | 5.0E-05 | mg/m3 | 2.4E-04 |
| | | | | Nickel, total | 2.5E-06 | mg/m$^3$ | 8.6E-09 | mg/m$^3$ | NA | NA | NA | 6.0E-08 | mg/m$^3$ | 9.0E-05 | mg/m3 | 6.7E-04 |
| | | | | Silver, total | 1.6E-08 | mg/m$^3$ | 5.4E-11 | mg/m$^3$ | NA | NA | NA | 3.8E-10 | mg/m$^3$ | NA | NA | NA |
| | | | | Thallium, total | 4.4E-10 | mg/m$^3$ | 1.5E-12 | mg/m$^3$ | NA | NA | NA | 1.0E-11 | mg/m$^3$ | NA | NA | NA |
| | | | | Vanadium, total | 1.8E-08 | mg/m$^3$ | 6.0E-11 | mg/m$^3$ | NA | NA | NA | 4.2E-10 | mg/m$^3$ | NA | NA | NA |
| | | | | Zinc, total | 8.6E-05 | mg/m$^3$ | 2.9E-07 | mg/m$^3$ | NA | NA | NA | 2.0E-06 | mg/m$^3$ | NA | NA | NA |
| | | | Exp. Route Total | | | | | | | | 4.6E-09 | | | | | 1.6E-03 |
| | | Exposure Point Total | | | | | | | | | 4.6E-09 | | | | | 1.6E-03 |
| | Exposure Medium Total | | | | | | | | | | 4.6E-09 | | | | | 1.6E-03 |
| Soil Total | | | | | | | | | | | 4.1E-06 | | | | | 1.2E+00 |
| Surface Water | Surface Water | On-Site Surface Water | Ingestion | Cadmium, total | 8.7E+01 | ug/L | 1.8E-06 | mg/kg-day | NA | NA | NA | 1.3E-05 | mg/kg-day | 1.0E-03 | mg/kg-day | 1.3E-02 |
| | | | | Cobalt, total | 2.4E+00 | ug/L | 5.0E-08 | mg/kg-day | NA | NA | NA | 3.5E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.2E-03 |
| | | | | Iron, total | 3.2E+03 | ug/L | 6.7E-05 | mg/kg-day | NA | NA | NA | 4.7E-04 | mg/kg-day | 7.0E-01 | mg/kg-day | 6.7E-04 |
| | | | | Manganese, total | 7.6E+02 | ug/L | 1.6E-05 | mg/kg-day | NA | NA | NA | 1.1E-04 | mg/kg-day | 2.4E-02 | mg/kg-day | 4.6E-03 |
| | | | | Zinc, total | 9.1E+03 | ug/L | 1.9E-04 | mg/kg-day | NA | NA | NA | 1.3E-03 | mg/kg-day | 3.0E-01 | mg/kg-day | 4.4E-03 |
| | | | | Trichloroethylene (TCE) | 6.3E+00 | ug/L | 1.3E-07 | mg/kg-day | 1.4E-01 | 1/(mg/kg-day) | 1.8E-08 | 9.2E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.8E-03 |
| | | | Exp. Route Total | | | | | | | | 1.8E-08 | | | | | 2.5E-02 |
| Surface Water | Surface Water | On-Site Surface Water | Dermal | Cadmium, total | 8.7E+01 | ug/L | 9.1E-07 | mg/kg-day | NA | NA | NA | 6.4E-06 | mg/kg-day | 2.5E-05 | mg/kg-day | 2.5E-01 |
| | | | | Cobalt, total | 2.4E+00 | ug/L | 2.5E-08 | mg/kg-day | NA | NA | NA | 1.8E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 5.8E-04 |
| | | | | Iron, total | 3.2E+03 | ug/L | 3.3E-05 | mg/kg-day | NA | NA | NA | 2.3E-04 | mg/kg-day | 7.0E-01 | mg/kg-day | 3.3E-04 |
| | | | | Manganese, total | 7.6E+02 | ug/L | 7.9E-06 | mg/kg-day | NA | NA | NA | 5.5E-05 | mg/kg-day | 2.4E-02 | mg/kg-day | 2.3E-03 |
| | | | | Zinc, total | 9.1E+03 | ug/L | 9.5E-05 | mg/kg-day | NA | NA | NA | 6.6E-04 | mg/kg-day | 3.0E-01 | mg/kg-day | 2.2E-03 |
| | | | | Trichloroethylene (TCE) | 6.3E+00 | ug/L | 9.6E-07 | mg/kg-day | 1.4E-01 | 1/(mg/kg-day) | 1.3E-07 | 6.7E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.3E-02 |
| | | | Exp. Route Total | | | | | | | | 1.3E-07 | | | | | 2.7E-01 |
| | | Exposure Point Total | | | | | | | | | 1.5E-07 | | | | | 3.0E-01 |
| | Exposure Medium total | | | | | | | | | | 1.5E-07 | | | | | 3.0E-01 |
| Surface Water Total | | | | | | | | | | | 1.5E-07 | | | | | 3.0E-01 |
| Sediment | Sediment | On-Site Sediment | Ingestion | Arsenic, total | 1.0E+01 | mg/kg | 5.2E-08 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 7.8E-08 | 3.7E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.2E-03 |
| | | | | Cadmium, total | 2.7E+02 | mg/kg | 1.4E-06 | mg/kg-day | NA | NA | NA | 1.0E-05 | mg/kg-day | 1.0E-03 | mg/kg-day | 1.0E-02 |
| | | | | Cobalt, total | 1.1E+01 | mg/kg | 5.7E-08 | mg/kg-day | NA | NA | NA | 4.0E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.3E-03 |

TABLE 7.1.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| | | | | Iron, total | 2.9E+04 | mg/kg | 1.5E-04 | mg/kg-day | NA | NA | NA | 1.1E-03 | mg/kg-day | 7.0E-01 | mg/kg-day | 1.5E-03 |
| | | | | Manganese, total | 6.2E+02 | mg/kg | 3.2E-06 | mg/kg-day | NA | NA | NA | 2.3E-05 | mg/kg-day | 2.4E-02 | mg/kg-day | 9.4E-04 |
| | | | | Zinc, total | 1.3E+04 | mg/kg | 6.6E-05 | mg/kg-day | NA | NA | NA | 4.6E-04 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.5E-03 |
| | | | Exp. Route Total | | | | | | | | 7.8E-08 | | | | | 1.7E-02 |
| Sediment | Sediment | On-Site Sediment | Dermal | Arsenic, total | 1.0E+01 | mg/kg | 1.6E-07 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 2.4E-07 | 1.1E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 3.7E-03 |
| | | | | Cadmium, total | 2.7E+02 | mg/kg | 1.4E-07 | mg/kg-day | NA | NA | NA | 1.0E-06 | mg/kg-day | 2.5E-05 | mg/kg-day | 4.0E-02 |
| | | | | Cobalt, total | 1.1E+01 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-04 | mg/kg-day | NA |
| | | | | Iron, total | 2.9E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 7.0E-01 | mg/kg-day | NA |
| | | | | Manganese, total | 6.2E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 2.4E-02 | mg/kg-day | NA |
| | | | | Zinc, total | 1.3E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-01 | mg/kg-day | NA |
| | | | Exp. Route Total | | | | | | | | 2.4E-07 | | | | | 4.4E-02 |
| | | Exposure Point Total | | | | | | | | | 3.1E-07 | | | | | 6.0E-02 |
| | Exposure Medium Total | | | | | | | | | | 3.1E-07 | | | | | 6.0E-02 |
| Sediment Total | | | | | | | | | | | 3.1E-07 | | | | | 6.0E-02 |
| Receptor Total | | | | | | | | | | | 4.6E-06 | | | | | 1.5E+00 |

TABLE 7.1.RME SUPPLEMENT A
CALCULATION OF DAEVENT
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

| Chemical of Potential Concern | Exposure Point Concentration ($C_W$) (ug/L) | Permeability Coefficient ($K_p$) (cm/hr) | B (dimensionless) | Lag Time ($\tau_{event}$) (hr/event) | t* (hr) | Fraction Absorbed Water (FA) (dimensionless) | Duration of Event ($t_{event}$) (hr/event) | DAevent (mg/cm$^2$-event) | Eq |
|---|---|---|---|---|---|---|---|---|---|
| Cadmium, total | 8.7E+01 | 1.0E-03 | NA | NA | NA | NA | 4.0 | 3.5E-07 | 3 |
| Cobalt, total | 2.4E+00 | 1.0E-03 | NA | NA | NA | NA | 4.0 | 9.6E-09 | 3 |
| Iron, total | 3.2E+03 | 1.0E-03 | NA | NA | NA | NA | 4.0 | 1.3E-05 | 3 |
| Manganese, total | 7.6E+02 | 1.0E-03 | NA | NA | NA | NA | 4.0 | 3.0E-06 | 3 |
| Zinc, total | 9.1E+03 | 1.0E-03 | NA | NA | NA | NA | 4.0 | 3.6E-05 | 3 |
| Trichloroethylene (TCE) | 6.3E+00 | 1.2E-02 | 5.1E-02 | 5.8E-01 | 1.4E+00 | 1.0E+00 | 4.0 | 3.7E-07 | 2 |

**Organics: $DA_{event}$ (mg/cm$^2$-event) =**

$t_{event} \le t^*$: $DA_{event}$ (mg/cm$^2$-event) =
$2 \times FA \times K_p \times C_w \times (\mathrm{sqrt}((6 \times \tau_{event} \times t_{event}) / (\pi))) \times CF1 \times CF2$ (Eq 1)

$t_{event} > t^*$: $DA_{event}$ (mg/cm$^2$-event) =
$FA \times K_p \times C_W \times ( t_{event}/(1+B) + 2 \times \tau_{event} \times ((1 + 3B + 3B^2)/(1+B)^2)) \times CF1 \times CF2$ (Eq 2)

**Inorganics: $DA_{event}$ (mg/cm$^2$-event) =**

$DA_{event} = K_p \times C_W \times$ tevent $\times$ 0.001 mg/ug $\times$ 0.001 l/cm$^3$ (Eq 3)

Notes:
Values for permeability constants, B, tau, t*, and FA are from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005.
NA - Not applicable.
t* - Time to reach steady-state
B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
CF1 - Conversion Factor 1 (0.001 mg/µg), CF2 - Conversion Factor 2 (0.001 L/cm$^3$)

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Surface Water | Surface Water | Off-Site Surface Water | Ingestion | Arsenic, total | 2.3E+00 | ug/L | NA | NA | NA | NA | NA | 3.7E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.2E-03 |
| | | | | Cadmium, total | 1.8E+01 | ug/L | NA | NA | NA | NA | NA | 2.9E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 2.9E-03 |
| | | | | Cobalt, total | 1.6E+00 | ug/L | NA | NA | NA | NA | NA | 2.6E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 8.7E-04 |
| | | | | Manganese, total | 6.0E+02 | ug/L | NA | NA | NA | NA | NA | 9.8E-05 | mg/kg-day | 2.4E-02 | mg/kg-day | 4.1E-03 |
| | | | | Zinc, total | 1.9E+04 | ug/L | NA | NA | NA | NA | NA | 3.2E-03 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.1E-02 |
| | | | Exp. Route Total | | | | | | | | 0.0E+00 | | | | | 2.0E-02 |
| Surface Water | Surface Water | Off-Site Surface Water | Dermal | Arsenic, total | 2.3E+00 | ug/L | NA | NA | NA | NA | NA | 2.1E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 7.1E-04 |
| | | | | Cadmium, total | 1.8E+01 | ug/L | NA | NA | NA | NA | NA | 1.7E-06 | mg/kg-day | 2.5E-05 | mg/kg-day | 6.6E-02 |
| | | | | Cobalt, total | 1.6E+00 | ug/L | NA | NA | NA | NA | NA | 1.5E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 4.9E-04 |
| | | | | Manganese, total | 6.0E+02 | ug/L | NA | NA | NA | NA | NA | 5.6E-05 | mg/kg-day | 2.4E-02 | mg/kg-day | 2.3E-03 |
| | | | | Zinc, total | 1.9E+04 | ug/L | NA | NA | NA | NA | NA | 1.8E-03 | mg/kg-day | 3.0E-01 | mg/kg-day | 6.0E-03 |
| | | | Exp. Route Total | | | | | | | | 0.0E+00 | | | | | 7.6E-02 |
| | | Exposure Point Total | | | | | | | | | 0.0E+00 | | | | | 9.5E-02 |
| | Exposure Medium total | | | | | | | | | | 0.0E+00 | | | | | 9.5E-02 |
| Surface Water Total | | | | | | | | | | | 0.0E+00 | | | | | 9.5E-02 |
| Sediment | Sediment | Off-Site Sediment | Ingestion | Aluminum, total | 1.0E+04 | mg/kg | NA | NA | NA | NA | NA | 4.2E-04 | mg/kg-day | 1.0E+00 | mg/kg-day | 4.2E-04 |
| | | | | Antimony, total | 7.2E+00 | mg/kg | NA | NA | NA | NA | NA | 2.9E-07 | mg/kg-day | 4.0E-04 | mg/kg-day | 7.3E-04 |
| | | | | Arsenic, total | 9.8E+00 | mg/kg | NA | NA | NA | NA | NA | 4.0E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.3E-03 |
| | | | | Cadmium, total | 3.3E+01 | mg/kg | NA | NA | NA | NA | NA | 1.4E-06 | mg/kg-day | 1.0E-03 | mg/kg-day | 1.4E-03 |
| | | | | Cobalt, total | 8.4E+00 | mg/kg | NA | NA | NA | NA | NA | 3.4E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.1E-03 |
| | | | | Copper, total | 1.0E+02 | mg/kg | NA | NA | NA | NA | NA | 4.2E-06 | mg/kg-day | 4.0E-02 | mg/kg-day | 1.1E-04 |
| | | | | Iron, total | 2.3E+04 | mg/kg | NA | NA | NA | NA | NA | 9.5E-04 | mg/kg-day | 7.0E-01 | mg/kg-day | 1.4E-03 |
| | | | | Manganese, total | 4.7E+02 | mg/kg | NA | NA | NA | NA | NA | 1.9E-05 | mg/kg-day | 2.4E-02 | mg/kg-day | 7.9E-04 |
| | | | | Zinc, total | 1.1E+04 | mg/kg | NA | NA | NA | NA | NA | 4.4E-04 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.5E-03 |
| | | | Exp. Route Total | | | | | | | | 0.0E+00 | | | | | 8.7E-03 |
| Sediment | Sediment | Off-Site Sediment | Dermal | Aluminum, total | 1.0E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 1.0E+00 | mg/kg-day | NA |
| | | | | Antimony, total | 7.2E+00 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 6.0E-05 | mg/kg-day | NA |
| | | | | Arsenic, total | 9.8E+00 | mg/kg | NA | NA | NA | NA | NA | 1.4E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 4.6E-03 |
| | | | | Cadmium, total | 3.3E+01 | mg/kg | NA | NA | NA | NA | NA | 1.5E-07 | mg/kg-day | 2.5E-05 | mg/kg-day | 6.2E-03 |
| | | | | Cobalt, total | 8.4E+00 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-04 | mg/kg-day | NA |
| | | | | Copper, total | 1.0E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 4.0E-02 | mg/kg-day | NA |
| | | | | Iron, total | 2.3E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 7.0E-01 | mg/kg-day | NA |
| | | | | Manganese, total | 4.7E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 2.4E-02 | mg/kg-day | NA |
| | | | | Zinc, total | 1.1E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-01 | mg/kg-day | NA |
| | | | Exp. Route Total | | | | | | | | 0.0E+00 | | | | | 1.1E-02 |
| | | Exposure Point Total | | | | | | | | | 0.0E+00 | | | | | 1.9E-02 |
| | Exposure Medium Total | | | | | | | | | | 0.0E+00 | | | | | 1.9E-02 |
| Sediment Total | | | | | | | | | | | 0.0E+00 | | | | | 1.9E-02 |
| Receptor Total | | | | | | | | | | | 0.0E+00 | | | | | 1.1E-01 |

TABLE 7.2.RME SUPPLEMENT A
CALCULATION OF DAEVENT
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

| Chemical of Potential Concern | Exposure Point Concentration ($C_W$) (ug/L) | Permeability Coefficient ($K_p$) (cm/hr) | B (dimensionless) | Lag Time ($\tau_{event}$) (hr/event) | t* (hr) | Fraction Absorbed Water (FA) (dimensionless) | Duration of Event ($t_{event}$) (hr/event) | DAevent ($mg/cm^2$-event) | Eq |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic, total | 2.3E+00 | 1.0E-03 | NA | NA | NA | NA | 4.0 | 9.2E-09 | 1 |
| Cadmium, total | 1.8E+01 | 1.0E-03 | NA | NA | NA | NA | 4.0 | 7.1E-08 | 1 |
| Cobalt, total | 1.6E+00 | 1.0E-03 | NA | NA | NA | NA | 4.0 | 6.4E-09 | 1 |
| Manganese, total | 6.0E+02 | 1.0E-03 | NA | NA | NA | NA | 4.0 | 2.4E-06 | 1 |
| Zinc, total | 1.9E+04 | 1.0E-03 | NA | NA | NA | NA | 4.0 | 7.7E-05 | 1 |

**Inorganics: $DA_{event}$ ($mg/cm^2$-event) =**

$$DA_{event} = K_p \times C_W \times tevent \times 0.001\ mg/ug \times 0.001\ l/cm^3 \quad \text{(Eq 1)}$$

Notes:

Values for permeability constants, B, tau, t*, and FA are from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005.

NA - Not applicable.

t* - Time to reach steady-state

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

CF1 - Conversion Factor 1 (0.001 mg/μg), CF2 - Conversion Factor 2 (0.001 $L/cm^3$)

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Surface Water | Surface Water | Off-Site Surface Water | Ingestion | Arsenic, total | 2.3E+00 | ug/L | NA | NA | NA | NA | NA | 1.7E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 5.8E-03 |
| | | | | Cadmium, total | 1.8E+01 | ug/L | NA | NA | NA | NA | NA | 1.4E-05 | mg/kg-day | 1.0E-03 | mg/kg-day | 1.4E-02 |
| | | | | Cobalt, total | 1.6E+00 | ug/L | NA | NA | NA | NA | NA | 1.2E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 4.1E-03 |
| | | | | Manganese, total | 6.0E+02 | ug/L | NA | NA | NA | NA | NA | 4.6E-04 | mg/kg-day | 2.4E-02 | mg/kg-day | 1.9E-02 |
| | | | | Zinc, total | 1.9E+04 | ug/L | NA | NA | NA | NA | NA | 1.5E-02 | mg/kg-day | 3.0E-01 | mg/kg-day | 4.9E-02 |
| | | | Exp. Route Total | | | | | | | | 0.0E+00 | | | | | 9.1E-02 |
| Surface Water | Surface Water | Off-Site Surface Water | Dermal | Arsenic, total | 2.3E+00 | ug/L | NA | NA | NA | NA | NA | 4.9E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.6E-03 |
| | | | | Cadmium, total | 1.8E+01 | ug/L | NA | NA | NA | NA | NA | 3.8E-06 | mg/kg-day | 2.5E-05 | mg/kg-day | 1.5E-01 |
| | | | | Cobalt, total | 1.6E+00 | ug/L | NA | NA | NA | NA | NA | 3.4E-07 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.1E-03 |
| | | | | Manganese, total | 6.0E+02 | ug/L | NA | NA | NA | NA | NA | 1.3E-04 | mg/kg-day | 2.4E-02 | mg/kg-day | 5.3E-03 |
| | | | | Zinc, total | 1.9E+04 | ug/L | NA | NA | NA | NA | NA | 4.1E-03 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.4E-02 |
| | | | Exp. Route Total | | | | | | | | 0.0E+00 | | | | | 1.7E-01 |
| | | Exposure Point Total | | | | | | | | | 0.0E+00 | | | | | 2.7E-01 |
| | Exposure Medium total | | | | | | | | | | 0.0E+00 | | | | | 2.7E-01 |
| Surface Water Total | | | | | | | | | | | 0.0E+00 | | | | | 2.7E-01 |
| Sediment | Sediment | Off-Site Sediment | Ingestion | Aluminum, total | 1.0E+04 | mg/kg | NA | NA | NA | NA | NA | 3.9E-03 | mg/kg-day | 1.0E+00 | mg/kg-day | 3.9E-03 |
| | | | | Antimony, total | 7.2E+00 | mg/kg | NA | NA | NA | NA | NA | 2.7E-06 | mg/kg-day | 4.0E-04 | mg/kg-day | 6.8E-03 |
| | | | | Arsenic, total | 9.8E+00 | mg/kg | NA | NA | NA | NA | NA | 3.7E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.2E-02 |
| | | | | Cadmium, total | 3.3E+01 | mg/kg | NA | NA | NA | NA | NA | 1.3E-05 | mg/kg-day | 1.0E-03 | mg/kg-day | 1.3E-02 |
| | | | | Cobalt, total | 8.4E+00 | mg/kg | NA | NA | NA | NA | NA | 3.2E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.1E-02 |
| | | | | Copper, total | 1.0E+02 | mg/kg | NA | NA | NA | NA | NA | 4.0E-05 | mg/kg-day | 4.0E-02 | mg/kg-day | 9.9E-04 |
| | | | | Iron, total | 2.3E+04 | mg/kg | NA | NA | NA | NA | NA | 8.9E-03 | mg/kg-day | 7.0E-01 | mg/kg-day | 1.3E-02 |
| | | | | Manganese, total | 4.7E+02 | mg/kg | NA | NA | NA | NA | NA | 1.8E-04 | mg/kg-day | 2.4E-02 | mg/kg-day | 7.4E-03 |
| | | | | Zinc, total | 1.1E+04 | mg/kg | NA | NA | NA | NA | NA | 4.1E-03 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.4E-02 |
| | | | Exp. Route Total | | | | | | | | 0.0E+00 | | | | | 8.1E-02 |
| Sediment | Sediment | Off-Site Sediment | Dermal | Aluminum, total | 1.0E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 1.0E+00 | mg/kg-day | NA |
| | | | | Antimony, total | 7.2E+00 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 6.0E-05 | mg/kg-day | NA |
| | | | | Arsenic, total | 9.8E+00 | mg/kg | NA | NA | NA | NA | NA | 3.1E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.0E-02 |
| | | | | Cadmium, total | 3.3E+01 | mg/kg | NA | NA | NA | NA | NA | 3.5E-07 | mg/kg-day | 2.5E-05 | mg/kg-day | 1.4E-02 |
| | | | | Cobalt, total | 8.4E+00 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-04 | mg/kg-day | NA |
| | | | | Copper, total | 1.0E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 4.0E-02 | mg/kg-day | NA |
| | | | | Iron, total | 2.3E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 7.0E-01 | mg/kg-day | NA |
| | | | | Manganese, total | 4.7E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 2.4E-02 | mg/kg-day | NA |
| | | | | Zinc, total | 1.1E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-01 | mg/kg-day | NA |
| | | | Exp. Route Total | | | | | | | | 0.0E+00 | | | | | 2.5E-02 |
| | | Exposure Point Total | | | | | | | | | 0.0E+00 | | | | | 1.1E-01 |
| | Exposure Medium Total | | | | | | | | | | 0.0E+00 | | | | | 1.1E-01 |
| Sediment Total | | | | | | | | | | | 0.0E+00 | | | | | 1.1E-01 |
| Receptor Total | | | | | | | | | | | 0.0E+00 | | | | | 3.7E-01 |

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult/Child Aggregate

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Surface Water | Surface Water | Off-Site Surface Water | Ingestion | Arsenic, total | 2.3E+00 | ug/L | 2.8E-07 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 4.2E-07 | NA | NA | NA | NA | NA |
| | | | | Cadmium, total | 1.8E+01 | ug/L | 2.2E-06 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Cobalt, total | 1.6E+00 | ug/L | 1.9E-07 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Manganese, total | 6.0E+02 | ug/L | 7.3E-05 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Zinc, total | 1.9E+04 | ug/L | 2.3E-03 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Exp. Route Total | | | | | | | | 4.2E-07 | | | | | 0.0E+00 |
| Surface Water | Surface Water | Off-Site Surface Water | Dermal | Arsenic, total | 2.3E+00 | ug/L | 1.2E-07 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 1.7E-07 | NA | NA | NA | NA | NA |
| | | | | Cadmium, total | 1.8E+01 | ug/L | 8.9E-07 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Cobalt, total | 1.6E+00 | ug/L | 8.0E-08 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Manganese, total | 6.0E+02 | ug/L | 3.0E-05 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Zinc, total | 1.9E+04 | ug/L | 9.7E-04 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Exp. Route Total | | | | | | | | 1.7E-07 | | | | | 0.0E+00 |
| | | Exposure Point Total | | | | | | | | | 5.9E-07 | | | | | 0.0E+00 |
| | Exposure Medium total | | | | | | | | | | 5.9E-07 | | | | | 0.0E+00 |
| Surface Water Total | | | | | | | | | | | 5.9E-07 | | | | | 0.0E+00 |
| Sediment | Sediment | Off-Site Sediment | Ingestion | Aluminum, total | 1.0E+04 | mg/kg | 4.8E-04 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Antimony, total | 7.2E+00 | mg/kg | 3.3E-07 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Arsenic, total | 9.8E+00 | mg/kg | 4.6E-07 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 6.9E-07 | NA | NA | NA | NA | NA |
| | | | | Cadmium, total | 3.3E+01 | mg/kg | 1.6E-06 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Cobalt, total | 8.4E+00 | mg/kg | 3.9E-07 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Copper, total | 1.0E+02 | mg/kg | 4.9E-06 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Iron, total | 2.3E+04 | mg/kg | 1.1E-03 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Manganese, total | 4.7E+02 | mg/kg | 2.2E-05 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Zinc, total | 1.1E+04 | mg/kg | 5.1E-04 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Exp. Route Total | | | | | | | | 6.9E-07 | | | | | 0.0E+00 |
| Sediment | Sediment | Off-Site Sediment | Dermal | Aluminum, total | 1.0E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Antimony, total | 7.2E+00 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Arsenic, total | 9.8E+00 | mg/kg | 7.4E-07 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 1.1E-06 | NA | NA | NA | NA | NA |
| | | | | Cadmium, total | 3.3E+01 | mg/kg | 8.3E-08 | mg/kg-day | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Cobalt, total | 8.4E+00 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Copper, total | 1.0E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Iron, total | 2.3E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Manganese, total | 4.7E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | | Zinc, total | 1.1E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Exp. Route Total | | | | | | | | 1.1E-06 | | | | | 0.0E+00 |
| | | Exposure Point Total | | | | | | | | | 1.8E-06 | | | | | 0.0E+00 |
| | Exposure Medium Total | | | | | | | | | | 1.8E-06 | | | | | 0.0E+00 |
| Sediment Total | | | | | | | | | | | 1.8E-06 | | | | | 0.0E+00 |
| Receptor Total | | | | | | | | | | | 2.4E-06 | | | | | 0.0E+00 |

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil and Residue | Surface Soil and Residue (0-2 feet) | Exposure Area 2 Surface Soil and Residue (0-2 ft) | Ingestion | Antimony, total | 3.6E+02 | mg/kg | 1.3E-04 | mg/kg-day | NA | NA | NA | 3.5E-04 | mg/kg-day | 4.0E-04 | mg/kg-day | 8.8E-01 |
| | | | | Arsenic, total | 4.1E+01 | mg/kg | 1.4E-05 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 2.1E-05 | 4.0E-05 | mg/kg-day | 3.0E-04 | mg/kg-day | 1.3E-01 |
| | | | | Cadmium, total | 5.7E+01 | mg/kg | 2.0E-05 | mg/kg-day | NA | NA | NA | 5.6E-05 | mg/kg-day | 1.0E-03 | mg/kg-day | 5.6E-02 |
| | | | | Cobalt, total | 2.5E+02 | mg/kg | 8.6E-05 | mg/kg-day | NA | NA | NA | 2.4E-04 | mg/kg-day | 3.0E-04 | mg/kg-day | 8.1E-01 |
| | | | | Copper, total | 8.2E+03 | mg/kg | 2.9E-03 | mg/kg-day | NA | NA | NA | 8.0E-03 | mg/kg-day | 4.0E-02 | mg/kg-day | 2.0E-01 |
| | | | | Iron, total | 5.1E+04 | mg/kg | 1.8E-02 | mg/kg-day | NA | NA | NA | 5.0E-02 | mg/kg-day | 7.0E-01 | mg/kg-day | 7.1E-02 |
| | | | | Manganese, total | 9.3E+02 | mg/kg | 3.2E-04 | mg/kg-day | NA | NA | NA | 9.1E-04 | mg/kg-day | 2.4E-02 | mg/kg-day | 3.8E-02 |
| | | | | Nickel, total | 4.7E+03 | mg/kg | 1.6E-03 | mg/kg-day | NA | NA | NA | 4.6E-03 | mg/kg-day | 2.0E-02 | mg/kg-day | 2.3E-01 |
| | | | | Thallium, total | 8.2E-01 | mg/kg | 2.9E-07 | mg/kg-day | NA | NA | NA | 8.0E-07 | mg/kg-day | 1.0E-05 | mg/kg-day | 8.0E-02 |
| | | | | Zinc, total | 1.6E+05 | mg/kg | 5.6E-02 | mg/kg-day | NA | NA | NA | 1.6E-01 | mg/kg-day | 3.0E-01 | mg/kg-day | 5.2E-01 |
| | | | Exp. Route Total | | | | | | | | 2.1E-05 | | | | | 3.0E+00 |
| Soil and Residue | Surface Soil and Residue (0-2 feet) | Exposure Area 2 Surface Soil and Residue (0-2 ft) | Dermal | Antimony, total | 3.6E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 6.0E-05 | mg/kg-day | NA |
| | | | | Arsenic, total | 4.1E+01 | mg/kg | 2.8E-06 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 4.2E-06 | 7.9E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 2.6E-02 |
| | | | | Cadmium, total | 5.7E+01 | mg/kg | 1.3E-07 | mg/kg-day | NA | NA | NA | 3.7E-07 | mg/kg-day | 2.5E-05 | mg/kg-day | 1.5E-02 |
| | | | | Cobalt, total | 2.5E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-04 | mg/kg-day | NA |
| | | | | Copper, total | 8.2E+03 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 4.0E-02 | mg/kg-day | NA |
| | | | | Iron, total | 5.1E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 7.0E-01 | mg/kg-day | NA |
| | | | | Manganese, total | 9.3E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 2.4E-02 | mg/kg-day | NA |
| | | | | Nickel, total | 4.7E+03 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 8.0E-04 | mg/kg-day | NA |
| | | | | Thallium, total | 8.2E-01 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 1.0E-05 | mg/kg-day | NA |
| | | | | Zinc, total | 1.6E+05 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-01 | mg/kg-day | NA |
| | | | Exp. Route Total | | | | | | | | 4.2E-06 | | | | | 4.1E-02 |
| | | Exposure Point Total | | | | | | | | | 2.6E-05 | | | | | 3.1E+00 |
| | Exposure Medium Total | | | | | | | | | | 2.6E-05 | | | | | 3.1E+00 |
| Soil and Residue | Ambient Air | Exposure Area 2 Emissions from Surface Soil and Residue | Inhalation | Antimony, total | 1.9E-07 | $mg/m^3$ | 1.6E-08 | $mg/m^3$ | NA | NA | NA | 4.4E-08 | $mg/m^3$ | NA | NA | NA |
| | | | | Arsenic, total | 2.2E-08 | $mg/m^3$ | 1.8E-09 | $mg/m^3$ | 4.3E-03 | 1/(ug/m3) | 7.7E-09 | 5.0E-09 | $mg/m^3$ | 1.5E-05 | mg/m3 | 3.3E-04 |
| | | | | Cadmium, total | 3.1E-08 | $mg/m^3$ | 2.5E-09 | $mg/m^3$ | 1.8E-03 | 1/(ug/m3) | 4.5E-09 | 7.0E-09 | $mg/m^3$ | 2.0E-05 | mg/m3 | 3.5E-04 |
| | | | | Cobalt, total | 1.3E-07 | $mg/m^3$ | 1.1E-08 | $mg/m^3$ | 9.0E-03 | 1/(ug/m3) | 9.7E-08 | 3.0E-08 | $mg/m^3$ | 6.0E-06 | mg/m3 | 5.0E-03 |
| | | | | Copper, total | 4.4E-06 | $mg/m^3$ | 3.6E-07 | $mg/m^3$ | NA | NA | NA | 1.0E-06 | $mg/m^3$ | NA | NA | NA |
| | | | | Iron, total | 2.7E-05 | $mg/m^3$ | 2.2E-06 | $mg/m^3$ | NA | NA | NA | 6.2E-06 | $mg/m^3$ | NA | NA | NA |
| | | | | Manganese, total | 5.0E-07 | $mg/m^3$ | 4.1E-08 | $mg/m^3$ | NA | NA | NA | 1.1E-07 | $mg/m^3$ | 5.0E-05 | mg/m3 | 2.3E-03 |
| | | | | Nickel, total | 2.5E-06 | $mg/m^3$ | 2.1E-07 | $mg/m^3$ | NA | NA | NA | 5.8E-07 | $mg/m^3$ | 9.0E-05 | mg/m3 | 6.4E-03 |
| | | | | Thallium, total | 4.4E-10 | $mg/m^3$ | 3.6E-11 | $mg/m^3$ | NA | NA | NA | 1.0E-10 | $mg/m^3$ | NA | NA | NA |
| | | | | Zinc, total | 8.6E-05 | $mg/m^3$ | 7.0E-06 | $mg/m^3$ | NA | NA | NA | 2.0E-05 | $mg/m^3$ | NA | NA | NA |
| | | | Exp. Route Total | | | | | | | | 1.1E-07 | | | | | 1.4E-02 |
| | | Exposure Point Total | | | | | | | | | 1.1E-07 | | | | | 1.4E-02 |
| | Exposure Medium Total | | | | | | | | | | 1.1E-07 | | | | | 1.4E-02 |
| Soil Total | | | | | | | | | | | 2.6E-05 | | | | | 3.1E+00 |
| Receptor Total | | | | | | | | | | | 2.6E-05 | | | | | 3.1E+00 |

NA = Not applicable.

TABLE 7.6.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eagle Zinc

Hillsboro Illinois

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | EPC | | Cancer Risk Calculations | | | | | Non-Cancer Hazard Calculations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Value | Units | Intake/Exposure Concentration | | CSF/Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD/RfC | | Hazard Quotient |
| | | | | | | | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Soil and Residue | Total Soil and Residue (0-10 feet) | Exposure Area 2 Total Soil and Residue (0-10 ft) | Ingestion | Antimony, total | 2.1E+02 | mg/kg | 9.9E-06 | mg/kg-day | NA | NA | NA | 6.9E-04 | mg/kg-day | 4.0E-04 | mg/kg-day | 1.7E+00 |
| | | | | Arsenic, total | 3.2E+01 | mg/kg | 1.5E-06 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 2.2E-06 | 1.0E-04 | mg/kg-day | 3.0E-04 | mg/kg-day | 3.5E-01 |
| | | | | Cadmium, total | 5.2E+01 | mg/kg | 2.4E-06 | mg/kg-day | NA | NA | NA | 1.7E-04 | mg/kg-day | 1.0E-03 | mg/kg-day | 1.7E-01 |
| | | | | Cobalt, total | 2.0E+02 | mg/kg | 9.4E-06 | mg/kg-day | NA | NA | NA | 6.6E-04 | mg/kg-day | 3.0E-04 | mg/kg-day | 2.2E+00 |
| | | | | Copper, total | 6.2E+03 | mg/kg | 2.8E-04 | mg/kg-day | NA | NA | NA | 2.0E-02 | mg/kg-day | 4.0E-02 | mg/kg-day | 5.0E-01 |
| | | | | Iron, total | 4.7E+04 | mg/kg | 2.1E-03 | mg/kg-day | NA | NA | NA | 1.5E-01 | mg/kg-day | 7.0E-01 | mg/kg-day | 2.1E-01 |
| | | | | Manganese, total | 7.7E+02 | mg/kg | 3.6E-05 | mg/kg-day | NA | NA | NA | 2.5E-03 | mg/kg-day | 2.4E-02 | mg/kg-day | 1.0E-01 |
| | | | | Nickel, total | 4.0E+03 | mg/kg | 1.8E-04 | mg/kg-day | NA | NA | NA | 1.3E-02 | mg/kg-day | 2.0E-02 | mg/kg-day | 6.4E-01 |
| | | | | Thallium, total | 5.4E-01 | mg/kg | 2.5E-08 | mg/kg-day | NA | NA | NA | 1.8E-06 | mg/kg-day | 4.0E-05 | mg/kg-day | 4.4E-02 |
| | | | | Zinc, total | 1.2E+05 | mg/kg | 5.6E-03 | mg/kg-day | NA | NA | NA | 3.9E-01 | mg/kg-day | 3.0E-01 | mg/kg-day | 1.3E+00 |
| | | | Exp. Route Total | | | | | | | | 2.2E-06 | | | | | 7.3E+00 |
| Soil and Residue | Total Soil and Residue (0-10 feet) | Exposure Area 2 Total Soil and Residue (0-10 ft) | Dermal | Antimony, total | 2.1E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 6.0E-05 | mg/kg-day | NA |
| | | | | Arsenic, total | 3.2E+01 | mg/kg | 1.3E-07 | mg/kg-day | 1.5E+00 | 1/(mg/kg-day) | 2.0E-07 | 9.4E-06 | mg/kg-day | 3.0E-04 | mg/kg-day | 3.1E-02 |
| | | | | Cadmium, total | 5.2E+01 | mg/kg | 7.2E-09 | mg/kg-day | NA | NA | NA | 5.0E-07 | mg/kg-day | 2.5E-05 | mg/kg-day | 2.0E-02 |
| | | | | Cobalt, total | 2.0E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-04 | mg/kg-day | NA |
| | | | | Copper, total | 6.2E+03 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 4.0E-02 | mg/kg-day | NA |
| | | | | Iron, total | 4.7E+04 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 7.0E-01 | mg/kg-day | NA |
| | | | | Manganese, total | 7.7E+02 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 2.4E-02 | mg/kg-day | NA |
| | | | | Nickel, total | 4.0E+03 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 8.0E-04 | mg/kg-day | NA |
| | | | | Thallium, total | 5.4E-01 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 4.0E-05 | mg/kg-day | NA |
| | | | | Zinc, total | 1.2E+05 | mg/kg | NA | NA | NA | NA | NA | NA | NA | 3.0E-01 | mg/kg-day | NA |
| | | | Exp. Route Total | | | | | | | | 2.0E-07 | | | | | 5.1E-02 |
| | | Exposure Point Total | | | | | | | | | 2.4E-06 | | | | | 7.3E+00 |
| | Exposure Medium Total | | | | | | | | | | 2.4E-06 | | | | | 7.3E+00 |
| Soil and Residue | Ambient Air | Exposure Area 2 Emissions from Total Soil and Residue | Inhalation | Antimony, total | 2.2E-05 | $mg/m^3$ | 7.0E-08 | $mg/m^3$ | NA | NA | NA | 4.9E-06 | $mg/m^3$ | NA | NA | NA |
| | | | | Arsenic, total | 3.2E-06 | $mg/m^3$ | 1.1E-08 | $mg/m^3$ | 4.3E-03 | 1/(ug/m3) | 4.5E-08 | 7.4E-07 | $mg/m^3$ | 1.5E-05 | mg/m3 | 4.9E-02 |
| | | | | Cadmium, total | 5.2E-06 | $mg/m^3$ | 1.7E-08 | $mg/m^3$ | 1.8E-03 | 1/(ug/m3) | 3.1E-08 | 1.2E-06 | $mg/m^3$ | 2.0E-05 | mg/m3 | 5.9E-02 |
| | | | | Cobalt, total | 2.0E-05 | $mg/m^3$ | 6.7E-08 | $mg/m^3$ | 9.0E-03 | 1/(ug/m3) | 6.0E-07 | 4.7E-06 | $mg/m^3$ | 6.0E-06 | mg/m3 | 7.8E-01 |
| | | | | Copper, total | 6.2E-04 | $mg/m^3$ | 2.0E-06 | $mg/m^3$ | NA | NA | NA | 1.4E-04 | $mg/m^3$ | NA | NA | NA |
| | | | | Iron, total | 4.7E-03 | $mg/m^3$ | 1.5E-05 | $mg/m^3$ | NA | NA | NA | 1.1E-03 | $mg/m^3$ | NA | NA | NA |
| | | | | Manganese, total | 7.8E-05 | $mg/m^3$ | 2.5E-07 | $mg/m^3$ | NA | NA | NA | 1.8E-05 | $mg/m^3$ | 5.0E-05 | mg/m3 | 3.5E-01 |
| | | | | Nickel, total | 4.0E-04 | $mg/m^3$ | 1.3E-06 | $mg/m^3$ | NA | NA | NA | 9.1E-05 | $mg/m^3$ | 9.0E-05 | mg/m3 | 1.0E+00 |
| | | | | Thallium, total | 5.4E-08 | $mg/m^3$ | 1.8E-10 | $mg/m^3$ | NA | NA | NA | 1.2E-08 | $mg/m^3$ | NA | NA | NA |
| | | | | Zinc, total | 1.2E-02 | $mg/m^3$ | 4.0E-05 | $mg/m^3$ | NA | NA | NA | 2.8E-03 | $mg/m^3$ | NA | NA | NA |
| | | | Exp. Route Total | | | | | | | | 6.8E-07 | | | | | 2.3E+00 |
| | | Exposure Point Total | | | | | | | | | 6.8E-07 | | | | | 2.3E+00 |
| | Exposure Medium Total | | | | | | | | | | 6.8E-07 | | | | | 2.3E+00 |
| Soil Total | | | | | | | | | | | 3.1E-06 | | | | | 9.6E+00 |
| Receptor Total | | | | | | | | | | | 3.1E-06 | | | | | 9.6E+00 |

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Soil and Residue | Surface Soil and Residue | Exposure Area 2 Surface Soil and Residue (0-2 ft) | Benzo(a)pyrene | 7E-08 | NA | 8E-08 | 2E-07 | NA | NA | NA | NA | NA |
| | | | Aluminum, total | NA | NA | NA | NA | Nervous System | 8E-03 | NA | NA | 8E-03 |
| | | | Antimony, total | NA | NA | NA | NA | Longevity, Blood | 3E-01 | NA | NA | 3E-01 |
| | | | Arsenic, total | 3E-06 | NA | 8E-07 | 4E-06 | Skin, Cardiovascular | 5E-02 | NA | 1E-02 | 6E-02 |
| | | | Barium, total | NA | NA | NA | NA | Kidney | 1E-03 | NA | NA | 1E-03 |
| | | | Cadmium, total | NA | NA | NA | NA | Kidney | 2E-02 | NA | 7E-03 | 3E-02 |
| | | | Cobalt, total | NA | NA | NA | NA | Thyroid | 3E-01 | NA | NA | 3E-01 |
| | | | Copper, total | NA | NA | NA | NA | NA | 8E-02 | NA | NA | 8E-02 |
| | | | Iron, total | NA | NA | NA | NA | GI System | 3E-02 | NA | NA | 3E-02 |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | 1E-02 | NA | NA | 1E-02 |
| | | | Nickel, total | NA | NA | NA | NA | Body Weight, Organ Weight | 9E-02 | NA | NA | 9E-02 |
| | | | Silver, total | NA | NA | NA | NA | Skin | 2E-03 | NA | NA | 2E-03 |
| | | | Thallium, total | NA | NA | NA | NA | Hair | 3E-02 | NA | NA | 3E-02 |
| | | | Vanadium, total | NA | NA | NA | NA | Hair | 2E-03 | NA | NA | 2E-03 |
| | | | Zinc, total | NA | NA | NA | NA | Blood | 2E-01 | NA | NA | 2E-01 |
| | | Exposure Point Total | | 3E-06 | NA | 9E-07 | 4E-06 | | 1E+00 | NA | 2E-02 | 1E+00 |
| | Exposure Medium Total | | | 3E-06 | NA | 9E-07 | 4E-06 | | 1E+00 | NA | 2E-02 | 1E+00 |
| | Ambient Air | Exposure Area 2 Emissions from Surface Soil and Residue | Benzo(a)pyrene | NA | 4E-13 | NA | 4E-13 | NA | NA | NA | NA | NA |
| | | | Aluminum, total | NA | NA | NA | NA | Nervous System | NA | 6E-05 | NA | 6E-05 |
| | | | Antimony, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Arsenic, total | NA | 3E-10 | NA | 3E-10 | Cardiovascular, Nervous System, Development | NA | 3E-05 | NA | 3E-05 |
| | | | Barium, total | NA | NA | NA | NA | Development | NA | 2E-05 | NA | 2E-05 |
| | | | Cadmium, total | NA | 2E-10 | NA | 2E-10 | Kidney | NA | 4E-05 | NA | 4E-05 |
| | | | Cobalt, total | NA | 4E-09 | NA | 4E-09 | Respiratory | NA | 5E-04 | NA | 5E-04 |
| | | | Copper, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Iron, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | NA | 2E-04 | NA | 2E-04 |
| | | | Nickel, total | NA | NA | NA | NA | Respiratory | NA | 7E-04 | NA | 7E-04 |
| | | | Silver, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Thallium, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Vanadium, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Zinc, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | Exposure Point Total | | NA | 5E-09 | NA | 5E-09 | | NA | 2E-03 | NA | 2E-03 |
| | Exposure Medium Total | | | NA | 5E-09 | NA | 5E-09 | | NA | 2E-03 | NA | 2E-03 |
| Medium Total | | | | 3E-06 | 5E-09 | 9E-07 | 4E-06 | | 1E+00 | 2E-03 | 2E-02 | 1E+00 |

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Surface Water | Surface Water | On-Site Surface Water | Cadmium, total | NA | NA | NA | NA | Kidney | 1E-02 | NA | 3E-01 | 3E-01 |
| | | | Cobalt, total | NA | NA | NA | NA | Thyroid | 1E-03 | NA | 6E-04 | 2E-03 |
| | | | Iron, total | NA | NA | NA | NA | GI System | 7E-04 | NA | 3E-04 | 1E-03 |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | 5E-03 | NA | 2E-03 | 7E-03 |
| | | | Zinc, total | NA | NA | NA | NA | Blood | 4E-03 | NA | 2E-03 | 7E-03 |
| | | | Trichloroethylene (TCE) | 2E-08 | NA | 1E-07 | 2E-07 | Immune System, Cardiovascular, Development | 2E-03 | NA | 1E-02 | 2E-02 |
| | | Exposure Point Total | | 2E-08 | NA | 1E-07 | 2E-07 | | 3E-02 | NA | 3E-01 | 3E-01 |
| | Exposure Medium Total | | | 2E-08 | NA | 1E-07 | 2E-07 | | 3E-02 | NA | 3E-01 | 3E-01 |
| Medium Total | | | | 2E-08 | NA | 1E-07 | 2E-07 | | 3E-02 | NA | 3E-01 | 3E-01 |
| Sediment | Sediment | On-Site Sediment | Arsenic, total | 8E-08 | NA | 2E-07 | 3E-07 | Skin, Cardiovascular | 1E-03 | NA | 4E-03 | 5E-03 |
| | | | Cadmium, total | NA | NA | NA | NA | Kidney | 1E-02 | NA | 4E-02 | 5E-02 |
| | | | Cobalt, total | NA | NA | NA | NA | Thyroid | 1E-03 | NA | NA | 1E-03 |
| | | | Iron, total | NA | NA | NA | NA | GI System | 2E-03 | NA | NA | 2E-03 |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | 9E-04 | NA | NA | 9E-04 |
| | | | Zinc, total | NA | NA | NA | NA | Blood | 2E-03 | NA | NA | 2E-03 |
| | | Exposure Point Total | | 8E-08 | NA | 2E-07 | 3E-07 | | 2E-02 | NA | 4E-02 | 6E-02 |
| | Exposure Medium Total | | | 8E-08 | NA | 2E-07 | 3E-07 | | 2E-02 | NA | 4E-02 | 6E-02 |
| Medium Total | | | | 8E-08 | NA | 2E-07 | 3E-07 | | 2E-02 | NA | 4E-02 | 6E-02 |
| Receptor Total | | | | 3E-06 | 5E-09 | 1E-06 | 5E-06 | | 1E+00 | 2E-03 | 3E-01 | 2E+00 |

NA = Not applicable or not available

| | |
|---|---|
| Total Blood HI Across Media = | 5E-01 |
| Total Body Weight HI Across Media = | 9E-02 |
| Total Cardiovascular HI Across Media = | 8E-02 |
| Total Development HI Across Media = | 2E-02 |
| Total GI System HI Across Media = | 3E-02 |
| Total Hair HI Across Media = | 3E-02 |
| Total Kidney HI Across Media = | 3E-01 |
| Total Longevity HI Across Media = | 3E-01 |
| Total Nervous System HI Across Media = | 3E-02 |
| Total Immune System HI Across Media = | 2E-02 |
| Total Organ Weight HI Across Media = | 9E-02 |
| Total Respiratory HI Across Media = | 1E-03 |
| Total Skin HI Across Media = | 7E-02 |
| Total Thyroid HI Across Media = | 3E-01 |

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Surface Water | Surface Water | Off-Site Surface Water | Arsenic, total | NA | NA | NA | NA | Skin, Cardiovascular | 1E-03 | NA | 7E-04 | 2E-03 |
| | | | Cadmium, total | NA | NA | NA | NA | Kidney | 3E-03 | NA | 7E-02 | 7E-02 |
| | | | Cobalt, total | NA | NA | NA | NA | Thyroid | 9E-04 | NA | 5E-04 | 1E-03 |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | 4E-03 | NA | 2E-03 | 6E-03 |
| | | | Zinc, total | NA | NA | NA | NA | Blood | 1E-02 | NA | 6E-03 | 2E-02 |
| | | Exposure Point Total | | 0E+00 | NA | NA | 0E+00 | | 2E-02 | NA | 8E-02 | 1E-01 |
| | Exposure Medium Total | | | 0E+00 | NA | NA | 0E+00 | | 2E-02 | NA | 8E-02 | 1E-01 |
| Medium Total | | | | 0E+00 | NA | NA | 0E+00 | | 2E-02 | NA | 8E-02 | 1E-01 |
| Sediment | Sediment | Off-Site Sediment | Aluminum, total | NA | NA | NA | NA | Nervous System | 4E-04 | NA | NA | 4E-04 |
| | | | Antimony, total | NA | NA | NA | NA | Longevity, Blood | 7E-04 | NA | NA | 7E-04 |
| | | | Arsenic, total | NA | NA | NA | NA | Skin, Cardiovascular | 1E-03 | NA | 5E-03 | 6E-03 |
| | | | Cadmium, total | NA | NA | NA | NA | Kidney | 1E-03 | NA | 6E-03 | 8E-03 |
| | | | Cobalt, total | NA | NA | NA | NA | Thyroid | 1E-03 | NA | NA | 1E-03 |
| | | | Copper, total | NA | NA | NA | NA | NA | 1E-04 | NA | NA | 1E-04 |
| | | | Iron, total | NA | NA | NA | NA | GI System | 1E-03 | NA | NA | 1E-03 |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | 8E-04 | NA | NA | 8E-04 |
| | | | Zinc, total | NA | NA | NA | NA | Blood | 1E-03 | NA | NA | 1E-03 |
| | | Exposure Point Total | | 0E+00 | NA | 0E+00 | 0E+00 | | 9E-03 | NA | 1E-02 | 2E-02 |
| | Exposure Medium Total | | | 0E+00 | NA | 0E+00 | 0E+00 | | 9E-03 | NA | 1E-02 | 2E-02 |
| Medium Total | | | | 0E+00 | NA | 0E+00 | 0E+00 | | 9E-03 | NA | 1E-02 | 2E-02 |
| Receptor Total | | | | 0E+00 | NA | 0E+00 | 0E+00 | | 3E-02 | 0E+00 | 9E-02 | 1E-01 |

NA = Not applicable or not available

| | |
|---|---|
| Total Blood HI Across Media = | 2E-02 |
| Total Cardiovascular HI Across Media = | 8E-03 |
| Total GI System HI Across Media = | 1E-03 |
| Total Kidney HI Across Media = | 8E-02 |
| Total Longevity HI Across Media = | 7E-04 |
| Total Nervous System HI Across Media = | 8E-03 |
| Total Skin HI Across Media = | 8E-03 |
| Total Thyroid HI Across Media = | 3E-03 |

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Child

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Surface Water | Surface Water | Off-Site Surface Water | Arsenic, total | NA | NA | NA | NA | Skin, Cardiovascular | 6E-03 | NA | 2E-03 | 7E-03 |
| | | | Cadmium, total | NA | NA | NA | NA | Kidney | 1E-02 | NA | 2E-01 | 2E-01 |
| | | | Cobalt, total | NA | NA | NA | NA | Thyroid | 4E-03 | NA | 1E-03 | 5E-03 |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | 2E-02 | NA | 5E-03 | 2E-02 |
| | | | Zinc, total | NA | NA | NA | NA | Blood | 5E-02 | NA | 1E-02 | 6E-02 |
| | | Exposure Point Total | | 0E+00 | NA | NA | 0E+00 | | 9E-02 | NA | 2E-01 | 3E-01 |
| | Exposure Medium Total | | | 0E+00 | NA | NA | 0E+00 | | 9E-02 | NA | 2E-01 | 3E-01 |
| Medium Total | | | | 0E+00 | NA | NA | 0E+00 | | 9E-02 | NA | 2E-01 | 3E-01 |
| Sediment | Sediment | Off-Site Sediment | Aluminum, total | NA | NA | NA | NA | Nervous System | 4E-03 | NA | NA | 4E-03 |
| | | | Antimony, total | NA | NA | NA | NA | Longevity, Blood | 7E-03 | NA | NA | 7E-03 |
| | | | Arsenic, total | NA | NA | NA | NA | Skin, Cardiovascular | 1E-02 | NA | 1E-02 | 2E-02 |
| | | | Cadmium, total | NA | NA | NA | NA | Kidney | 1E-02 | NA | 1E-02 | 3E-02 |
| | | | Cobalt, total | NA | NA | NA | NA | Thyroid | 1E-02 | NA | NA | 1E-02 |
| | | | Copper, total | NA | NA | NA | NA | NA | 1E-03 | NA | NA | 1E-03 |
| | | | Iron, total | NA | NA | NA | NA | GI System | 1E-02 | NA | NA | 1E-02 |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | 7E-03 | NA | NA | 7E-03 |
| | | | Zinc, total | NA | NA | NA | NA | Blood | 1E-02 | NA | NA | 1E-02 |
| | | Exposure Point Total | | 0E+00 | NA | 0E+00 | 0E+00 | | 8E-02 | NA | 2E-02 | 1E-01 |
| | Exposure Medium Total | | | 0E+00 | NA | 0E+00 | 0E+00 | | 8E-02 | NA | 2E-02 | 1E-01 |
| Medium Total | | | | 0E+00 | NA | 0E+00 | 0E+00 | | 8E-02 | NA | 2E-02 | 1E-01 |
| Receptor Total | | | | 0E+00 | 0E+00 | 0E+00 | 0E+00 | | 2E-01 | 0E+00 | 2E-01 | 4E-01 |

NA = Not applicable or not available

| | |
|---|---|
| Total Blood HI Across Media = | 8E-02 |
| Total Cardiovascular HI Across Media = | 3E-02 |
| Total GI System HI Across Media = | 1E-02 |
| Total Kidney HI Across Media = | 2E-01 |
| Total Longevity HI Across Media = | 7E-03 |
| Total Nervous System HI Across Media = | 4E-02 |
| Total Skin HI Across Media = | 3E-02 |
| Total Thyroid HI Across Media = | 2E-02 |

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adult/Child Aggregate

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Surface Water | Surface Water | Off-Site Surface Water | Arsenic, total | 4E-07 | NA | 2E-07 | 6E-07 | Skin, Cardiovascular | NA | NA | NA | NA |
| | | | Cadmium, total | NA | NA | NA | NA | Kidney | NA | NA | NA | NA |
| | | | Cobalt, total | NA | NA | NA | NA | Thyroid | NA | NA | NA | NA |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | NA | NA | NA | NA |
| | | | Zinc, total | NA | NA | NA | NA | Blood | NA | NA | NA | NA |
| | | Exposure Point Total | | 4E-07 | NA | 2E-07 | 6E-07 | | 0E+00 | NA | NA | 0E+00 |
| | Exposure Medium Total | | | 4E-07 | NA | 2E-07 | 6E-07 | | 0E+00 | NA | NA | 0E+00 |
| Medium Total | | | | 4E-07 | NA | 2E-07 | 6E-07 | | 0E+00 | NA | NA | 0E+00 |
| Sediment | Sediment | Off-Site Sediment | Aluminum, total | NA | NA | NA | NA | Nervous System | NA | NA | NA | NA |
| | | | Antimony, total | NA | NA | NA | NA | Longevity, Blood | NA | NA | NA | NA |
| | | | Arsenic, total | 7E-07 | NA | 1E-06 | 2E-06 | Skin, Cardiovascular | NA | NA | NA | NA |
| | | | Cadmium, total | NA | NA | NA | NA | Kidney | NA | NA | NA | NA |
| | | | Cobalt, total | NA | NA | NA | NA | Thyroid | NA | NA | NA | NA |
| | | | Copper, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Iron, total | NA | NA | NA | NA | GI System | NA | NA | NA | NA |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | NA | NA | NA | NA |
| | | | Zinc, total | NA | NA | NA | NA | Blood | NA | NA | NA | NA |
| | | Exposure Point Total | | 7E-07 | NA | 1E-06 | 2E-06 | | 0E+00 | NA | 0E+00 | 0E+00 |
| | Exposure Medium Total | | | 7E-07 | NA | 1E-06 | 2E-06 | | 0E+00 | NA | 0E+00 | 0E+00 |
| Medium Total | | | | 7E-07 | NA | 1E-06 | 2E-06 | | 0E+00 | NA | 0E+00 | 0E+00 |
| Receptor Total | | | | 1E-06 | NA | 1E-06 | 2E-06 | | 0E+00 | 0E+00 | 0E+00 | 0E+00 |

NA = Not applicable or not available

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Soil and Residue | Surface Soil and Residue | Exposure Area 2 Surface Soil and Residue (0-2 ft) | Antimony, total | NA | NA | NA | NA | Longevity, Blood | 9E-01 | NA | NA | 9E-01 |
| | | | Arsenic, total | 2E-05 | NA | 4E-06 | 3E-05 | Skin, Cardiovascular | 1E-01 | NA | 3E-02 | 2E-01 |
| | | | Cadmium, total | NA | NA | NA | NA | Kidney | 6E-02 | NA | 1E-02 | 7E-02 |
| | | | Cobalt, total | NA | NA | NA | NA | Thyroid | 8E-01 | NA | NA | 8E-01 |
| | | | Copper, total | NA | NA | NA | NA | NA | 2E-01 | NA | NA | 2E-01 |
| | | | Iron, total | NA | NA | NA | NA | GI System | 7E-02 | NA | NA | 7E-02 |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | 4E-02 | NA | NA | 4E-02 |
| | | | Nickel, total | NA | NA | NA | NA | Body Weight, Organ Weight | 2E-01 | NA | NA | 2E-01 |
| | | | Thallium, total | NA | NA | NA | NA | Hair | 8E-02 | NA | NA | 8E-02 |
| | | | Zinc, total | NA | NA | NA | NA | Blood | 5E-01 | NA | NA | 5E-01 |
| | | Exposure Point Total | | 2E-05 | NA | 4E-06 | 3E-05 | | 3E+00 | NA | 4E-02 | 3E+00 |
| | Exposure Medium Total | | | 2E-05 | NA | 4E-06 | 3E-05 | | 3E+00 | NA | 4E-02 | 3E+00 |
| | Ambient Air | Exposure Area 2 Emissions from Surface Soil and Residue | Antimony, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Arsenic, total | NA | 8E-09 | NA | 8E-09 | Cardiovascular, Nervous System, Development | NA | 3E-04 | NA | 3E-04 |
| | | | Cadmium, total | NA | 4E-09 | NA | 4E-09 | Kidney | NA | 3E-04 | NA | 3E-04 |
| | | | Cobalt, total | NA | 1E-07 | NA | 1E-07 | Respiratory | NA | 5E-03 | NA | 5E-03 |
| | | | Copper, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Iron, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | NA | 2E-03 | NA | 2E-03 |
| | | | Nickel, total | NA | NA | NA | NA | Respiratory | NA | 6E-03 | NA | 6E-03 |
| | | | Thallium, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Zinc, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | Exposure Point Total | | NA | 1E-07 | NA | 1E-07 | | NA | 1E-02 | NA | 1E-02 |
| | Exposure Medium Total | | | NA | 1E-07 | NA | 1E-07 | | NA | 1E-02 | NA | 1E-02 |
| Medium Total | | | | 2E-05 | 1E-07 | 4E-06 | 3E-05 | | 3E+00 | 1E-02 | 4E-02 | 3E+00 |
| Receptor Total | | | | 2E-05 | 1E-07 | 4E-06 | 3E-05 | | 3E+00 | 1E-02 | 4E-02 | 3E+00 |

NA = Not applicable or not available

| | |
|---|---|
| Total Blood HI Across Media = | **1.4E+00** |
| Total Body Weight HI Across Media = | 2E-01 |
| Total Cardiovascular HI Across Media = | 2E-01 |
| Total Development HI Across Media = | 3E-04 |
| Total GI System HI Across Media = | 7E-02 |
| Total Hair HI Across Media = | 8E-02 |
| Total Kidney HI Across Media = | 7E-02 |
| Total Longevity HI Across Media = | 9E-01 |
| Total Nervous System HI Across Media = | 4E-02 |
| Total Organ Weight HI Across Media = | 2E-01 |
| Total Respiratory HI Across Media = | 1E-02 |
| Total Skin HI Across Media = | 2E-01 |
| Total Thyroid HI Across Media = | 8E-01 |

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Soil and Residue | Total Soil and Residue | Exposure Area 2 Total Soil and Residue (0-10 ft) | Antimony, total | NA | NA | NA | NA | Longevity, Blood | 2E+00 | NA | NA | 2E+00 |
| | | | Arsenic, total | 2E-06 | NA | 2E-07 | 2E-06 | Skin | 3E-01 | NA | 3E-02 | 4E-01 |
| | | | Cadmium, total | NA | NA | NA | NA | Kidney | 2E-01 | NA | 2E-02 | 2E-01 |
| | | | Cobalt, total | NA | NA | NA | NA | Thyroid | 2E+00 | NA | NA | 2E+00 |
| | | | Copper, total | NA | NA | NA | NA | NA | 5E-01 | NA | NA | 5E-01 |
| | | | Iron, total | NA | NA | NA | NA | GI System | 2E-01 | NA | NA | 2E-01 |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | 1E-01 | NA | NA | 1E-01 |
| | | | Nickel, total | NA | NA | NA | NA | Body Weight, Organ Weight | 6E-01 | NA | NA | 6E-01 |
| | | | Thallium, total | NA | NA | NA | NA | Hair | 4E-02 | NA | NA | 4E-02 |
| | | | Zinc, total | NA | NA | NA | NA | Blood | 1E+00 | NA | NA | 1E+00 |
| | | Exposure Point Total | | 2E-06 | NA | 2E-07 | 2E-06 | | 7E+00 | NA | 5E-02 | 7E+00 |
| | Exposure Medium Total | | | 2E-06 | NA | 2E-07 | 2E-06 | | 7E+00 | NA | 5E-02 | 7E+00 |
| | Ambient Air | Exposure Area 2 Emissions from Total Soil and Residue | Antimony, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Arsenic, total | NA | 5E-08 | NA | 5E-08 | Cardiovascular, Nervous System, Development | NA | 5E-02 | NA | 5E-02 |
| | | | Cadmium, total | NA | 3E-08 | NA | 3E-08 | Kidney | NA | 6E-02 | NA | 6E-02 |
| | | | Cobalt, total | NA | 6E-07 | NA | 6E-07 | Respiratory | NA | 8E-01 | NA | 8E-01 |
| | | | Copper, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Iron, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Manganese, total | NA | NA | NA | NA | Nervous System | NA | 4E-01 | NA | 4E-01 |
| | | | Nickel, total | NA | NA | NA | NA | Respiratory | NA | 1E+00 | NA | 1E+00 |
| | | | Thallium, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | | Zinc, total | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | | Exposure Point Total | | NA | 7E-07 | NA | 7E-07 | | NA | 2E+00 | NA | 2E+00 |
| | Exposure Medium Total | | | NA | 7E-07 | NA | 7E-07 | | NA | 2E+00 | NA | 2E+00 |
| Medium Total | | | | 2E-06 | 7E-07 | 2E-07 | 3E-06 | | 7E+00 | 2E+00 | 5E-02 | 1E+01 |
| Receptor Total | | | | 2E-06 | 7E-07 | 2E-07 | 3E-06 | | 7E+00 | 2E+00 | 5E-02 | 1E+01 |

NA = Not applicable or not available

| | |
|---|---|
| Total Blood HI Across Media = | **3E+00** |
| Total Body Weight HI Across Media = | 6E-01 |
| Total Cardiovascular HI Across Media = | 5E-02 |
| Total Development HI Across Media = | 5E-02 |
| Total GI System HI Across Media = | 2E-01 |
| Total Hair HI Across Media = | 4E-02 |
| Total Kidney HI Across Media = | 2E-01 |
| Total Longevity HI Across Media = | **2E+00** |
| Total Nervous System HI Across Media = | 5E-01 |
| Total Organ Weight HI Across Media = | 6E-01 |
| Total Respiratory HI Across Media = | **2E+00** |
| Total Skin HI Across Media = | 4E-01 |
| Total Thyroid HI Across Media = | **2E+00** |

TABLE 10.1.RME
RISK SUMMARY TABLE
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Soil and Residue | Surface Soil and Residue | Exposure Area 2 Surface Soil and Residue (0-2 ft) | Antimony, total | NA | NA | NA | NA | Longevity, Blood | 9E-01 | NA | NA | 9E-01 |
| | | | Zinc, total | NA | NA | NA | NA | Blood | 5E-01 | NA | NA | 5E-01 |
| | | Exposure Point Total | | 0E+00 | NA | 0E+00 | 0E+00 | | 1E+00 | NA | 0E+00 | 1E+00 |
| | Exposure Medium Total | | | 0E+00 | NA | 0E+00 | 0E+00 | | 1E+00 | NA | 0E+00 | 1E+00 |
| Medium Total | | | | 0E+00 | 0E+00 | 0E+00 | 0E+00 | | 1E+00 | 0E+00 | 0E+00 | 1E+00 |
| Receptor Total | | | | 0E+00 | 0E+00 | 0E+00 | 0E+00 | | 1E+00 | 0E+00 | 0E+00 | 1E+00 |

NA = Not applicable or not available

Total Blood HI Across Media = **1.4E+00**

TABLE 10.2.RME
RISK SUMMARY TABLE
REASONABLE MAXIMUM EXPOSURE
Eagle Zinc
Hillsboro Illinois

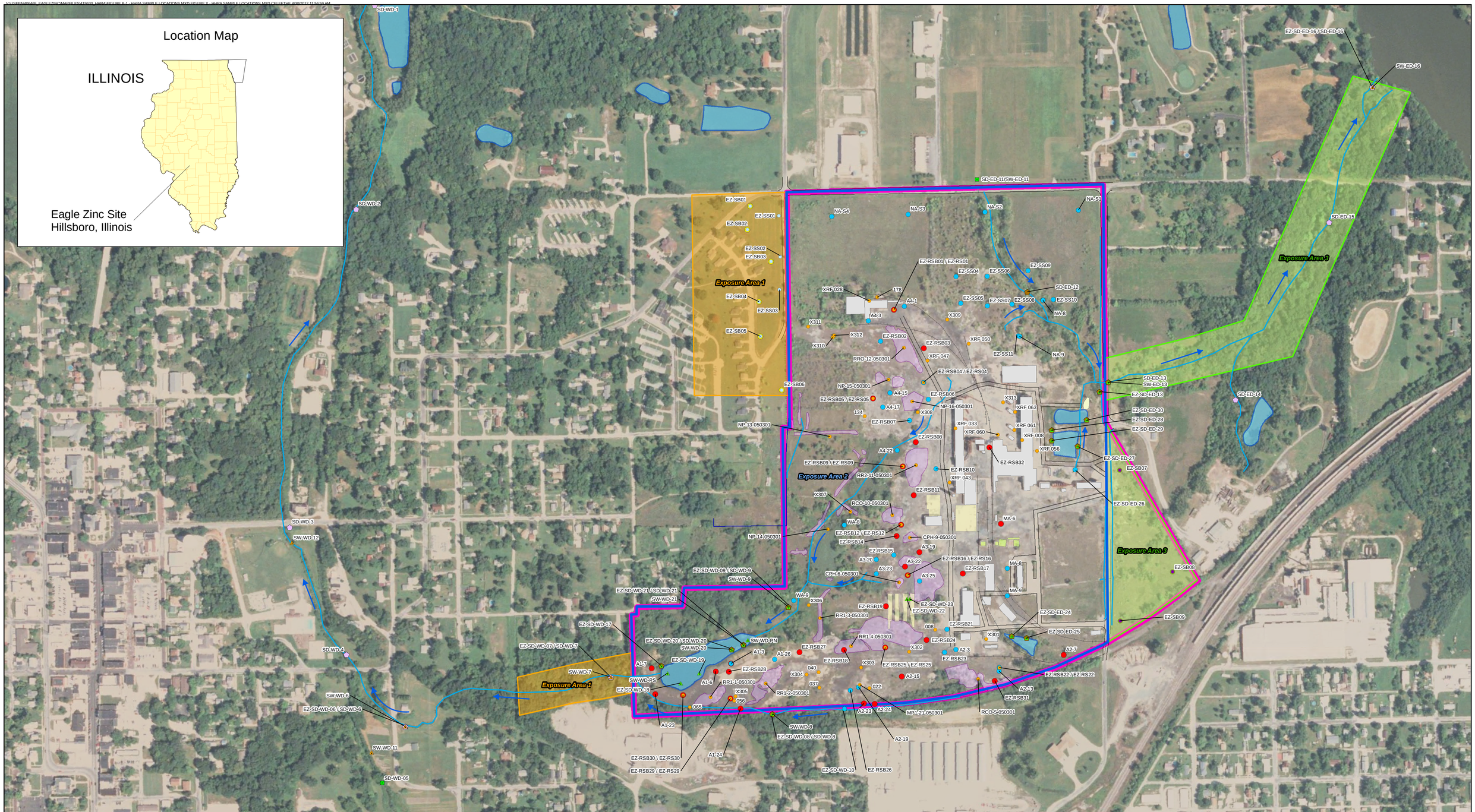
Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | Carcinogenic Risk | | | | Non-Carcinogenic Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ingestion | Inhalation | Dermal | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Inhalation | Dermal | Exposure Routes Total |
| Soil and Residue | Total Soil and Residue | Exposure Area 2 Total Soil and Residue (0-10 ft) | Antimony, total | | | | | Longevity, Blood | 2E+00 | NA | NA | 2E+00 |
| | | | Cobalt, total | | | | | Thyroid | 2E+00 | NA | NA | 2E+00 |
| | | | Zinc, total | | | | | Blood | 1E+00 | NA | NA | 1E+00 |
| | | Exposure Point Total | | 0E+00 | NA | 0E+00 | 0E+00 | | 5E+00 | NA | 0E+00 | 5E+00 |
| | Exposure Medium Total | | | 0E+00 | NA | 0E+00 | 0E+00 | | 5E+00 | NA | 0E+00 | 5E+00 |
| | Ambient Air | Exposure Area 2 Emissions from Total Soil and Residue | Cobalt, total | | | | | Respiratory | NA | 8E-01 | NA | 8E-01 |
| | | | Nickel, total | | | | | Respiratory | NA | 1E+00 | NA | 1E+00 |
| | | Exposure Point Total | | NA | 0E+00 | NA | 0E+00 | | NA | 2E+00 | NA | 2E+00 |
| | Exposure Medium Total | | | NA | 0E+00 | NA | 0E+00 | | NA | 2E+00 | NA | 2E+00 |
| Medium Total | | | | 0E+00 | 0E+00 | 0E+00 | 0E+00 | | 5E+00 | 2E+00 | 0E+00 | 7E+00 |
| Receptor Total | | | | 0E+00 | 0E+00 | 0E+00 | 0E+00 | | 5E+00 | 2E+00 | 0E+00 | 7E+00 |

NA = Not applicable or not available

| | |
|---|---|
| Total Blood HI Across Media = | **3E+00** |
| Total Longevity HI Across Media = | **2E+00** |
| Total Respiratory HI Across Media = | **2E+00** |
| Total Thyroid HI Across Media = | **2E+00** |

# Attachment B
# Figures




**Legend**

- Surface Water and Sediment Location

**Onsite Exposure Area**

- Residue Soil
- Surface Soil (0-2 ft)
- Subsurface Soil (2-10ft)

**Offsite Exposure Area 1**

- Surface Soil (0-2 ft)
- Subsurface Soil (2-10 ft)

**Offsite Exposure Area 3**

- Surface Soil (0-2 ft)
- Subsurface Soil (2-10 ft)

**Surface Water**

- Onsite Surface Water
- Offsite Surface Water
- Background

**Sediment**

- Onsite Sediment
- Offsite Sediment
- Background

**Exposure Areas**

- Exposure Area 1
- Exposure Area 2
- Exposure Area 3

- Fence
- Railroad
- Streams/Ditches

- Lake/Pond
- Rip Rap
- Culvert
- Tank
- Foundation

- Building
- Residue Pile

- Site Boundary

Figure B.1
Locations of Samples To be Used in the HHRA
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

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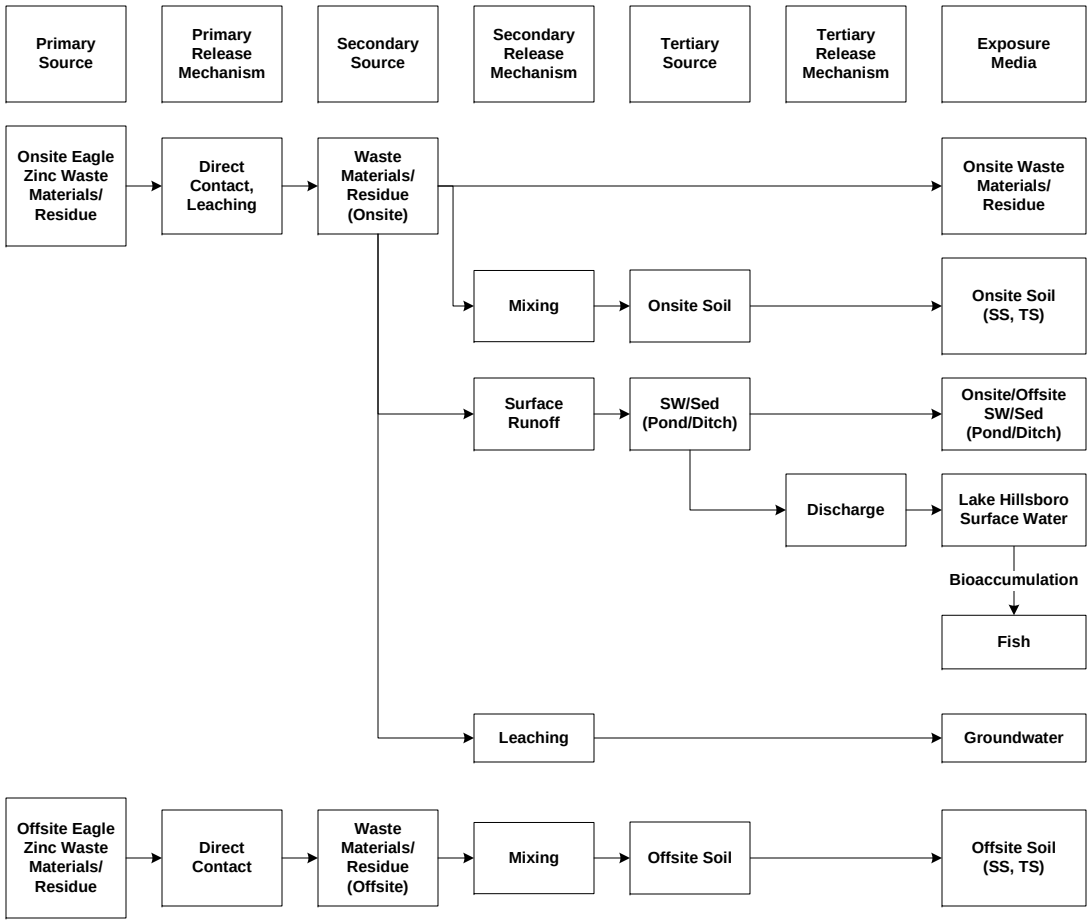
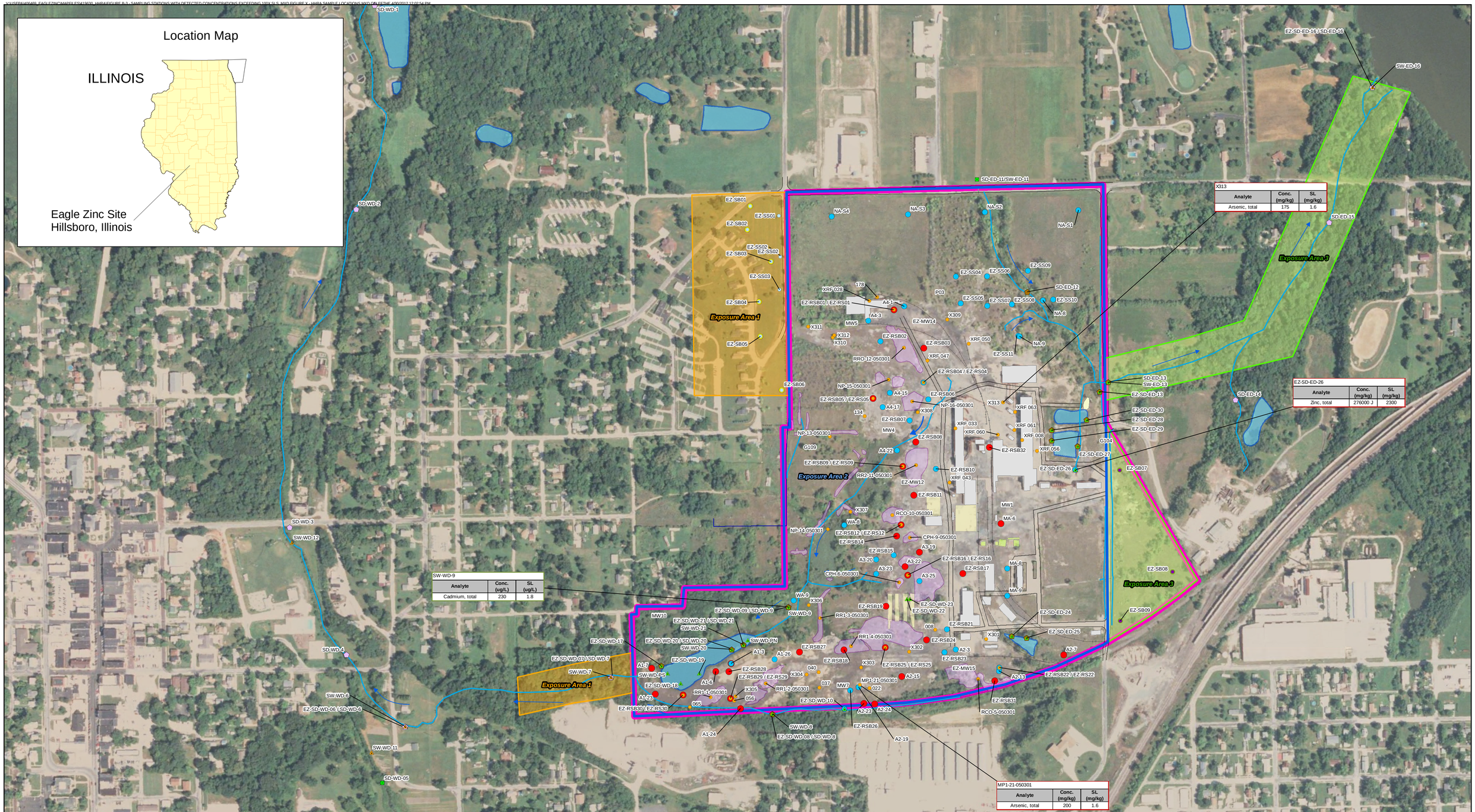



| | | Potential Human Receptors | | | | | |
|---|---|---|---|---|---|---|---|
| | | Onsite | | | Offsite | | |
| | | Current | Future | | Current/Future | | Future |
| Exposure Route | | Trespasser (Adolescent) | Industrial Worker | Construction Worker | Residents (Adult/Child) | Recreational Users (Adult/Child) | Construction Worker |
| Onsite Waste Materials/ Residue | Ingestion | X 1 | | X 1 | | | |
| | Dermal Contact | X 1 | | X 1 | | | |
| | Inhalation | X 1 | | X 1 | | | |
| Onsite Soil (SS, TS) | Ingestion | X (SS) | X (SS) | X (TS) | | | |
| | Dermal Contact | X (SS) | X (SS) | X (TS) | | | |
| | Inhalation | X (SS) | X (SS) | X (TS) | | | |
| Onsite/Offsite SW/Sed (Pond/Ditch) | Ingestion | X 2 | | | | X 3 | |
| | Dermal Contact | X 2 | | | | X 3 | |
| Lake Hillsboro Surface Water | Ingestion | | | | *X 4* | *X 4* | |
| | Dermal Contact | | | | *X 4* | *X 4* | |
| Fish | Ingestion | | | | | *X 5* | |
| Groundwater | None 6 | | | | | | |
| Offsite Soil (SS, TS) | Ingestion | | | | X (SS) | | X (TS) |
| | Dermal Contact | | | | X (SS) | | X (TS) |
| | Inhalation | | | | X (SS) | | X (TS) |

**Legend**
X – Potentially complete exposure pathways identified
SS – Surface Soil (0-2 ft). TS – Total Soil (0-10 ft).
SW – Surface Water. Sed – Sediment.

1 – Residue data were combined with onsite soil data.
2 – Onsite sediment and surface water consist of the southwestern pond, western drainage ditch, eastern drainage ditch, small southern pond, and two retention basins.
3 – Offsite sediment and surface water consist of the western and eastern drainage ditches and Lake Hillsboro. Surface water discharges from the site via Stormwater Outfall 001 to the western drainage ditch and from Stormwater Outfall 002 to the eastern drainage ditch and Lake Hillsboro.
4 – Based on potential potable and recreational use of Lake Hillsboro surface water. The evaluation of this exposure pathway was performed qualitatively due to lack of quantitative data.
5 – Lake Hillsboro fish. The evaluation of this exposure pathway was performed qualitatively due to lack of quantitative data.
6 – Site groundwater is assumed to be Class II GW (non potable).

**Figure B.2**
**Conceptual Exposure Model**
**for the Human Health Risk Assessment**
*Eagle Zinc, Illinois*




**Legend**

- Surface Water and Sediment Location

**Onsite Exposure Area**

- Residue Soil
- Surface Soil (0-2 ft)
- Subsurface Soil (2-10ft)

**Offsite Exposure Area 1**

- Surface Soil (0-2 ft)
- Subsurface Soil (2-10 ft)

**Offsite Exposure Area 3**

- Surface Soil (0-2 ft)
- Subsurface Soil (2-10 ft)

**Surface Water**

- Onsite Surface Water
- Offsite Surface Water
- Background

**Sediment**

- Onsite Sediment
- Offsite Sediment
- Background
- Flow Direction

**Exposure Areas**

- Exposure Area 1
- Exposure Area 2
- Exposure Area 3

- Fence
- Railroad
- Streams/Ditches
- Flow Direction

- Lake/Pond
- Rip Rap
- Culvert
- Tank
- Foundation

- Building
- Residue Pile

- Site Boundary

Regional Screening Levels (RSLs; June 2011) based on non-carcinogenic hazard quotient (HQ) of 0.1 and ELCR of $10^{-6}$ are used as screening level (SL); the resulting 100x SLs correspond to HQ of 10 and ELCR of $10^{-4}$.

RSLs for tapwater are used to screen surface water data.
RSLs for industrial soil are used to screen soil data; while RSLs for residential soil are used to screen sediment data.

Data Qualifier:
J = Estimated detection
J+ = Estimated detection, biased high

Concentrations exceeding 100x SL are presented in the boxes color-coded for the exposure media

- Soil concentration exceeding 100x SL.
- Sediment concentration exceeding 100x SL.
- Surface water concentration exceeding 100x SL.

N
W E
S

0 250 500 Feet

1 inch = 250 feet

Figure B.3
Sampling Stations with Detected Concentrations Exceeding 100x SLs.
*Eagle Zinc Superfund Site - Hillsboro, Illinois*

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# Attachment C
# Tables

TABLE C.1
Soil Assignments
*Eagle Zinc*
*Hillsboro, Illinois*

| | | | | | | Surface Soil (0-2 ft) | | | Total Soil (0-10 ft) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Matrix** | **Station ID** | **Sample ID** | **Collection Date** | **Upper Depth (feet)** | **Lower Depth (feet)** | **Exposure Area 2 Surface Soil and Residue** | **Exposure Area 1 Surface Soil** | **Exposure Area 3 Surface Soil** | **Exposure Area 2 Total Soil and Residue** | **Exposure Area 1 Total Soil** | **Exposure Area 3 Total Soil** |
| SO | 008 | 008C | 10/1/08 | 0 | 0.25 | x | | | x | | |
| SO | 022 | 022C | 10/1/08 | 0 | 0.25 | x | | | x | | |
| SO | 037 | 037C | 10/1/08 | 0 | 0.25 | x | | | x | | |
| SO | 040 | 040C | 10/1/08 | 0 | 0.25 | x | | | x | | |
| SO | 056 | 056C | 10/1/08 | 0 | 0.25 | x | | | x | | |
| SO | 065 | 065C | 10/1/08 | 0 | 0.25 | x | | | x | | |
| SO | 134 | 134C | 10/1/08 | 0 | 0.25 | x | | | x | | |
| SO | 178 | 178C | 10/1/08 | 0 | 0.25 | x | | | x | | |
| SO | A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | | | | x | | |
| SO | A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | | | | x | | |
| SO | A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | x | | | x | | |
| SO | A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | x | | | x | | |
| SO | A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | x | | | x | | |
| SO | A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | | | | x | | |
| SO | A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | | | | x | | |
| SO | A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | | | | x | | |
| SO | A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | x | | | x | | |
| SO | A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | | | | x | | |
| SO | A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | | | | x | | |
| SO | A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | | | | x | | |
| SO | A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | x | | | x | | |
| SO | A2-3 | A2-3-S1D | 3/1/05 | 0 | 0.5 | x | | | x | | |
| SO | A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | | | | x | | |
| SO | A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | | | | x | | |
| SO | A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | | | | x | | |
| SO | A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | CPH-6-050301 | CPH-6-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | CPH-9-050301 | CPH-9-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | EZ-RS01 | EZ-RS01-1 | 11/30/10 | 0 | 1 | x | | | x | | |
| SO | EZ-RS04 | EZ-RS04-1 | 12/1/10 | 0 | 0.4 | x | | | x | | |
| SO | EZ-RS05 | EZ-RS05-1 | 12/1/10 | 0 | 1 | x | | | x | | |
| SO | EZ-RS09 | EZ-RS09-1 | 12/1/10 | 0 | 1 | x | | | x | | |
| SO | EZ-RS12 | EZ-RS12-1 | 12/1/10 | 0 | 1 | x | | | x | | |

TABLE C.1
Soil Assignments
*Eagle Zinc*
*Hillsboro, Illinois*

| | | | | | | Surface Soil (0-2 ft) | | | Total Soil (0-10 ft) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Matrix** | **Station ID** | **Sample ID** | **Collection Date** | **Upper Depth (feet)** | **Lower Depth (feet)** | **Exposure Area 2 Surface Soil and Residue** | **Exposure Area 1 Surface Soil** | **Exposure Area 3 Surface Soil** | **Exposure Area 2 Total Soil and Residue** | **Exposure Area 1 Total Soil** | **Exposure Area 3 Total Soil** |
| SO | EZ-RS16 | EZ-RS16-1 | 12/1/10 | 0 | 2 | x | | | x | | |
| SO | EZ-RS22 | EZ-RS22-1 | 12/1/10 | 0 | 0.7 | x | | | x | | |
| SO | EZ-RS25 | EZ-RS25-1 | 12/2/10 | 0 | 1 | x | | | x | | |
| SO | EZ-RS29 | EZ-RS29-1 | 12/3/10 | 0 | 1 | x | | | x | | |
| SO | EZ-RS30 | EZ-RS30-1 | 12/3/10 | 0 | 1 | x | | | x | | |
| SO | EZ-RS30 | EZ-RS30-1FD | 12/3/10 | 0 | 1 | x | | | x | | |
| SO | EZ-RSB01 | EZ-RSB01-2 | 11/30/10 | 2 | 3 | | | | x | | |
| SO | EZ-RSB02 | EZ-RSB02-2 | 12/1/10 | 1.8 | 2.8 | x | | | x | | |
| SO | EZ-RSB03 | EZ-RSB03-2 | 11/30/10 | 2 | 3 | | | | x | | |
| SO | EZ-RSB04 | EZ-RSB04-2 | 12/1/10 | 1.4 | 2.4 | x | | | x | | |
| SO | EZ-RSB05 | EZ-RSB05-2 | 12/1/10 | 4.5 | 5.5 | | | | x | | |
| SO | EZ-RSB06 | EZ-RSB06-2 | 12/1/10 | 1.4 | 2.4 | x | | | x | | |
| SO | EZ-RSB07 | EZ-RSB07-2 | 12/1/10 | 1.6 | 2.6 | x | | | x | | |
| SO | EZ-RSB08 | EZ-RSB08-2FD | 12/1/10 | 5 | 6 | | | | x | | |
| SO | EZ-RSB09 | EZ-RSB09-2 | 12/1/10 | 3.3 | 4.3 | | | | x | | |
| SO | EZ-RSB10 | EZ-RSB10-2 | 12/1/10 | 1.8 | 2.8 | x | | | x | | |
| SO | EZ-RSB11 | EZ-RSB11-2 | 12/1/10 | 5 | 6 | | | | x | | |
| SO | EZ-RSB12 | EZ-RSB12-2 | 12/1/10 | 3.6 | 5.6 | | | | x | | |
| SO | EZ-RSB14 | EZ-RSB14-2 | 12/1/10 | 4.5 | 5.5 | | | | x | | |
| SO | EZ-RSB15 | EZ-RSB15-2 | 12/1/10 | 1.2 | 2.2 | x | | | x | | |
| SO | EZ-RSB16 | EZ-RSB16-2 | 12/1/10 | 6.8 | 7.8 | | | | x | | |
| SO | EZ-RSB17 | EZ-RSB17-2 | 12/1/10 | 2.8 | 3.8 | | | | x | | |
| SO | EZ-RSB18 | EZ-RSB18-2 | 12/1/10 | 6.6 | 7.6 | | | | x | | |
| SO | EZ-RSB19 | EZ-RSB19-2 | 12/2/10 | 2.1 | 3.1 | | | | x | | |
| SO | EZ-RSB19 | EZ-RSB19-2FD | 12/1/10 | 2.1 | 3.1 | | | | x | | |
| SO | EZ-RSB21 | EZ-RSB21-2 | 12/1/10 | 1.7 | 2.7 | x | | | x | | |
| SO | EZ-RSB22 | EZ-RSB22-2 | 12/1/10 | 1.7 | 2.7 | x | | | x | | |
| SO | EZ-RSB23 | EZ-RSB23-2 | 12/1/10 | 1.6 | 2.6 | x | | | x | | |
| SO | EZ-RSB24 | EZ-RSB24-2 | 12/2/10 | 3 | 4 | | | | x | | |
| SO | EZ-RSB25 | EZ-RSB25-2 | 12/2/10 | 2.6 | 3.6 | | | | x | | |
| SO | EZ-RSB26 | EZ-RSB26-2 | 12/2/10 | 1.4 | 2.4 | x | | | x | | |
| SO | EZ-RSB27 | EZ-RSB27-2 | 12/2/10 | 3 | 5 | | | | x | | |
| SO | EZ-RSB28 | EZ-RSB28-2 | 12/2/10 | 3 | 5 | | | | x | | |
| SO | EZ-RSB29 | EZ-RSB29-2 | 12/3/10 | 6.5 | 7.5 | | | | x | | |
| SO | EZ-RSB29 | EZ-RSB29-2FD | 12/3/10 | 6.5 | 7.5 | | | | x | | |
| SO | EZ-RSB30 | EZ-RSB30-2 | 12/3/10 | 3.3 | 4.3 | | | | x | | |
| SO | EZ-RSB31 | EZ-RSB31-2 | 12/3/10 | 2.4 | 3.4 | | | | x | | |
| SO | EZ-RSB32 | EZ-RSB32-2 | 12/3/10 | 6.4 | 7.4 | | | | x | | |
| SO | EZ-SB01 | EZ-SB01-1 | 11/29/10 | 0 | 2 | | x | | | x | |
| SO | EZ-SB01 | EZ-SB01-2 | 11/29/10 | 3 | 5 | | | | | x | |
| SO | EZ-SB01 | EZ-SB01-3 | 11/29/10 | 7 | 9 | | | | | x | |
| SO | EZ-SB02 | EZ-SB02-1 | 11/30/10 | 0 | 2 | | x | | | x | |

TABLE C.1
Soil Assignments
*Eagle Zinc*
*Hillsboro, Illinois*

| | | | | | | Surface Soil (0-2 ft) | | | Total Soil (0-10 ft) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Matrix** | **Station ID** | **Sample ID** | **Collection Date** | **Upper Depth (feet)** | **Lower Depth (feet)** | **Exposure Area 2 Surface Soil and Residue** | **Exposure Area 1 Surface Soil** | **Exposure Area 3 Surface Soil** | **Exposure Area 2 Total Soil and Residue** | **Exposure Area 1 Total Soil** | **Exposure Area 3 Total Soil** |
| SO | EZ-SB02 | EZ-SB02-2 | 11/30/10 | 3 | 5 | | | | | x | |
| SO | EZ-SB02 | EZ-SB02-3 | 11/30/10 | 7 | 9 | | | | | x | |
| SO | EZ-SB03 | EZ-SB03-1 | 11/30/10 | 0 | 2 | | x | | | x | |
| SO | EZ-SB03 | EZ-SB03-2 | 11/30/10 | 3 | 5 | | | | | x | |
| SO | EZ-SB03 | EZ-SB03-2FD | 11/30/10 | 3 | 5 | | | | | x | |
| SO | EZ-SB03 | EZ-SB03-3 | 11/30/10 | 7 | 9 | | | | | x | |
| SO | EZ-SB04 | EZ-SB04-1 | 11/30/10 | 0 | 2 | | x | | | x | |
| SO | EZ-SB04 | EZ-SB04-2 | 11/30/10 | 3 | 5 | | | | | x | |
| SO | EZ-SB04 | EZ-SB04-3 | 11/30/10 | 7 | 9 | | | | | x | |
| SO | EZ-SB05 | EZ-SB05-1 | 11/30/10 | 0 | 2 | | x | | | x | |
| SO | EZ-SB05 | EZ-SB05-2 | 11/30/10 | 3 | 5 | | | | | x | |
| SO | EZ-SB05 | EZ-SB05-2FD | 11/30/10 | 3 | 5 | | | | | x | |
| SO | EZ-SB05 | EZ-SB05-3 | 11/30/10 | 7 | 9 | | | | | x | |
| SO | EZ-SB06 | EZ-SB06-1 | 11/30/10 | 0 | 2 | | x | | | x | |
| SO | EZ-SB06 | EZ-SB06-2 | 11/30/10 | 3 | 5 | | | | | x | |
| SO | EZ-SB06 | EZ-SB06-3 | 11/30/10 | 7 | 9 | | | | | x | |
| SO | EZ-SB06 | EZ-SB06-3FD | 11/30/10 | 7 | 9 | | | | | x | |
| SO | EZ-SB07 | EZ-SB07-1 | 11/29/10 | 0 | 2 | | | x | | | x |
| SO | EZ-SB07 | EZ-SB07-2 | 11/29/10 | 3 | 5 | | | | | | x |
| SO | EZ-SB07 | EZ-SB07-3 | 11/29/10 | 7 | 9 | | | | | | x |
| SO | EZ-SB08 | EZ-SB08-1 | 11/29/10 | 0 | 2 | | | x | | | x |
| SO | EZ-SB08 | EZ-SB08-2 | 11/29/10 | 3 | 5 | | | | | | x |
| SO | EZ-SB08 | EZ-SB08-3 | 11/29/10 | 7 | 9 | | | | | | x |
| SO | EZ-SB09 | EZ-SB09-1 | 11/29/10 | 0 | 2 | | | x | | | x |
| SO | EZ-SB09 | EZ-SB09-2 | 11/29/10 | 3 | 5 | | | | | | x |
| SO | EZ-SB09 | EZ-SB09-3 | 11/29/10 | 7 | 9 | | | | | | x |
| SO | EZ-SS01 | EZ-SS01-1 | 11/22/10 | 0 | 2 | | x | | | x | |
| SO | EZ-SS01 | EZ-SS01-1FD | 11/22/10 | 0 | 2 | | x | | | x | |
| SO | EZ-SS02 | EZ-SS02-1 | 11/22/10 | 0 | 2 | | x | | | x | |
| SO | EZ-SS03 | EZ-SS03-1 | 11/22/10 | 0 | 2 | | x | | | x | |
| SO | EZ-SS04 | EZ-SS04-1 | 11/18/10 | 0 | 2 | x | | | x | | |
| SO | EZ-SS05 | EZ-SS05-1 | 11/18/10 | 0 | 2 | x | | | x | | |
| SO | EZ-SS06 | EZ-SS06-1 | 11/18/10 | 0 | 2 | x | | | x | | |
| SO | EZ-SS07 | EZ-SS07-1 | 11/18/10 | 0 | 2 | x | | | x | | |
| SO | EZ-SS08 | EZ-SS08-1 | 11/18/10 | 0 | 2 | x | | | x | | |
| SO | EZ-SS09 | EZ-SS09-1 | 11/18/10 | 0 | 2 | x | | | x | | |
| SO | EZ-SS10 | EZ-SS10-1 | 11/18/10 | 0 | 2 | x | | | x | | |
| SO | EZ-SS11 | EZ-SS11-1 | 11/18/10 | 0 | 2 | x | | | x | | |
| SO | EZ-SS11 | EZ-SS11-1FD | 11/18/10 | 0 | 2 | x | | | x | | |
| SO | MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | | | | x | | |
| SO | MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | x | | | x | | |

TABLE C.1
Soil Assignments
*Eagle Zinc*
*Hillsboro, Illinois*

| | | | | | | Surface Soil (0-2 ft) | | | Total Soil (0-10 ft) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Matrix** | **Station ID** | **Sample ID** | **Collection Date** | **Upper Depth (feet)** | **Lower Depth (feet)** | **Exposure Area 2 Surface Soil and Residue** | **Exposure Area 1 Surface Soil** | **Exposure Area 3 Surface Soil** | **Exposure Area 2 Total Soil and Residue** | **Exposure Area 1 Total Soil** | **Exposure Area 3 Total Soil** |
| SO | MP1-21-050301 | MP1-21-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | x | | | x | | |
| SO | NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | x | | | x | | |
| SO | NA-S2 | NA-S2 | 3/1/05 | 0 | 0.5 | x | | | x | | |
| SO | NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | x | | | x | | |
| SO | NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | x | | | x | | |
| SO | NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | x | | | x | | |
| SO | NP-13-050301 | NP-13-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | NP-14-050301 | NP-14-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | NP-15-050301 | NP-15-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | NP-16-050301 | NP-16-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | RCO-10-050301 | RCO-10-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | RCO-5-050301 | RCO-5-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | RR1-1-050301 | RR1-1-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | RR1-2-050301 | RR1-2-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | RR1-3-050301 | RR1-3-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | RR1-4-050301 | RR1-4-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | RR2-11-050301 | RR2-11-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | RRO-12-050301 | RRO-12-050301 | 3/1/05 | (1) | | x | | | x | | |
| SO | RRO-12-050301 | RRO-12-050301D | 3/1/05 | (1) | | x | | | x | | |
| SO | WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | x | | | x | | |
| SO | WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | x | | | x | | |
| SO | X301 | X301 | 4/25/05 | (1) | | x | | | x | | |
| SO | X302 | X302 | 4/25/05 | (1) | | x | | | x | | |
| SO | X303 | X303 | 4/25/05 | (1) | | x | | | x | | |
| SO | X304 | X304 | 4/25/05 | (1) | | x | | | x | | |
| SO | X305 | X305 | 4/25/05 | (1) | | x | | | x | | |
| SO | X306 | X306 | 4/25/05 | (1) | | x | | | x | | |
| SO | X307 | X307 | 4/25/05 | (1) | | x | | | x | | |
| SO | X308 | X308 | 4/25/05 | (1) | | x | | | x | | |
| SO | X309 | X309 | 4/26/05 | (1) | | x | | | x | | |
| SO | X310 | X310 | 4/26/05 | (1) | | x | | | x | | |
| SO | X311 | X311 | 4/26/05 | (1) | | x | | | x | | |
| SO | X312 | X312 | 4/26/05 | (1) | | x | | | x | | |
| SO | X313 | X313 | 4/26/05 | (1) | | x | | | x | | |
| SO | XRF 008 | XRF 008C | 5/1/08 | 0 | 0.25 | x | | | x | | |
| SO | XRF 028 | XRF 028C | 5/1/08 | 0 | 0.25 | x | | | x | | |
| SO | XRF 033 | XRF 033C | 5/1/08 | 0 | 0.25 | x | | | x | | |
| SO | XRF 043 | XRF 043C | 5/1/08 | 0 | 0.25 | x | | | x | | |
| SO | XRF 047 | XRF 047C | 5/1/08 | 0 | 0.25 | x | | | x | | |

TABLE C.1
Soil Assignments
*Eagle Zinc*
*Hillsboro, Illinois*

| | | | | | | Surface Soil (0-2 ft) | | | Total Soil (0-10 ft) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample Matrix** | **Station ID** | **Sample ID** | **Collection Date** | **Upper Depth (feet)** | **Lower Depth (feet)** | **Exposure Area 2 Surface Soil and Residue** | **Exposure Area 1 Surface Soil** | **Exposure Area 3 Surface Soil** | **Exposure Area 2 Total Soil and Residue** | **Exposure Area 1 Total Soil** | **Exposure Area 3 Total Soil** |
| SO | XRF 050 | XRF 050C | 5/1/08 | 0 | 0.25 | x | | | x | | |
| SO | XRF 056 | XRF 056C | 5/1/08 | 0 | 0.25 | x | | | x | | |
| SO | XRF 060 | XRF 060C | 5/1/08 | 0 | 0.25 | x | | | x | | |
| SO | XRF 061 | XRF 061C | 5/1/08 | 0 | 0.25 | x | | | x | | |
| SO | XRF 063 | XRF 063C | 5/1/08 | 0 | 0.25 | x | | | x | | |
| SE (2) | EZ-SD-ED-26 | EZ-SD-ED-26-2 | 12/4/10 | 0 | 0.5 | x | | | x | | |
| SE (2) | EZ-SD-ED-26 | EZ-SD-ED-26-2FD | 12/4/10 | 0 | 0.5 | x | | | x | | |
| SE (2) | EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | x | | | x | | |

**Note:**
(1) Historical residue samples with unreported depth intervals are assumed to have been collected from the surface soil interval.
(2) Sediment samples that are not covered with water 100% of the time are grouped as soil samples.

TABLE C.2
Sediment Sample Assignments
*Eagle Zinc*
*Hillsboro, Illinois*

| Sample Matrix | Station ID | Sample ID | Collection Date | Onsite Sediment | Offsite Sediment | Background Sediment |
|---|---|---|---|---|---|---|
| SD | EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | x | | |
| SD | EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | x | | |
| SD | EZ-SD-ED-27 | EZ-SD-ED-27-2 | 12/5/10 | x | | |
| SD | EZ-SD-ED-27 | EZ-SD-ED-27-2FD | 12/5/10 | x | | |
| SD | EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | x | | |
| SD | EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | x | | |
| SD | EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | x | | |
| SD | EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | x | | |
| SD | EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | x | | |
| SD | EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | x | | |
| SD | EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | x | | |
| SD | EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | x | | |
| SD | SD-ED-12 | SD-ED-12 | 7/9/02 | x | | |
| SD | SD-WD-20 | SD-WD-20 | 11/24/03 | x | | |
| SD | SD-WD-21 | SD-WD-21 | 11/24/03 | x | | |
| SD | SD-WD-21 | SD-WD-21D | 11/24/03 | x | | |
| SD | SD-WD-8 | SD-WD-8 | 7/9/02 | x | | |
| SD | SD-WD-9 | SD-WD-9 | 7/9/02 | x | | |
| SD | SD-WD-9 | SD-WD-9D | 7/9/02 | x | | |
| SD | EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | x | | |
| SD | SD-ED-13 | SD-ED-13 | 7/9/02 | x | | |
| SD | EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | | x | |
| SD | EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | | x | |
| SD | EZ-SD-WD-06 | EZ-SD-WD-06-2FD | 12/2/10 | | x | |
| SD | EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | | x | |
| SD | SD-ED-14 | SD-ED-14 | 7/8/02 | | x | |
| SD | SD-ED-15 | SD-ED-15 | 7/8/02 | | x | |
| SD | SD-ED-16 | SD-ED-16 | 7/8/02 | | x | |
| SD | SD-WD-1 | SD-WD-1 | 7/8/02 | | x | |
| SD | SD-WD-2 | SD-WD-2 | 7/8/02 | | x | |
| SD | SD-WD-3 | SD-WD-3 | 7/8/02 | | x | |
| SD | SD-WD-4 | SD-WD-4 | 7/8/02 | | x | |
| SD | SD-WD-6 | SD-WD-6 | 7/8/02 | | x | |
| SD | SD-WD-7 | SD-WD-7 | 7/8/02 | | x | |
| SD | SD-ED-11 | SD-ED-11 | 7/9/02 | | | x |
| SD | SD-WD-5 | SD-WD-5 | 7/8/02 | | | x |

TABLE C.3
Surface Water Sample Assignments
*Eagle Zinc*
*Hillsboro, Illinois*

| Sample Matrix | Station ID | Sample ID | Collected Date | Onsite Surface Water | Offsite Surface Water | Background Surface Water |
|---|---|---|---|---|---|---|
| SW | EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | x | | |
| SW | EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | x | | |
| SW | EZ-SD-ED-26 | EZ-SD-ED-26-1 | 12/4/10 | x | | |
| SW | EZ-SD-ED-26 | EZ-SD-ED-26-1FD | 12/4/10 | x | | |
| SW | EZ-SD-ED-27 | EZ-SD-ED-27-1 | 12/5/10 | x | | |
| SW | EZ-SD-ED-27 | EZ-SD-ED-27-1FD | 12/5/10 | x | | |
| SW | EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | x | | |
| SW | EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | x | | |
| SW | EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | x | | |
| SW | EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | x | | |
| SW | EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | x | | |
| SW | EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | x | | |
| SW | EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | x | | |
| SW | EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | x | | |
| SW | EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | x | | |
| SW | EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | x | | |
| SW | EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | x | | |
| SW | EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | x | | |
| SW | EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | x | | |
| SW | SW-WD-9 | SW-WD-09-031124 | 11/24/03 | x | | |
| SW | SW-WD-9 | SW-WD-09-031124D | 11/24/03 | x | | |
| SW | SW-WD-20 | SW-WD-20 | 11/24/03 | x | | |
| SW | SW-WD-21 | SW-WD-21 | 11/24/03 | x | | |
| SW | SW-WD-9 | SW-WD-9 | 3/11/03 | x | | |
| SW | SW-WD-PN | SW-WD-PN | 3/11/03 | x | | |
| SW | SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | x | | |
| SW | SW-WD-PS | SW-WD-PS | 3/11/03 | x | | |
| SW | EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | X | | |
| SW | SW-ED-13 | SW-ED-13 | 3/11/03 | x | | |
| SW | SW-WD-8 | SW-WD-8 | 3/11/03 | x | | |
| SW | EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | | x | |
| SW | EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | | x | |
| SW | EZ-SD-WD-06 | EZ-SD-WD-06-1FD | 12/2/10 | | x | |
| SW | EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | | x | |
| SW | SW-ED-16 | SW-ED-16 | 3/11/03 | | x | |
| SW | SW-WD-11 | SW-WD-11 | 6/13/03 | | x | |
| SW | SW-WD-12 | SW-WD-12 | 6/13/03 | | x | |
| SW | SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | x | |
| SW | SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | x | |
| SW | SW-WD-6 | SW-WD-6-030613D | 6/13/03 | | x | |
| SW | SW-WD-7 | SW-WD-7 | 3/11/03 | | x | |
| SW | SW-WD-7 | SW-WD-7D | 3/11/03 | | x | |
| SW | SW-ED-11 | SW-ED-11 | 3/11/03 | | | x |

**TABLE C.4**
Summary of Final Chemicals of Concern (COC)
*Eagle Zinc*
*Hillsboro Illinois*

| Scenario Time Frame | Receptor Population | Medium | Exposure Medium | Exposure Route | ELCR | HQ/HI | Final COCs |
|---|---|---|---|---|---|---|---|
| Current | Trespasser (Adolescent) | Soil and Residue | Exposure Area 2 Surface Soil and Residue (0-2 ft) | Ingestion | 3.E-06 | 1.1 | None |
| | | | | Dermal | 9.E-07 | 0.02 | |
| | | | | Inhalation | 5.E-09 | 0.002 | |
| | | **Soil Total** | | | 4.E-06 | 1.2 | |
| | | Surface Water | On-Site Surface Water | Ingestion | 8.E-10 | 0.02 | None |
| | | | | Dermal | 6.E-09 | 0.3 | |
| | | **Surface Water Total** | | | 6.E-09 | 0.3 | |
| | | Sediment | On-site Sediment | Ingestion | 8.E-08 | 0.017 | None |
| | | | | Dermal | NA | 0.04 | |
| | | **Sediment Total** | | | 8.E-08 | 0.06 | |
| | | **Receptor Total (Soil, Surface Water, Sediment)** | | | 4.E-06 | 2 | |
| Current/Future | Recreational User (Adult) | Surface Water | Off-Site Surface Water | Ingestion | -- | 0.02 | None |
| | | | | Dermal | -- | 0.08 | |
| | | **Surface Water Total** | | | -- | 0.10 | |
| | | Sediment | Off-Site Sediment | Ingestion | -- | 0.009 | None |
| | | | | Dermal | -- | 0.01 | |
| | | **Sediment Total** | | | -- | 0.02 | |
| | | **Receptor Total (Surface Water, Sediment)** | | | -- | 0.1 | |
| | Recreational User (Child) | Surface Water | Off-Site Surface Water | Ingestion | -- | 0.09 | None |
| | | | | Dermal | -- | 0.2 | |
| | | **Surface Water Total** | | | -- | 0.3 | |
| | | Sediment | Off-Site Sediment | Ingestion | -- | 0.08 | None |
| | | | | Dermal | -- | 0.02 | |
| | | **Sediment Total** | | | -- | 0.1 | |
| | | **Receptor Total (Surface Water, Sediment)** | | | -- | 0.4 | |
| | Recreational User (Adult/Child Aggregate) | Surface Water | Off-Site Surface Water | Ingestion | 4.E-07 | -- | None |
| | | | | Dermal | 2.E-07 | -- | |
| | | **Surface Water Total** | | | 6.E-07 | -- | |
| | | Sediment | Off-Site Sediment | Ingestion | 7.E-07 | -- | None |
| | | | | Dermal | 1.E-06 | -- | |
| | | **Sediment Total** | | | 2.E-06 | -- | |
| | | **Receptor Total (Surface Water, Sediment)** | | | 2.E-06 | -- | |
| Future | Industrial Worker | Soil and Residue | Exposure Area 2 Surface Soil and Residue (0-2 ft) | Ingestion | 2.E-05 | 3 | **Non-Cancer:** Antimony, Zinc, Lead |
| | | | | Dermal | 4.E-06 | 0.04 | |
| | | | | Inhalation | 1.E-07 | 0.01 | |
| | | **Receptor Total (Soil)** | | | 3.E-05 | 3 | |
| | Construction Worker | Soil | Exposure Area 2 Total Soil and Residue (0-10 ft) | Ingestion | 2.E-06 | 7 | **Non-Cancer:** Antimony, Cobalt, Nickel, Zinc, Lead |
| | | | | Dermal | 2.E-07 | 0.05 | |
| | | | | Inhalation | 7.E-07 | 2 | |
| | | **Receptor Total (Soil)** | | | 3.E-06 | 10 | |

**Notes:**

ELCR = Excess Lifetime Cancer Risk
HQ/HI = Hazard Quotient/Hazard Index

Chemicals of Concern (COCs) were identified in the following manner:
Cancer: If the receptor ELCR exceeds $1x10^{-4}$, COCs were identified as individual chemicals with an ELCR greater than $1x10^{6}$ for the environmental medium driving the risk.
Non-Cancer for non-lead: If a target organ HI exceeds 1.0, COCs were identified as chemicals with an individual HQ greater than 0.1 contributing to the target organ HI exceeding 1.0 for the environmental medium driving the risk. For lead, if the exposure model (ALM model) predicted more than 5 percent of exposed population exceeding a BLL of 10 micrograms per deciliter (µg/dL), lead was identified as a COC for that potential receptor.

TABLE C.5

Summary of Generic HHRA Uncertainties

*Eagle Zinc*

*Hillsboro, Illinois*

| Category | Methodology | Probable Effect on Risk Estimates |
|---|---|---|
| **DATA EVALUATION** | | |
| Selection of COPCs | Chemicals were identified as COPCs even when chemicals were detected at low frequency. | Overestimates risks |
| Use of conservative screening levels | When tabulated RSLs are not available, RSLs for conservatively identified surrogate chemicals were used. | Overestimates risks |
| **EXPOSURE ASSUMPTIONS** | | |
| Use of conservative exposure assumptions | A RME scenario was quantified for potential receptors under current and future land use scenarios. For instance, industrial workers are assumed to be exposed to COPCs in soil for 250 days per year over a period of 25 years. | Overestimates risks |
| Use of conservatively estimated EPCs | The 95% UCL on the arithmetic mean and/or the maximum detected concentration were used as EPCs. | Overestimates risks |
| **TOXICITY ASSESSMENT** | | |
| Missing toxicity values | Oral and inhalation non-cancer toxicity values are missing for some COPCs (e.g., benzo(a)pyrene). | Underestimates risk |
| Study selection | Not all toxicity values represent the same degree of certainty. All are subject to change as new evidence becomes available. | May under- or overestimate risks. |
| Toxicity values derived from animal studies | Extrapolation from animal to human toxicity may induce error because of differences in pharmacokinetics, target organs, and population variability. | May under- or overestimate risks. |
| Toxicity values derived primarily from high doses (whereas most environmental exposures occur at low doses) | Assumes linearity at low doses. Tends to have conservative exposure assumptions. | May under- or overestimate risks. |
| Use of generic metal toxicity values | Due to the lack of speciated metal analysis, general toxicity values available through EPA's preferred toxicity information sources were used for evaluations of metals. | May under- or overestimate risks. |
| **RISK CHARACTERIZATION** | | |
| Risk from multiple chemicals | Assumes additivity of risks from multiple chemicals; chemical mixtures may actually have synergistic or antagonistic effects. | Under- or overestimates risks |
| Combination of several upper-bound assumptions | The result of combining several upper-bound assumptions is that the final estimates of potential risk are conservative. | Overestimates risks. |

***Notes:***

COPC = chemical of potential concern

EPC = exposure point concentration

HHRA = human health risk assessment

RME = Reasonably Maximum Exposure

RSL = Regional Screening Level

UCL = upper confidence limit

TABLE C.6
Summary Statistics For Discrete, Composite, and Combined Data Groupings - Exposure Area 2 Surface Soil & Residue
Eagle Zinc
Hillsboro, Illinois

**0-2 Feet**

| Chemical | *Discrete Samples* | | | | | *Composite Samples* | | | | | *Discrete + Composite Combined* | | | | | Ratio of Higher UCL (discrete or composite) to UCL of Combined (0-2 Ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Minimum Concentration Qualifier | Maximum Concentration Qualifier | Detection Frequency | UCL | Statistic (95% UCL type) | Minimum Concentration Qualifier | Maximum Concentration Qualifier | Detection Frequency | UCL | Statistic (95% UCL type) | Minimum Concentration Qualifier | Maximum Concentration Qualifier | Detection Frequency | UCL | Statistic (95% UCL type) | |
| Benzo(a)pyrene | -- | -- | -- | -- | -- | 0.043 J | 0.065 J | 2 / 2 | 0.065 | Max. Detected Conc. | 0.043 J | 0.065 J | 2 / 11 | 0.065 | Max. Detected Conc. | 1 |
| Aluminum | 7600 | 33000 | 23 / 23 | 21,928 | Student's-t | 3800 J | 75500 | 28 / 28 | 31,757 | Chebyshev (Mean, Sd) | 3800 J | 75500 | 51 / 51 | 22,247 | H | 1.4 |
| Antimony | 0.42 | 5.4 J | 8 / 23 | 1.5 | KM (t) | 3.8 J | 665 | 21 / 28 | 363 | KM (Chebyshev) | 0.42 | 665 | 29 / 51 | 361 | 99% KM (Chebyshev) | 1.0 |
| Arsenic | 2.3 | 28.5 | 52 / 52 | 10 | Approximate Gamma | 3.1 J | 200 | 38 / 38 | 59 | Approximate Gamma | 2.3 | 200 | 90 / 90 | 41 | Chebyshev (Mean, Sd) | 1.5 |
| Barium | 65 | 490 | 23 / 23 | 193 | Student's-t | 40.7 | 4670 | 38 / 38 | 521 | H | 40.7 | 4670 | 61 / 61 | 664 | Chebyshev (Mean, Sd) | 0.8 |
| Cadmium | 0.12 | 167 | 52 / 53 | 28 | KM (Chebyshev) | 5.6 | 284 | 26 / 38 | 66 | KM (% Bootstrap) | 0.12 | 284 | 78 / 91 | 57 | 97.5% KM (Chebyshev) | 1.2 |
| Cobalt | 2.1 | 29 | 23 / 23 | 11 | Approximate Gamma | 4.4 | 880 | 28 / 28 | 327 | Approximate Gamma | 2.1 | 880 | 51 / 51 | 247 | Chebyshev (Mean, Sd) | 1.3 |
| Copper | 8.4 | 2540 | 53 / 53 | 581 | Chebyshev (Mean, Sd) | 140 J | 49900 | 38 / 38 | 18,229 | Chebyshev (Mean, Sd) | 8.4 | 49900 | 91 / 91 | 8,223 | Chebyshev (Mean, Sd) | 2.2 |
| Iron | 7300 | 47000 | 23 / 23 | 23,855 | Student's-t | 5500 | 142000 | 28 / 28 | 71,271 | Student's-t | 5500 | 142000 | 51 / 51 | 50,729 | Approximate Gamma | 1.4 |
| Lead† | 0.78 J,- | 5030 J | 77 / 77 | | | 74 | 65400 | 46 / 46 | | | 0.78 J,- | 65400 | 113 / 113 | 4,508 | Avg. Detected Conc. | 0 |
| Manganese | 38 | 19100 | 53 / 53 | 828 | H | 65 | 8300 J | 28 / 28 | 1,542 | H | 38 | 19100 | 81 / 81 | 926 | H | 1.7 |
| Nickel | 6.6 | 93 J | 23 / 23 | 26 | H | 10 | 17800 | 38 / 38 | 8,984 | 97.5% Chebyshev | 6.6 | 17800 | 61 / 61 | 4,718 | Chebyshev (Mean, Sd) | 1.9 |
| Silver | 0.054 J | 3.4 | 11 / 23 | 0.55 | KM (t) | 0.39 | 140 | 27 / 28 | 51 | KM (Chebyshev) | 0.054 J | 140 | 38 / 51 | 30 | KM (Chebyshev) | 1.7 |
| Thallium | 0.13 J | 2.1 | 15 / 23 | 0.70 | KM (% Bootstrap) | 0.053 J | 1 J | 11 / 15 | 0.28 | KM (BCA) | 0.053 J | 2.1 | 26 / 38 | 0.82 | 97.5% KM (Chebyshev) | 0.8 |
| Vanadium | 19 | 66 | 23 / 23 | 45 | Student's-t | 5.7 | 53.9 | 28 / 28 | 22 | Approximate Gamma | 5.7 | 66 | 51 / 51 | 33 | Approximate Gamma | 1.4 |
| Zinc | 50 J | 296000 | 53 / 53 | 76,782 | Chebyshev (Mean, Sd) | 7700 | 407000 | 38 / 38 | 245,662 | Approximate Gamma | 50 J | 407000 | 91 / 91 | 159,515 | Chebyshev (Mean, Sd) | 1.5 |

**0-10 Feet**

| Chemical | *Discrete Samples* | | | | | *Composite Samples* | | | | | *Discrete + Composite Combined* | | | | | Ratio of Higher UCL (discrete or composite) to UCL of Combined (0-10 Ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Minimum Concentration Qualifier | Maximum Concentration Qualifier | Detection Frequency | UCL | Statistic | Minimum Concentration Qualifier | Maximum Concentration Qualifier | Detection Frequency | UCL | Statistic | Minimum Concentration Qualifier | Maximum Concentration Qualifier | Detection Frequency | UCL | Statistic (95% UCL type) | |
| Antimony | 0.34 | 5.4 J | 15 / 35 | 1.1 | KM (t) | 3.8 J | 665 | 21 / 28 | 363 | KM (Chebyshev) | 0.34 | 665 | 36 / 63 | 215 | 97.5% KM (Chebyshev) | 1.7 |
| Arsenic | 1.7 J | 28.5 | 84 / 84 | 9.1 | Approximate Gamma | 3.1 J | 200 | 38 / 38 | 59 | Approximate Gamma | 1.7 J | 200 | 122 / 122 | 32 | Chebyshev (Mean, Sd) | 1.8 |
| Cadmium | 0.12 | 197 | 83 / 85 | 33 | KM (Chebyshev) | 5.6 | 284 | 26 / 38 | 66 | KM (% Bootstrap) | 0.12 | 284 | 109 / 123 | 52 | 97.5% KM (Chebyshev) | 1.3 |
| Cobalt | 2.1 | 29 | 35 / 35 | 8.8 | Approximate Gamma | 4.4 | 880 | 28 / 28 | 327 | Approximate Gamma | 2.1 | 880 | 63 / 63 | 204 | Chebyshev (Mean, Sd) | 1.6 |
| Copper | 6.6 J | 2540 | 85 / 85 | 375 | Chebyshev (Mean, Sd) | 140 J | 49900 | 38 / 38 | 18,229 | Chebyshev (Mean, Sd) | 6.6 J | 49900 | 123 / 123 | 6,154 | Chebyshev (Mean, Sd) | 3.0 |
| Iron | 7300 | 47000 | 35 / 35 | 22,695 | Student's-t | 5500 | 142000 | 28 / 28 | 71,271 | Student's-t | 5500 | 142000 | 63 / 63 | 46,546 | H | 1.5 |
| Lead† | 0.78 J,- | 5030 J | 118 / 119 | | | 74 | 65400 | 46 / 46 | | | 0.78 J,- | 65400 | 164 / 165 | 3,113 | Avg. Detected Conc. | 0 |
| Manganese | 37.1 J,+ | 19100 | 85 / 85 | 671 | H | 65 | 8300 J | 28 / 28 | 1,542 | H | 37.1 J,+ | 19100 | 113 / 113 | 774 | H | 2.0 |
| Nickel | 6.6 | 93 J | 35 / 35 | 30 | Chebyshev (Mean, Sd) | 10 | 17800 | 38 / 38 | 8,984 | 97.5% Chebyshev | 6.6 | 17800 | 73 / 73 | 3,980 | Chebyshev (Mean, Sd) | 2.3 |
| Thallium | 0.13 J | 2.1 | 25 / 35 | 0.71 | KM (% Bootstrap) | 0.053 J | 1 J | 11 / 15 | 0.28 | KM (BCA) | 0.053 J | 2.1 | 36 / 50 | 0.54 | KM (% Bootstrap) | 1.3 |
| Zinc | 50 J | 296000 | 85 / 85 | 50,012 | Chebyshev (Mean, Sd) | 7700 | 407000 | 38 / 38 | 245,662 | Approximate Gamma | 50 J | 407000 | 123 / 123 | 122,089 | Chebyshev (Mean, Sd) | 2.0 |

Note:
The chemicals identified as COPCs in the combined sample group (i.e., discrete and composite combined) are presented.
Units in mg/kg.

# Attachment D
# Analytical Data

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SB01 | EZ-SB01-1 | 11/29/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 40.7 | J | mg/kg | | 1 | TRUE |
| EZ-SB01 | EZ-SB01-1 | 11/29/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 16.8 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB01 | EZ-SB01-1 | 11/29/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 912 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB01 | EZ-SB01-1 | 11/29/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 14.2 | J | mg/kg | | 1 | TRUE |
| EZ-SB01 | EZ-SB01-1 | 11/29/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 1.1 | = | mg/kg | | 0.5 | TRUE |
| EZ-SB01 | EZ-SB01-1 | 11/29/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 23.1 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB01 | EZ-SB01-1 | 11/29/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 315 | J | mg/kg | | 6 | TRUE |
| EZ-SB02 | EZ-SB02-1 | 11/30/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 29.3 | = | mg/kg | | 1 | TRUE |
| EZ-SB02 | EZ-SB02-1 | 11/30/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 14.2 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB02 | EZ-SB02-1 | 11/30/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 2490 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB02 | EZ-SB02-1 | 11/30/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 10.8 | J | mg/kg | | 1 | TRUE |
| EZ-SB02 | EZ-SB02-1 | 11/30/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 0.66 | = | mg/kg | | 0.5 | TRUE |
| EZ-SB02 | EZ-SB02-1 | 11/30/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 12.7 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB02 | EZ-SB02-1 | 11/30/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 164 | J | mg/kg | | 6 | TRUE |
| EZ-SB03 | EZ-SB03-1 | 11/30/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 43.8 | = | mg/kg | | 1 | TRUE |
| EZ-SB03 | EZ-SB03-1 | 11/30/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 18.3 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB03 | EZ-SB03-1 | 11/30/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 1780 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB03 | EZ-SB03-1 | 11/30/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 9.1 | J | mg/kg | | 1 | TRUE |
| EZ-SB03 | EZ-SB03-1 | 11/30/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 1.9 | = | mg/kg | | 0.5 | TRUE |
| EZ-SB03 | EZ-SB03-1 | 11/30/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 14.5 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB03 | EZ-SB03-1 | 11/30/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 565 | J | mg/kg | | 6 | TRUE |
| EZ-SB04 | EZ-SB04-1 | 11/30/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 16.9 | J | mg/kg | | 1 | TRUE |
| EZ-SB04 | EZ-SB04-1 | 11/30/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 10.3 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB04 | EZ-SB04-1 | 11/30/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 1260 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB04 | EZ-SB04-1 | 11/30/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 10.5 | = | mg/kg | | 1 | TRUE |
| EZ-SB04 | EZ-SB04-1 | 11/30/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 0.67 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB04 | EZ-SB04-1 | 11/30/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 14.8 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB04 | EZ-SB04-1 | 11/30/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 283 | = | mg/kg | | 6 | TRUE |
| EZ-SB05 | EZ-SB05-1 | 11/30/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 16.8 | J | mg/kg | | 1 | TRUE |
| EZ-SB05 | EZ-SB05-1 | 11/30/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 14 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB05 | EZ-SB05-1 | 11/30/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 672 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB05 | EZ-SB05-1 | 11/30/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 7.1 | = | mg/kg | | 1 | TRUE |
| EZ-SB05 | EZ-SB05-1 | 11/30/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 0.53 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB05 | EZ-SB05-1 | 11/30/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 9.6 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB05 | EZ-SB05-1 | 11/30/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 274 | = | mg/kg | | 6 | TRUE |
| EZ-SB06 | EZ-SB06-1 | 11/30/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 46 | J | mg/kg | | 1 | TRUE |
| EZ-SB06 | EZ-SB06-1 | 11/30/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 17.9 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB06 | EZ-SB06-1 | 11/30/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 1740 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB06 | EZ-SB06-1 | 11/30/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 16.3 | = | mg/kg | | 1 | TRUE |
| EZ-SB06 | EZ-SB06-1 | 11/30/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 1.7 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB06 | EZ-SB06-1 | 11/30/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 14.2 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB06 | EZ-SB06-1 | 11/30/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 246 | = | mg/kg | | 6 | TRUE |
| EZ-SS01 | EZ-SS01-1 | 11/22/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 26 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SS01 | EZ-SS01-1FD | 11/22/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 363 | = | mg/kg | | 1.5 | TRUE |
| EZ-SS01 | EZ-SS01-1FD | 11/22/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 4.5 | = | mg/kg | | 1 | TRUE |
| EZ-SS01 | EZ-SS01-1FD | 11/22/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 1.6 | = | mg/kg | | 0.5 | TRUE |
| EZ-SS01 | EZ-SS01-1FD | 11/22/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 12.6 | = | mg/kg | | 2.5 | TRUE |
| EZ-SS01 | EZ-SS01-1FD | 11/22/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 657 | J | mg/kg | | 6 | TRUE |
| EZ-SS02 | EZ-SS02-1 | 11/22/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 25.5 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SS02 | EZ-SS02-1 | 11/22/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 1610 | = | mg/kg | | 1.5 | TRUE |
| EZ-SS02 | EZ-SS02-1 | 11/22/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 12.7 | = | mg/kg | | 1 | TRUE |
| EZ-SS02 | EZ-SS02-1 | 11/22/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 1.6 | = | mg/kg | | 0.5 | TRUE |
| EZ-SS02 | EZ-SS02-1 | 11/22/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 12 | = | mg/kg | | 2.5 | TRUE |
| EZ-SS02 | EZ-SS02-1 | 11/22/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 489 | J | mg/kg | | 6 | TRUE |
| EZ-SS03 | EZ-SS03-1 | 11/22/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 28 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SS03 | EZ-SS03-1 | 11/22/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 989 | = | mg/kg | | 1.5 | TRUE |
| EZ-SS03 | EZ-SS03-1 | 11/22/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 17.8 | = | mg/kg | | 1 | TRUE |
| EZ-SS03 | EZ-SS03-1 | 11/22/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 0.94 | = | mg/kg | | 0.5 | TRUE |
| EZ-SS03 | EZ-SS03-1 | 11/22/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 14.1 | = | mg/kg | | 2.5 | TRUE |
| EZ-SS03 | EZ-SS03-1 | 11/22/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 738 | J | mg/kg | | 6 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SB01 | EZ-SB01-2 | 11/29/10 | 3 | 5 | SO | 7439-92-1 | Lead, total | 11.5 | = | mg/kg | | 1 | TRUE |
| EZ-SB01 | EZ-SB01-2 | 11/29/10 | 3 | 5 | SO | 7439-92-1SV | Lead, sieve | 11.6 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB01 | EZ-SB01-2 | 11/29/10 | 3 | 5 | SO | 7439-96-5 | Manganese, total | 364 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB01 | EZ-SB01-2 | 11/29/10 | 3 | 5 | SO | 7440-38-2 | Arsenic, total | 6 | J | mg/kg | | 1 | TRUE |
| EZ-SB01 | EZ-SB01-2 | 11/29/10 | 3 | 5 | SO | 7440-43-9 | Cadmium, total | 0.51 | U | mg/kg | | 0.5 | FALSE |
| EZ-SB01 | EZ-SB01-2 | 11/29/10 | 3 | 5 | SO | 7440-50-8 | Copper, total | 12.4 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB01 | EZ-SB01-2 | 11/29/10 | 3 | 5 | SO | 7440-66-6 | Zinc, total | 46.4 | J | mg/kg | | 6 | TRUE |
| EZ-SB01 | EZ-SB01-3 | 11/29/10 | 7 | 9 | SO | 7439-92-1 | Lead, total | 8.8 | = | mg/kg | | 1 | TRUE |
| EZ-SB01 | EZ-SB01-3 | 11/29/10 | 7 | 9 | SO | 7439-92-1SV | Lead, sieve | 10 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB01 | EZ-SB01-3 | 11/29/10 | 7 | 9 | SO | 7439-96-5 | Manganese, total | 266 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB01 | EZ-SB01-3 | 11/29/10 | 7 | 9 | SO | 7440-38-2 | Arsenic, total | 3.9 | J | mg/kg | | 1 | TRUE |
| EZ-SB01 | EZ-SB01-3 | 11/29/10 | 7 | 9 | SO | 7440-43-9 | Cadmium, total | 0.48 | U | mg/kg | | 0.5 | FALSE |
| EZ-SB01 | EZ-SB01-3 | 11/29/10 | 7 | 9 | SO | 7440-50-8 | Copper, total | 7.9 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB01 | EZ-SB01-3 | 11/29/10 | 7 | 9 | SO | 7440-66-6 | Zinc, total | 22.2 | J | mg/kg | | 6 | TRUE |
| EZ-SB02 | EZ-SB02-2 | 11/30/10 | 3 | 5 | SO | 7439-92-1 | Lead, total | 17.1 | = | mg/kg | | 1 | TRUE |
| EZ-SB02 | EZ-SB02-2 | 11/30/10 | 3 | 5 | SO | 7439-92-1SV | Lead, sieve | 12.3 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB02 | EZ-SB02-2 | 11/30/10 | 3 | 5 | SO | 7439-96-5 | Manganese, total | 584 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB02 | EZ-SB02-2 | 11/30/10 | 3 | 5 | SO | 7440-38-2 | Arsenic, total | 8 | J | mg/kg | | 1 | TRUE |
| EZ-SB02 | EZ-SB02-2 | 11/30/10 | 3 | 5 | SO | 7440-43-9 | Cadmium, total | 0.51 | U | mg/kg | | 0.5 | FALSE |
| EZ-SB02 | EZ-SB02-2 | 11/30/10 | 3 | 5 | SO | 7440-50-8 | Copper, total | 15.4 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB02 | EZ-SB02-2 | 11/30/10 | 3 | 5 | SO | 7440-66-6 | Zinc, total | 42.4 | J | mg/kg | | 6 | TRUE |
| EZ-SB02 | EZ-SB02-3 | 11/30/10 | 7 | 9 | SO | 7439-92-1 | Lead, total | 16.9 | = | mg/kg | | 1 | TRUE |
| EZ-SB02 | EZ-SB02-3 | 11/30/10 | 7 | 9 | SO | 7439-92-1SV | Lead, sieve | 10.5 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB02 | EZ-SB02-3 | 11/30/10 | 7 | 9 | SO | 7439-96-5 | Manganese, total | 971 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB02 | EZ-SB02-3 | 11/30/10 | 7 | 9 | SO | 7440-38-2 | Arsenic, total | 5.5 | J | mg/kg | | 1 | TRUE |
| EZ-SB02 | EZ-SB02-3 | 11/30/10 | 7 | 9 | SO | 7440-43-9 | Cadmium, total | 0.47 | U | mg/kg | | 0.5 | FALSE |
| EZ-SB02 | EZ-SB02-3 | 11/30/10 | 7 | 9 | SO | 7440-50-8 | Copper, total | 8.3 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB02 | EZ-SB02-3 | 11/30/10 | 7 | 9 | SO | 7440-66-6 | Zinc, total | 22.4 | J | mg/kg | | 6 | TRUE |
| EZ-SB03 | EZ-SB03-2 | 11/30/10 | 3 | 5 | SO | 7440-66-6 | Zinc, total | 101 | J | mg/kg | | 6 | TRUE |
| EZ-SB03 | EZ-SB03-2FD | 11/30/10 | 3 | 5 | SO | 7439-92-1 | Lead, total | 27 | = | mg/kg | | 1 | TRUE |
| EZ-SB03 | EZ-SB03-2FD | 11/30/10 | 3 | 5 | SO | 7439-92-1SV | Lead, sieve | 18.7 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB03 | EZ-SB03-2FD | 11/30/10 | 3 | 5 | SO | 7439-96-5 | Manganese, total | 649 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB03 | EZ-SB03-2FD | 11/30/10 | 3 | 5 | SO | 7440-38-2 | Arsenic, total | 14.6 | J | mg/kg | | 1 | TRUE |
| EZ-SB03 | EZ-SB03-2FD | 11/30/10 | 3 | 5 | SO | 7440-43-9 | Cadmium, total | 0.5 | U | mg/kg | | 0.5 | FALSE |
| EZ-SB03 | EZ-SB03-2FD | 11/30/10 | 3 | 5 | SO | 7440-50-8 | Copper, total | 19.8 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB03 | EZ-SB03-3 | 11/30/10 | 7 | 9 | SO | 7439-92-1 | Lead, total | 9.5 | J | mg/kg | | 1 | TRUE |
| EZ-SB03 | EZ-SB03-3 | 11/30/10 | 7 | 9 | SO | 7439-92-1SV | Lead, sieve | 7.9 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB03 | EZ-SB03-3 | 11/30/10 | 7 | 9 | SO | 7439-96-5 | Manganese, total | 390 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB03 | EZ-SB03-3 | 11/30/10 | 7 | 9 | SO | 7440-38-2 | Arsenic, total | 4.5 | = | mg/kg | | 1 | TRUE |
| EZ-SB03 | EZ-SB03-3 | 11/30/10 | 7 | 9 | SO | 7440-43-9 | Cadmium, total | 0.34 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB03 | EZ-SB03-3 | 11/30/10 | 7 | 9 | SO | 7440-50-8 | Copper, total | 6.4 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB03 | EZ-SB03-3 | 11/30/10 | 7 | 9 | SO | 7440-66-6 | Zinc, total | 99.4 | = | mg/kg | | 6 | TRUE |
| EZ-SB04 | EZ-SB04-2 | 11/30/10 | 3 | 5 | SO | 7439-92-1 | Lead, total | 11.3 | J | mg/kg | | 1 | TRUE |
| EZ-SB04 | EZ-SB04-2 | 11/30/10 | 3 | 5 | SO | 7439-92-1SV | Lead, sieve | 9.5 | J | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB04 | EZ-SB04-2 | 11/30/10 | 3 | 5 | SO | 7439-96-5 | Manganese, total | 549 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB04 | EZ-SB04-2 | 11/30/10 | 3 | 5 | SO | 7440-38-2 | Arsenic, total | 5.9 | = | mg/kg | | 1 | TRUE |
| EZ-SB04 | EZ-SB04-2 | 11/30/10 | 3 | 5 | SO | 7440-43-9 | Cadmium, total | 0.19 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB04 | EZ-SB04-2 | 11/30/10 | 3 | 5 | SO | 7440-50-8 | Copper, total | 12.5 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB04 | EZ-SB04-2 | 11/30/10 | 3 | 5 | SO | 7440-66-6 | Zinc, total | 39.2 | = | mg/kg | | 6 | TRUE |
| EZ-SB04 | EZ-SB04-3 | 11/30/10 | 7 | 9 | SO | 7439-92-1 | Lead, total | 9.8 | J | mg/kg | | 1 | TRUE |
| EZ-SB04 | EZ-SB04-3 | 11/30/10 | 7 | 9 | SO | 7439-92-1SV | Lead, sieve | 9.6 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB04 | EZ-SB04-3 | 11/30/10 | 7 | 9 | SO | 7439-96-5 | Manganese, total | 375 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB04 | EZ-SB04-3 | 11/30/10 | 7 | 9 | SO | 7440-38-2 | Arsenic, total | 5.7 | = | mg/kg | | 1 | TRUE |
| EZ-SB04 | EZ-SB04-3 | 11/30/10 | 7 | 9 | SO | 7440-43-9 | Cadmium, total | 0.088 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB04 | EZ-SB04-3 | 11/30/10 | 7 | 9 | SO | 7440-50-8 | Copper, total | 8.2 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB04 | EZ-SB04-3 | 11/30/10 | 7 | 9 | SO | 7440-66-6 | Zinc, total | 24.3 | = | mg/kg | | 6 | TRUE |
| EZ-SB05 | EZ-SB05-2 | 11/30/10 | 3 | 5 | SO | 7439-92-1SV | Lead, sieve | 13.2 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB05 | EZ-SB05-2FD | 11/30/10 | 3 | 5 | SO | 7439-92-1 | Lead, total | 21.6 | J | mg/kg | | 1 | TRUE |
| EZ-SB05 | EZ-SB05-2FD | 11/30/10 | 3 | 5 | SO | 7439-96-5 | Manganese, total | 855 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB05 | EZ-SB05-2FD | 11/30/10 | 3 | 5 | SO | 7440-38-2 | Arsenic, total | 11.6 | = | mg/kg | | 1 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SB05 | EZ-SB05-2FD | 11/30/10 | 3 | 5 | SO | 7440-43-9 | Cadmium, total | 0.2 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB05 | EZ-SB05-2FD | 11/30/10 | 3 | 5 | SO | 7440-50-8 | Copper, total | 18.2 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB05 | EZ-SB05-2FD | 11/30/10 | 3 | 5 | SO | 7440-66-6 | Zinc, total | 58.2 | = | mg/kg | | 6 | TRUE |
| EZ-SB05 | EZ-SB05-3 | 11/30/10 | 7 | 9 | SO | 7439-92-1 | Lead, total | 15.2 | J | mg/kg | | 1 | TRUE |
| EZ-SB05 | EZ-SB05-3 | 11/30/10 | 7 | 9 | SO | 7439-92-1SV | Lead, sieve | 8 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB05 | EZ-SB05-3 | 11/30/10 | 7 | 9 | SO | 7439-96-5 | Manganese, total | 1340 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB05 | EZ-SB05-3 | 11/30/10 | 7 | 9 | SO | 7440-38-2 | Arsenic, total | 4.1 | = | mg/kg | | 1 | TRUE |
| EZ-SB05 | EZ-SB05-3 | 11/30/10 | 7 | 9 | SO | 7440-43-9 | Cadmium, total | 0.21 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB05 | EZ-SB05-3 | 11/30/10 | 7 | 9 | SO | 7440-50-8 | Copper, total | 8.7 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB05 | EZ-SB05-3 | 11/30/10 | 7 | 9 | SO | 7440-66-6 | Zinc, total | 26.1 | = | mg/kg | | 6 | TRUE |
| EZ-SB06 | EZ-SB06-2 | 11/30/10 | 3 | 5 | SO | 7439-92-1 | Lead, total | 11.2 | J | mg/kg | | 1 | TRUE |
| EZ-SB06 | EZ-SB06-2 | 11/30/10 | 3 | 5 | SO | 7439-92-1SV | Lead, sieve | 10 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB06 | EZ-SB06-2 | 11/30/10 | 3 | 5 | SO | 7439-96-5 | Manganese, total | 543 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB06 | EZ-SB06-2 | 11/30/10 | 3 | 5 | SO | 7440-38-2 | Arsenic, total | 5.6 | = | mg/kg | | 1 | TRUE |
| EZ-SB06 | EZ-SB06-2 | 11/30/10 | 3 | 5 | SO | 7440-43-9 | Cadmium, total | 0.23 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB06 | EZ-SB06-2 | 11/30/10 | 3 | 5 | SO | 7440-50-8 | Copper, total | 13.3 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB06 | EZ-SB06-2 | 11/30/10 | 3 | 5 | SO | 7440-66-6 | Zinc, total | 37 | = | mg/kg | | 6 | TRUE |
| EZ-SB06 | EZ-SB06-3 | 11/30/10 | 7 | 9 | SO | 7439-92-1 | Lead, total | 23.8 | J | mg/kg | | 1 | TRUE |
| EZ-SB06 | EZ-SB06-3 | 11/30/10 | 7 | 9 | SO | 7439-96-5 | Manganese, total | 1300 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB06 | EZ-SB06-3 | 11/30/10 | 7 | 9 | SO | 7440-38-2 | Arsenic, total | 6.8 | = | mg/kg | | 1 | TRUE |
| EZ-SB06 | EZ-SB06-3 | 11/30/10 | 7 | 9 | SO | 7440-43-9 | Cadmium, total | 0.2 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB06 | EZ-SB06-3 | 11/30/10 | 7 | 9 | SO | 7440-50-8 | Copper, total | 11.6 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB06 | EZ-SB06-3 | 11/30/10 | 7 | 9 | SO | 7440-66-6 | Zinc, total | 31.1 | = | mg/kg | | 6 | TRUE |
| EZ-SB06 | EZ-SB06-3FD | 11/30/10 | 7 | 9 | SO | 7439-92-1SV | Lead, sieve | 12.7 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB07 | EZ-SB07-1 | 11/29/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 12.5 | J | mg/kg | | 1 | TRUE |
| EZ-SB07 | EZ-SB07-1 | 11/29/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 16.6 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB07 | EZ-SB07-1 | 11/29/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 814 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB07 | EZ-SB07-1 | 11/29/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 9.4 | = | mg/kg | | 1 | TRUE |
| EZ-SB07 | EZ-SB07-1 | 11/29/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 0.89 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB07 | EZ-SB07-1 | 11/29/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 12.8 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB07 | EZ-SB07-1 | 11/29/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 793 | = | mg/kg | | 6 | TRUE |
| EZ-SB08 | EZ-SB08-1 | 11/29/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 28.1 | J | mg/kg | | 1 | TRUE |
| EZ-SB08 | EZ-SB08-1 | 11/29/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 17.9 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB08 | EZ-SB08-1 | 11/29/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 1340 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB08 | EZ-SB08-1 | 11/29/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 6.4 | = | mg/kg | | 1 | TRUE |
| EZ-SB08 | EZ-SB08-1 | 11/29/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 1 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB08 | EZ-SB08-1 | 11/29/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 9.9 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB08 | EZ-SB08-1 | 11/29/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 692 | = | mg/kg | | 6 | TRUE |
| EZ-SB09 | EZ-SB09-1 | 11/29/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 15.8 | J | mg/kg | | 1 | TRUE |
| EZ-SB09 | EZ-SB09-1 | 11/29/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 61.8 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB09 | EZ-SB09-1 | 11/29/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 625 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB09 | EZ-SB09-1 | 11/29/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 14.5 | = | mg/kg | | 1 | TRUE |
| EZ-SB09 | EZ-SB09-1 | 11/29/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 1.1 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB09 | EZ-SB09-1 | 11/29/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 24.3 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB09 | EZ-SB09-1 | 11/29/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 665 | = | mg/kg | | 6 | TRUE |
| EZ-SB07 | EZ-SB07-2 | 11/29/10 | 3 | 5 | SO | 7439-92-1 | Lead, total | 9.6 | J | mg/kg | | 1 | TRUE |
| EZ-SB07 | EZ-SB07-2 | 11/29/10 | 3 | 5 | SO | 7439-92-1SV | Lead, sieve | 10.4 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB07 | EZ-SB07-2 | 11/29/10 | 3 | 5 | SO | 7439-96-5 | Manganese, total | 93 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB07 | EZ-SB07-2 | 11/29/10 | 3 | 5 | SO | 7440-38-2 | Arsenic, total | 3.3 | = | mg/kg | | 1 | TRUE |
| EZ-SB07 | EZ-SB07-2 | 11/29/10 | 3 | 5 | SO | 7440-43-9 | Cadmium, total | 0.077 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB07 | EZ-SB07-2 | 11/29/10 | 3 | 5 | SO | 7440-50-8 | Copper, total | 7.2 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB07 | EZ-SB07-2 | 11/29/10 | 3 | 5 | SO | 7440-66-6 | Zinc, total | 33.8 | = | mg/kg | | 6 | TRUE |
| EZ-SB07 | EZ-SB07-3 | 11/29/10 | 7 | 9 | SO | 7439-92-1 | Lead, total | 14.7 | J | mg/kg | | 1 | TRUE |
| EZ-SB07 | EZ-SB07-3 | 11/29/10 | 7 | 9 | SO | 7439-92-1SV | Lead, sieve | 15.3 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB07 | EZ-SB07-3 | 11/29/10 | 7 | 9 | SO | 7439-96-5 | Manganese, total | 281 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB07 | EZ-SB07-3 | 11/29/10 | 7 | 9 | SO | 7440-38-2 | Arsenic, total | 18.2 | = | mg/kg | | 1 | TRUE |
| EZ-SB07 | EZ-SB07-3 | 11/29/10 | 7 | 9 | SO | 7440-43-9 | Cadmium, total | 0.2 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB07 | EZ-SB07-3 | 11/29/10 | 7 | 9 | SO | 7440-50-8 | Copper, total | 9 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB07 | EZ-SB07-3 | 11/29/10 | 7 | 9 | SO | 7440-66-6 | Zinc, total | 39.8 | = | mg/kg | | 6 | TRUE |
| EZ-SB08 | EZ-SB08-2 | 11/29/10 | 3 | 5 | SO | 7439-92-1 | Lead, total | 9.3 | J | mg/kg | | 1 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SB08 | EZ-SB08-2 | 11/29/10 | 3 | 5 | SO | 7439-92-1SV | Lead, sieve | 11.4 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB08 | EZ-SB08-2 | 11/29/10 | 3 | 5 | SO | 7439-96-5 | Manganese, total | 92.3 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB08 | EZ-SB08-2 | 11/29/10 | 3 | 5 | SO | 7440-38-2 | Arsenic, total | 4.2 | = | mg/kg | | 1 | TRUE |
| EZ-SB08 | EZ-SB08-2 | 11/29/10 | 3 | 5 | SO | 7440-43-9 | Cadmium, total | 0.11 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB08 | EZ-SB08-2 | 11/29/10 | 3 | 5 | SO | 7440-50-8 | Copper, total | 7.8 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB08 | EZ-SB08-2 | 11/29/10 | 3 | 5 | SO | 7440-66-6 | Zinc, total | 25.4 | = | mg/kg | | 6 | TRUE |
| EZ-SB08 | EZ-SB08-3 | 11/29/10 | 7 | 9 | SO | 7439-92-1 | Lead, total | 12.6 | J | mg/kg | | 1 | TRUE |
| EZ-SB08 | EZ-SB08-3 | 11/29/10 | 7 | 9 | SO | 7439-92-1SV | Lead, sieve | 16.1 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB08 | EZ-SB08-3 | 11/29/10 | 7 | 9 | SO | 7439-96-5 | Manganese, total | 64.2 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB08 | EZ-SB08-3 | 11/29/10 | 7 | 9 | SO | 7440-38-2 | Arsenic, total | 6.1 | = | mg/kg | | 1 | TRUE |
| EZ-SB08 | EZ-SB08-3 | 11/29/10 | 7 | 9 | SO | 7440-43-9 | Cadmium, total | 0.11 | J | mg/kg | | 0.5 | TRUE |
| EZ-SB08 | EZ-SB08-3 | 11/29/10 | 7 | 9 | SO | 7440-50-8 | Copper, total | 9.6 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB08 | EZ-SB08-3 | 11/29/10 | 7 | 9 | SO | 7440-66-6 | Zinc, total | 25.7 | = | mg/kg | | 6 | TRUE |
| EZ-SB09 | EZ-SB09-2 | 11/29/10 | 3 | 5 | SO | 7439-92-1 | Lead, total | 9.1 | J | mg/kg | | 1 | TRUE |
| EZ-SB09 | EZ-SB09-2 | 11/29/10 | 3 | 5 | SO | 7439-92-1SV | Lead, sieve | 10.2 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB09 | EZ-SB09-2 | 11/29/10 | 3 | 5 | SO | 7439-96-5 | Manganese, total | 17.1 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB09 | EZ-SB09-2 | 11/29/10 | 3 | 5 | SO | 7440-38-2 | Arsenic, total | 1.9 | J | mg/kg | | 1 | TRUE |
| EZ-SB09 | EZ-SB09-2 | 11/29/10 | 3 | 5 | SO | 7440-43-9 | Cadmium, total | 0.54 | U | mg/kg | | 0.5 | FALSE |
| EZ-SB09 | EZ-SB09-2 | 11/29/10 | 3 | 5 | SO | 7440-50-8 | Copper, total | 7.7 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB09 | EZ-SB09-2 | 11/29/10 | 3 | 5 | SO | 7440-66-6 | Zinc, total | 15.7 | J | mg/kg | | 6 | TRUE |
| EZ-SB09 | EZ-SB09-3 | 11/29/10 | 7 | 9 | SO | 7439-92-1 | Lead, total | 9.7 | J | mg/kg | | 1 | TRUE |
| EZ-SB09 | EZ-SB09-3 | 11/29/10 | 7 | 9 | SO | 7439-92-1SV | Lead, sieve | 8.8 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SB09 | EZ-SB09-3 | 11/29/10 | 7 | 9 | SO | 7439-96-5 | Manganese, total | 42.1 | J | mg/kg | | 1.5 | TRUE |
| EZ-SB09 | EZ-SB09-3 | 11/29/10 | 7 | 9 | SO | 7440-38-2 | Arsenic, total | 6.9 | J | mg/kg | | 1 | TRUE |
| EZ-SB09 | EZ-SB09-3 | 11/29/10 | 7 | 9 | SO | 7440-43-9 | Cadmium, total | 0.55 | U | mg/kg | | 0.5 | FALSE |
| EZ-SB09 | EZ-SB09-3 | 11/29/10 | 7 | 9 | SO | 7440-50-8 | Copper, total | 13.3 | J | mg/kg | | 2.5 | TRUE |
| EZ-SB09 | EZ-SB09-3 | 11/29/10 | 7 | 9 | SO | 7440-66-6 | Zinc, total | 39.4 | J | mg/kg | | 6 | TRUE |
| 008 | 008C | 10/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 2910 | = | mg/kg | | | TRUE |
| 022 | 022C | 10/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 5616 | = | mg/kg | | | TRUE |
| 037 | 037C | 10/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 19100 | = | mg/kg | | | TRUE |
| 040 | 040C | 10/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 15000 | = | mg/kg | | | TRUE |
| 056 | 056C | 10/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 7640 | = | mg/kg | | | TRUE |
| 065 | 065C | 10/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 13300 | = | mg/kg | | | TRUE |
| 134 | 134C | 10/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 15400 | = | mg/kg | | | TRUE |
| 178 | 178C | 10/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 65400 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7429-90-5 | Aluminum, total | 19000 | J | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-89-6 | Iron, total | 27000 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-92-1 | Lead, total | 500 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-95-4 | Magnesium, total | 2200 | J | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-96-5 | Manganese, total | 540 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-97-6 | Mercury, total | 0.042 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-02-0 | Nickel, total | 42 | J | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-09-7 | Potassium, total | 1300 | J | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-22-4 | Silver, total | 0.97 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-23-5 | Sodium, total | 53 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-28-0 | Thallium, total | 0.35 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-36-0 | Antimony, total | 18 | UJ | mg/kg | | | FALSE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-38-2 | Arsenic, total | 12 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-39-3 | Barium, total | 190 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-41-7 | Beryllium, total | 0.8 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-43-9 | Cadmium, total | 7.3 | J | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-47-3 | Chromium, total | 21 | J | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-48-4 | Cobalt, total | 13 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-50-8 | Copper, total | 130 | J | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-62-2 | Vanadium, total | 39 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-66-6 | Zinc, total | 4800 | J | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-70-2 | Calcium, total | 1000 | = | mg/kg | | | TRUE |
| A1-26 | A1-26-S1 | 3/1/05 | 0 | 0.5 | SO | 7782-49-2 | Selenium, total | 0.99 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7429-90-5 | Aluminum, total | 18000 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-89-6 | Iron, total | 25000 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-92-1 | Lead, total | 1100 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-95-4 | Magnesium, total | 2700 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-96-5 | Manganese, total | 490 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-97-6 | Mercury, total | 0.028 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-02-0 | Nickel, total | 18 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-09-7 | Potassium, total | 1400 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-22-4 | Silver, total | 3.4 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-23-5 | Sodium, total | 41 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-28-0 | Thallium, total | 0.31 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-36-0 | Antimony, total | 5.4 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-38-2 | Arsenic, total | 21 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-39-3 | Barium, total | 150 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-41-7 | Beryllium, total | 0.71 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-43-9 | Cadmium, total | 7.8 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-47-3 | Chromium, total | 22 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-48-4 | Cobalt, total | 12 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-50-8 | Copper, total | 180 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-62-2 | Vanadium, total | 42 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-66-6 | Zinc, total | 2700 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-70-2 | Calcium, total | 1000 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7782-49-2 | Selenium, total | 1.1 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7429-90-5 | Aluminum, total | 21000 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7439-89-6 | Iron, total | 19000 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7439-92-1 | Lead, total | 24 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7439-95-4 | Magnesium, total | 2500 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7439-96-5 | Manganese, total | 190 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7439-97-6 | Mercury, total | 0.041 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-02-0 | Nickel, total | 16 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-09-7 | Potassium, total | 670 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-22-4 | Silver, total | 0.054 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-23-5 | Sodium, total | 73 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-28-0 | Thallium, total | 0.17 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-36-0 | Antimony, total | 1.8 | UJ | mg/kg | | | FALSE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-38-2 | Arsenic, total | 4.5 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-39-3 | Barium, total | 110 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-41-7 | Beryllium, total | 1 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-43-9 | Cadmium, total | 4.7 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-47-3 | Chromium, total | 23 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-48-4 | Cobalt, total | 6 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-50-8 | Copper, total | 12 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-62-2 | Vanadium, total | 33 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-66-6 | Zinc, total | 93 | J | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7440-70-2 | Calcium, total | 1600 | = | mg/kg | | | TRUE |
| A1-3 | A1-3-S1-2 | 3/1/05 | 0.5 | 1 | SO | 7782-49-2 | Selenium, total | 0.64 | J | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7429-90-5 | Aluminum, total | 9800 | J | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-89-6 | Iron, total | 8100 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-92-1 | Lead, total | 26 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-95-4 | Magnesium, total | 990 | J | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-96-5 | Manganese, total | 160 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-97-6 | Mercury, total | 0.034 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-02-0 | Nickel, total | 8 | J | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-09-7 | Potassium, total | 840 | J | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-22-4 | Silver, total | 0.1 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-23-5 | Sodium, total | 98 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-28-0 | Thallium, total | 0.19 | J | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-36-0 | Antimony, total | 18 | UJ | mg/kg | | | FALSE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-38-2 | Arsenic, total | 2.3 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-39-3 | Barium, total | 150 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-41-7 | Beryllium, total | 0.65 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-43-9 | Cadmium, total | 5.8 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-47-3 | Chromium, total | 13 | J | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-48-4 | Cobalt, total | 3.3 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-50-8 | Copper, total | 27 | J | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-62-2 | Vanadium, total | 23 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-66-6 | Zinc, total | 770 | J | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-70-2 | Calcium, total | 1800 | = | mg/kg | | | TRUE |
| A2-13 | A2-13-S1 | 3/1/05 | 0 | 0.5 | SO | 7782-49-2 | Selenium, total | 0.81 | J | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 100-01-6 | 4-NITROANILINE | 0.3 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 100-02-7 | 4-NITROPHENOL | 0.29 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 100-41-4 | ETHYLBENZENE | 0.0016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 100-42-5 | STYRENE | 0.0015 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 100-52-7 | BENZALDEHYDE | 0.087 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0013 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0012 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.075 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 105-60-2 | CAPROLACTAM | 0.093 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.099 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0017 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 106-47-8 | 4-CHLOROANILINE | 0.075 | UJ | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0014 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0013 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.081 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0049 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 108-88-3 | TOLUENE | 0.0018 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 108-90-7 | CHLOROBENZENE | 0.0018 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 108-95-2 | PHENOL | 0.075 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 110-82-7 | CYCLOHEXANE | 0.0048 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.087 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.093 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.099 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.062 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 120-12-7 | ANTHRACENE | 0.081 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.17 | UJ | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.002 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 129-00-0 | PYRENE | 0.14 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 132-64-9 | DIBENZOFURAN | 0.12 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0018 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0015 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0017 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 179601-23-1 | Xylenes, -m, -p | 0.0037 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 1912-24-9 | ATRAZINE | 0.075 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.093 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.093 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 206-44-0 | FLUORANTHENE | 0.14 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.12 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 208-96-8 | ACENAPHTHYLENE | 0.093 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 218-01-9 | CHRYSENE | 0.13 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 50-32-8 | BENZO(A)PYRENE | 0.093 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.075 | UJ | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0013 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.0025 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.0017 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 591-78-6 | 2-HEXANONE | 0.002 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.099 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.081 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 67-66-3 | CHLOROFORM | 0.0016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 67-72-1 | HEXACHLOROETHANE | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 71-43-2 | BENZENE | 0.0017 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0015 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 23000 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 26000 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 18 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 3000 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 540 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.031 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 16 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 1600 | J | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.42 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 28 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 0.88 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 1.9 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 12 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 140 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 1.2 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 3.8 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 27 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 6.7 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 17 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 57 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 2200 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 530 | = | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 74-83-9 | BROMOMETHANE | 0.0022 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 74-87-3 | CHLOROMETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 75-00-3 | CHLOROETHANE | 0.0015 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 75-01-4 | VINYL CHLORIDE | 0.0016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.0038 | J | mg/kg | | | TRUE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 75-15-0 | CARBON DISULFIDE | 0.0022 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 75-25-2 | BROMOFORM | 0.0014 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.0018 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.002 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0018 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.075 | UJ | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 0.35 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 78-59-1 | ISOPHORONE | 0.075 | UJ | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.0012 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0018 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 79-20-9 | METHYL ACETATE | 0.0051 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 83-32-9 | ACENAPHTHENE | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.099 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 85-01-8 | PHENANTHRENE | 0.081 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.099 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 86-73-7 | FLUORENE | 0.12 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 86-74-8 | CARBAZOLE | 0.19 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.075 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 88-74-4 | 2-NITROANILINE | 0.16 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 88-75-5 | 2-NITROPHENOL | 0.093 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 91-20-3 | NAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.099 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.087 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.16 | UJ | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.099 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0022 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0018 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.099 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0018 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0014 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 98-86-2 | ACETOPHENONE | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 98-95-3 | NITROBENZENE | 0.11 | U | mg/kg | | | FALSE |
| A2-19 | S-A2-19-6 | 7/19/02 | 1 | 2 | SO | 99-09-2 | 3-NITROANILINE | 0.062 | U | mg/kg | | | FALSE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7429-90-5 | Aluminum, total | 11000 | J | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-89-6 | Iron, total | 16000 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-92-1 | Lead, total | 30 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-95-4 | Magnesium, total | 1400 | J | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-96-5 | Manganese, total | 960 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-02-0 | Nickel, total | 11 | J | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-22-4 | Silver, total | 0.056 | J | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-23-5 | Sodium, total | 70 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-38-2 | Arsenic, total | 11 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-39-3 | Barium, total | 160 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-41-7 | Beryllium, total | 0.78 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-43-9 | Cadmium, total | 7.7 | J | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-47-3 | Chromium, total | 15 | J | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-48-4 | Cobalt, total | 18 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-62-2 | Vanadium, total | 40 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1 | 3/1/05 | 0 | 0.5 | SO | 7782-49-2 | Selenium, total | 1.2 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1D | 3/1/05 | 0 | 0.5 | SO | 7439-97-6 | Mercury, total | 0.023 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1D | 3/1/05 | 0 | 0.5 | SO | 7440-09-7 | Potassium, total | 940 | J | mg/kg | | | TRUE |
| A2-3 | A2-3-S1D | 3/1/05 | 0 | 0.5 | SO | 7440-28-0 | Thallium, total | 0.37 | = | mg/kg | | | TRUE |
| A2-3 | A2-3-S1D | 3/1/05 | 0 | 0.5 | SO | 7440-36-0 | Antimony, total | 18 | UJ | mg/kg | | | FALSE |
| A2-3 | A2-3-S1D | 3/1/05 | 0 | 0.5 | SO | 7440-50-8 | Copper, total | 12 | J | mg/kg | | | TRUE |
| A2-3 | A2-3-S1D | 3/1/05 | 0 | 0.5 | SO | 7440-66-6 | Zinc, total | 710 | J | mg/kg | | | TRUE |
| A2-3 | A2-3-S1D | 3/1/05 | 0 | 0.5 | SO | 7440-70-2 | Calcium, total | 670 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 100-01-6 | 4-NITROANILINE | 0.3 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 100-02-7 | 4-NITROPHENOL | 0.29 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 100-41-4 | ETHYLBENZENE | 0.0017 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 100-42-5 | STYRENE | 0.0015 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 100-52-7 | BENZALDEHYDE | 0.086 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0014 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0012 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.074 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 105-60-2 | CAPROLACTAM | 0.092 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.099 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0018 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 106-47-8 | 4-CHLOROANILINE | 0.074 | UJ | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0014 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0014 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.08 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0052 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 108-88-3 | TOLUENE | 0.0019 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 108-90-7 | CHLOROBENZENE | 0.0019 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 108-95-2 | PHENOL | 0.074 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 110-82-7 | CYCLOHEXANE | 0.005 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.086 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.092 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.099 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.062 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 120-12-7 | ANTHRACENE | 0.08 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0017 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.17 | UJ | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0015 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0021 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 129-00-0 | PYRENE | 0.14 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 132-64-9 | DIBENZOFURAN | 0.12 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0019 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0018 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 179601-23-1 | Xylenes, -m, -p | 0.0039 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 1912-24-9 | ATRAZINE | 0.074 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.092 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.092 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 206-44-0 | FLUORANTHENE | 0.14 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.12 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 208-96-8 | ACENAPHTHYLENE | 0.092 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 218-01-9 | CHRYSENE | 0.13 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 50-32-8 | BENZO(A)PYRENE | 0.092 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.15 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.074 | UJ | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.0026 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.0018 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.11 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 591-78-6 | 2-HEXANONE | 0.0021 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.099 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.08 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 67-66-3 | CHLOROFORM | 0.0016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 67-72-1 | HEXACHLOROETHANE | 0.1 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.11 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 71-43-2 | BENZENE | 0.0018 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 30000 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 29000 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 11 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 4300 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 350 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.021 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 20 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 2200 | J | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.4 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 71 | J | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 1.7 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 2 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 8.3 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 140 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 1 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 6.3 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 34 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 5.2 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 21 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 57 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 1900 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 1500 | = | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 74-83-9 | BROMOMETHANE | 0.0023 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 74-87-3 | CHLOROMETHANE | 0.0015 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 75-00-3 | CHLOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 75-01-4 | VINYL CHLORIDE | 0.0017 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.0093 | J | mg/kg | | | TRUE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 75-15-0 | CARBON DISULFIDE | 0.0023 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 75-25-2 | BROMOFORM | 0.0015 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.0019 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0021 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0019 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.074 | UJ | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 1.4 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 78-59-1 | ISOPHORONE | 0.074 | UJ | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.0013 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0019 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 79-20-9 | METHYL ACETATE | 0.0054 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 83-32-9 | ACENAPHTHENE | 0.1 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.099 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 85-01-8 | PHENANTHRENE | 0.08 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.099 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.1 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 86-73-7 | FLUORENE | 0.12 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 86-74-8 | CARBAZOLE | 0.19 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.11 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.074 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 88-74-4 | 2-NITROANILINE | 0.16 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 88-75-5 | 2-NITROPHENOL | 0.092 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 91-20-3 | NAPHTHALENE | 0.1 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.099 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.086 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.16 | UJ | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.099 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0023 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.11 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0019 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.099 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0019 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0015 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 98-86-2 | ACETOPHENONE | 0.11 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 98-95-3 | NITROBENZENE | 0.1 | U | mg/kg | | | FALSE |
| A3-20 | S-A3-20-2 | 7/19/02 | 1 | 2 | SO | 99-09-2 | 3-NITROANILINE | 0.062 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 100-01-6 | 4-NITROANILINE | 0.29 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 100-02-7 | 4-NITROPHENOL | 0.28 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 100-41-4 | ETHYLBENZENE | 0.0021 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 100-42-5 | STYRENE | 0.002 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 100-52-7 | BENZALDEHYDE | 0.084 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0017 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0015 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.072 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 105-60-2 | CAPROLACTAM | 0.09 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.096 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0023 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 106-47-8 | 4-CHLOROANILINE | 0.072 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0018 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0022 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0017 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.078 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0066 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 108-88-3 | TOLUENE | 0.0024 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 108-90-7 | CHLOROBENZENE | 0.0024 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 108-95-2 | PHENOL | 0.072 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 110-82-7 | CYCLOHEXANE | 0.0064 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.016 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.016 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.016 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.016 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.084 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.09 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.096 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.06 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 120-12-7 | ANTHRACENE | 0.078 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0022 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.16 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0019 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.016 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.016 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0027 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 129-00-0 | PYRENE | 0.14 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 132-64-9 | DIBENZOFURAN | 0.12 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0024 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.002 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0023 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 179601-23-1 | Xylenes, -m, -p | 0.0049 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 1912-24-9 | ATRAZINE | 0.072 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.09 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.09 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.14 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 206-44-0 | FLUORANTHENE | 0.14 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.12 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 208-96-8 | ACENAPHTHYLENE | 0.09 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 218-01-9 | CHRYSENE | 0.13 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 50-32-8 | BENZO(A)PYRENE | 0.09 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.15 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.016 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.072 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0017 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.0032 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.0023 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.11 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 591-78-6 | 2-HEXANONE | 0.0027 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.096 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.078 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 67-64-1 | ACETONE | 0.061 | J | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 67-66-3 | CHLOROFORM | 0.0021 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 67-72-1 | HEXACHLOROETHANE | 0.1 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.11 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 71-43-2 | BENZENE | 0.0022 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.002 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 28000 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 22000 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 10 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 2400 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 68 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.039 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 15 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 1700 | J | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.079 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 34 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 1.3 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 0.72 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 4.8 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 120 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 1.1 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 7.9 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 30 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 3.7 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 15 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 49 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 1500 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 1500 | = | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 74-83-9 | BROMOMETHANE | 0.0029 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 74-87-3 | CHLOROMETHANE | 0.0019 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 75-00-3 | CHLOROETHANE | 0.0021 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 75-01-4 | VINYL CHLORIDE | 0.0022 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.0067 | J | mg/kg | | | TRUE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 75-15-0 | CARBON DISULFIDE | 0.0029 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 75-25-2 | BROMOFORM | 0.0019 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.0021 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.0021 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.0024 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0027 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0017 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0024 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.072 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 0.29 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 78-59-1 | ISOPHORONE | 0.072 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.0016 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0018 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0024 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 79-20-9 | METHYL ACETATE | 0.0069 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0021 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 83-32-9 | ACENAPHTHENE | 0.1 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.096 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 85-01-8 | PHENANTHRENE | 0.078 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.096 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.1 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 86-73-7 | FLUORENE | 0.12 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 86-74-8 | CARBAZOLE | 0.19 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.11 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.072 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 88-74-4 | 2-NITROANILINE | 0.16 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 88-75-5 | 2-NITROPHENOL | 0.09 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 91-20-3 | NAPHTHALENE | 0.1 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.096 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.084 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.16 | UJ | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.096 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0029 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.11 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0024 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.096 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0024 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0019 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 98-86-2 | ACETOPHENONE | 0.11 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 98-95-3 | NITROBENZENE | 0.1 | U | mg/kg | | | FALSE |
| A3-23 | S-A3-23-2 | 7/19/02 | 1 | 2 | SO | 99-09-2 | 3-NITROANILINE | 0.06 | UJ | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 100-01-6 | 4-NITROANILINE | 0.3 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 100-02-7 | 4-NITROPHENOL | 0.29 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 100-41-4 | ETHYLBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 100-42-5 | STYRENE | 0.0013 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 100-52-7 | BENZALDEHYDE | 0.086 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0011 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.001 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.074 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 105-60-2 | CAPROLACTAM | 0.092 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.099 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0015 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 106-47-8 | 4-CHLOROANILINE | 0.074 | UJ | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0012 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0011 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.08 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0043 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 108-88-3 | TOLUENE | 0.0015 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 108-90-7 | CHLOROBENZENE | 0.0016 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 108-95-2 | PHENOL | 0.074 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 110-82-7 | CYCLOHEXANE | 0.0041 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.086 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.092 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.099 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.062 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 120-12-7 | ANTHRACENE | 0.08 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.17 | UJ | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0017 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 129-00-0 | PYRENE | 0.14 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 132-64-9 | DIBENZOFURAN | 0.12 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0013 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0015 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 179601-23-1 | Xylenes, -m, -p | 0.0032 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 1912-24-9 | ATRAZINE | 0.074 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.092 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.092 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 206-44-0 | FLUORANTHENE | 0.14 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.12 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 208-96-8 | ACENAPHTHYLENE | 0.092 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 218-01-9 | CHRYSENE | 0.13 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 50-32-8 | BENZO(A)PYRENE | 0.092 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.15 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.074 | UJ | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0011 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.0021 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.0015 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.11 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 591-78-6 | 2-HEXANONE | 0.0017 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.099 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.08 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 67-64-1 | ACETONE | 0.023 | J | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 67-66-3 | CHLOROFORM | 0.0014 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 67-72-1 | HEXACHLOROETHANE | 0.1 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.11 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 71-43-2 | BENZENE | 0.0014 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 23000 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 25000 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 12 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 3700 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 410 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.043 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 21 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 2600 | J | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.15 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 280 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 0.68 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 0.73 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 8.2 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 220 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 1.2 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 33 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 29 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 4.7 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 19 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 53 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 1700 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 2500 | = | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 74-83-9 | BROMOMETHANE | 0.0019 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 74-87-3 | CHLOROMETHANE | 0.0012 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 75-00-3 | CHLOROETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 75-01-4 | VINYL CHLORIDE | 0.0014 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.0016 | J | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 75-15-0 | CARBON DISULFIDE | 0.0019 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 75-25-2 | BROMOFORM | 0.0012 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.0016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0017 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0011 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.074 | UJ | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 0.57 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 78-59-1 | ISOPHORONE | 0.074 | UJ | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.001 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 0.0044 | J | mg/kg | | | TRUE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0012 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 79-20-9 | METHYL ACETATE | 0.0045 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 83-32-9 | ACENAPHTHENE | 0.1 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.099 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 85-01-8 | PHENANTHRENE | 0.08 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.099 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.1 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 86-73-7 | FLUORENE | 0.12 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 86-74-8 | CARBAZOLE | 0.19 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.11 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.074 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 88-74-4 | 2-NITROANILINE | 0.16 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 88-75-5 | 2-NITROPHENOL | 0.092 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 91-20-3 | NAPHTHALENE | 0.1 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.099 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.086 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.16 | UJ | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.099 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0019 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.11 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.099 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0016 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0013 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 98-86-2 | ACETOPHENONE | 0.11 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 98-95-3 | NITROBENZENE | 0.1 | U | mg/kg | | | FALSE |
| A3-25 | S-A3-25-2 | 7/19/02 | 1 | 2 | SO | 99-09-2 | 3-NITROANILINE | 0.062 | U | mg/kg | | | FALSE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 20000 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 12000 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 15 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 2000 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 1200 | J | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.013 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 24 | J | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 690 | J | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.073 | U | mg/kg | | | FALSE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 120 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 1.2 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 0.36 | U | mg/kg | | | FALSE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 3.4 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 120 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 0.97 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 0.41 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 27 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 17 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 11 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 37 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 50 | J | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 1900 | = | mg/kg | | | TRUE |
| A4-1 | S-A4-1-6 | 7/19/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 0.61 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 100-01-6 | 4-NITROANILINE | 0.3 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 100-02-7 | 4-NITROPHENOL | 0.29 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 100-52-7 | BENZALDEHYDE | 0.088 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.075 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 105-60-2 | CAPROLACTAM | 0.094 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 106-47-8 | 4-CHLOROANILINE | 0.075 | UJ | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.081 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 108-95-2 | PHENOL | 0.075 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.016 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.016 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.016 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.016 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.088 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.094 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.063 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 120-12-7 | ANTHRACENE | 0.081 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.016 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.016 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 129-00-0 | PYRENE | 0.14 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 1912-24-9 | ATRAZINE | 0.075 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.094 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.094 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 206-44-0 | FLUORANTHENE | 0.14 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 208-96-8 | ACENAPHTHYLENE | 0.094 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 50-32-8 | BENZO(A)PYRENE | 0.094 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.016 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.075 | UJ | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.081 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 20 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 1900 | J | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.039 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 93 | J | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.17 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 2 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 0.83 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 490 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 1 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 29 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 3300 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.075 | UJ | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 1.7 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 78-59-1 | ISOPHORONE | 0.075 | UJ | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 85-01-8 | PHENANTHRENE | 0.081 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 86-74-8 | CARBAZOLE | 0.19 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.075 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 88-74-4 | 2-NITROANILINE | 0.16 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 88-75-5 | 2-NITROPHENOL | 0.094 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.088 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.16 | UJ | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 98-86-2 | ACETOPHENONE | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2 | 7/19/02 | 1 | 2 | SO | 99-09-2 | 3-NITROANILINE | 0.063 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 100-41-4 | ETHYLBENZENE | 0.00096 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 100-42-5 | STYRENE | 0.00089 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.00078 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0007 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.1 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0011 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.00083 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.00099 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.00079 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.003 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 108-88-3 | TOLUENE | 0.0011 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 108-90-7 | CHLOROBENZENE | 0.0011 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 110-82-7 | CYCLOHEXANE | 0.0029 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.00098 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.17 | UJ | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.00088 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0012 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 132-64-9 | DIBENZOFURAN | 0.13 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0011 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.00093 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.001 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 179601-23-1 | Xylenes, -m, -p | 0.0022 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.13 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 218-01-9 | CHRYSENE | 0.13 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.00079 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.00148 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.001 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 591-78-6 | 2-HEXANONE | 0.0012 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.1 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 67-66-3 | CHLOROFORM | 0.00095 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 67-72-1 | HEXACHLOROETHANE | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 71-43-2 | BENZENE | 0.001 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0009 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 28000 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 35000 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 4400 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 2100 | J | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 390 | J | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 13 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 2.8 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 38 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 24 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 66 | = | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 400 | J | mg/kg | | | TRUE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 74-83-9 | BROMOMETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 74-87-3 | CHLOROMETHANE | 0.00087 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 75-00-3 | CHLOROETHANE | 0.00094 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 75-01-4 | VINYL CHLORIDE | 0.00099 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.001 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 75-15-0 | CARBON DISULFIDE | 0.0013 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 75-25-2 | BROMOFORM | 0.00086 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.00095 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.00096 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.0011 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0012 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.00079 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0011 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.00073 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 0.0015 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.00081 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0011 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 79-20-9 | METHYL ACETATE | 0.0031 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.00097 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 83-32-9 | ACENAPHTHENE | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 86-73-7 | FLUORENE | 0.13 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 91-20-3 | NAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.1 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.1 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0013 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0011 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.1 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0011 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.00088 | U | mg/kg | | | FALSE |
| A4-15 | S-A4-15-2D | 7/19/02 | 1 | 2 | SO | 98-95-3 | NITROBENZENE | 0.11 | U | mg/kg | | | FALSE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 18000 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 24000 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 28 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 2000 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 920 | J | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.019 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 13 | J | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 1300 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.075 | U | mg/kg | | | FALSE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 63 | U | mg/kg | | | FALSE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 1.8 | U | mg/kg | | | FALSE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 0.71 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 9.3 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 120 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 1.5 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 1.2 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 24 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 4.7 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 11 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 50 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 990 | J | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 1300 | = | mg/kg | | | TRUE |
| A4-17 | S-A4-17-2 | 7/19/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 1.5 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 100-01-6 | 4-NITROANILINE | 0.31 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 100-02-7 | 4-NITROPHENOL | 0.3 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 100-41-4 | ETHYLBENZENE | 0.00087 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 100-42-5 | STYRENE | 0.00081 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 100-52-7 | BENZALDEHYDE | 0.09 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.00071 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.00064 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.077 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 105-60-2 | CAPROLACTAM | 0.096 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.17 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.1 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.00096 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 106-47-8 | 4-CHLOROANILINE | 0.077 | UJ | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.00075 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0009 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.00072 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.083 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0027 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 108-88-3 | TOLUENE | 0.00098 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 108-90-7 | CHLOROBENZENE | 0.001 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 108-95-2 | PHENOL | 0.077 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 110-82-7 | CYCLOHEXANE | 0.0026 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.017 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.017 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.017 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.017 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.09 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.096 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.064 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 120-12-7 | ANTHRACENE | 0.083 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.00089 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.17 | UJ | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0008 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.017 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.017 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0011 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 129-00-0 | PYRENE | 0.15 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 132-64-9 | DIBENZOFURAN | 0.13 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.001 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.00084 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.00094 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 179601-23-1 | Xylenes, -m, -p | 0.002 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 1912-24-9 | ATRAZINE | 0.077 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.096 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.096 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 206-44-0 | FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.13 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 208-96-8 | ACENAPHTHYLENE | 0.096 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 218-01-9 | CHRYSENE | 0.13 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 50-32-8 | BENZO(A)PYRENE | 0.096 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.017 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.077 | UJ | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.00072 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.00135 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.00095 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.12 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 591-78-6 | 2-HEXANONE | 0.0011 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.1 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.083 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 67-64-1 | ACETONE | 0.0058 | J | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 67-66-3 | CHLOROFORM | 0.00086 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 67-72-1 | HEXACHLOROETHANE | 0.11 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.12 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 71-43-2 | BENZENE | 0.00092 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.00082 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 18000 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 19000 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 21 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 2200 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 420 | J | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.0051 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 12 | J | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 1300 | J | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.074 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 83 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 1.1 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 0.62 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 8.4 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 170 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 0.85 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 1.3 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 20 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 9.7 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 12 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 42 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 420 | J | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 1500 | = | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 74-83-9 | BROMOMETHANE | 0.0012 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 74-87-3 | CHLOROMETHANE | 0.00079 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 75-00-3 | CHLOROETHANE | 0.00085 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 75-01-4 | VINYL CHLORIDE | 0.0009 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.00091 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 75-15-0 | CARBON DISULFIDE | 0.0012 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 75-25-2 | BROMOFORM | 0.00078 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.00086 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.00087 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.001 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0011 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.00072 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.001 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.077 | UJ | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 0.79 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 78-59-1 | ISOPHORONE | 0.077 | UJ | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.00066 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 0.0017 | J | mg/kg | | | TRUE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.00074 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.001 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 79-20-9 | METHYL ACETATE | 0.0028 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.00088 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 83-32-9 | ACENAPHTHENE | 0.11 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 85-01-8 | PHENANTHRENE | 0.083 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.11 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 86-73-7 | FLUORENE | 0.13 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 86-74-8 | CARBAZOLE | 0.2 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.12 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.077 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 88-74-4 | 2-NITROANILINE | 0.17 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 88-75-5 | 2-NITROPHENOL | 0.096 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 91-20-3 | NAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.1 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.09 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.17 | UJ | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.1 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0012 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.12 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.001 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.1 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.001 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0008 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 98-86-2 | ACETOPHENONE | 0.12 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 98-95-3 | NITROBENZENE | 0.11 | U | mg/kg | | | FALSE |
| A4-22 | S-A4-22-2 | 7/19/02 | 1 | 2 | SO | 99-09-2 | 3-NITROANILINE | 0.064 | U | mg/kg | | | FALSE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 33000 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 16000 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 13 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 3300 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 100 | J | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.031 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 19 | J | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 1500 | J | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.075 | U | mg/kg | | | FALSE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 210 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 1.7 | U | mg/kg | | | FALSE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 0.38 | U | mg/kg | | | FALSE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 3.3 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 120 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 1.9 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 1.5 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 35 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 5.3 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 17 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 48 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 350 | J | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 2800 | = | mg/kg | | | TRUE |
| A4-3 | S-A4-3-2 | 7/19/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 1.7 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 7000 | J | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 110000 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 800 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 4200 | J | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 910 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.43 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 650 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 1300 | J | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 14 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 340 | J | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.31 | UJ | mg/kg | | | FALSE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 8.3 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 33 | J | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 210 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 1.3 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 10 | U | mg/kg | | | FALSE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 10 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 250 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 2400 | J | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 11 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 190000 | = | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 9900 | J | mg/kg | | | TRUE |
| CPH-6-050301 | CPH-6-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 6.9 | J | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 3800 | J | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 47000 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 79 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 4400 | J | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 330 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.046 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 610 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 770 | J | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 48 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 450 | J | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.32 | UJ | mg/kg | | | FALSE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 16 | U | mg/kg | | | FALSE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 8.1 | J | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 150 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 0.68 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 6.1 | U | mg/kg | | | FALSE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 4.4 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 440 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 2100 | J | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 12 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 170000 | = | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 7500 | J | mg/kg | | | TRUE |
| CPH-9-050301 | CPH-9-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 4.4 | J | mg/kg | | | TRUE |
| EZ-RS01 | EZ-RS01-1 | 11/30/10 | 0 | 1 | SO | 7439-92-1 | Lead, total | 692 | = | mg/kg | 0.047 | 0.16 | TRUE |
| EZ-RS01 | EZ-RS01-1 | 11/30/10 | 0 | 1 | SO | 7439-96-5 | Manganese, total | 966 | = | mg/kg | 0.019 | 0.061 | TRUE |
| EZ-RS01 | EZ-RS01-1 | 11/30/10 | 0 | 1 | SO | 7440-38-2 | Arsenic, total | 28.5 | = | mg/kg | 0.15 | 0.53 | TRUE |
| EZ-RS01 | EZ-RS01-1 | 11/30/10 | 0 | 1 | SO | 7440-43-9 | Cadmium, total | 7.2 | = | mg/kg | 0.0071 | 0.025 | TRUE |
| EZ-RS01 | EZ-RS01-1 | 11/30/10 | 0 | 1 | SO | 7440-50-8 | Copper, total | 866 | = | mg/kg | 0.071 | 0.24 | TRUE |
| EZ-RS01 | EZ-RS01-1 | 11/30/10 | 0 | 1 | SO | 7440-66-6 | Zinc, total | 147000 | = | mg/kg | 4.7 | 14 | TRUE |
| EZ-RS04 | EZ-RS04-1 | 12/1/10 | 0 | 0.4 | SO | 7439-92-1 | Lead, total | 599 | = | mg/kg | 0.054 | 0.19 | TRUE |
| EZ-RS04 | EZ-RS04-1 | 12/1/10 | 0 | 0.4 | SO | 7439-96-5 | Manganese, total | 323 | = | mg/kg | 0.021 | 0.07 | TRUE |
| EZ-RS04 | EZ-RS04-1 | 12/1/10 | 0 | 0.4 | SO | 7440-38-2 | Arsenic, total | 15.4 | = | mg/kg | 0.17 | 0.6 | TRUE |
| EZ-RS04 | EZ-RS04-1 | 12/1/10 | 0 | 0.4 | SO | 7440-43-9 | Cadmium, total | 26.9 | = | mg/kg | 0.008 | 0.028 | TRUE |
| EZ-RS04 | EZ-RS04-1 | 12/1/10 | 0 | 0.4 | SO | 7440-50-8 | Copper, total | 1390 | = | mg/kg | 0.08 | 0.27 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-RS04 | EZ-RS04-1 | 12/1/10 | 0 | 0.4 | SO | 7440-66-6 | Zinc, total | 151000 | = | mg/kg | 5.4 | 16 | TRUE |
| EZ-RS05 | EZ-RS05-1 | 12/1/10 | 0 | 1 | SO | 7439-92-1 | Lead, total | 2400 | = | mg/kg | 0.044 | 0.15 | TRUE |
| EZ-RS05 | EZ-RS05-1 | 12/1/10 | 0 | 1 | SO | 7439-96-5 | Manganese, total | 278 | = | mg/kg | 0.017 | 0.057 | TRUE |
| EZ-RS05 | EZ-RS05-1 | 12/1/10 | 0 | 1 | SO | 7440-38-2 | Arsenic, total | 10.7 | = | mg/kg | 0.14 | 0.49 | TRUE |
| EZ-RS05 | EZ-RS05-1 | 12/1/10 | 0 | 1 | SO | 7440-43-9 | Cadmium, total | 7.4 | = | mg/kg | 0.0066 | 0.023 | TRUE |
| EZ-RS05 | EZ-RS05-1 | 12/1/10 | 0 | 1 | SO | 7440-50-8 | Copper, total | 2540 | = | mg/kg | 0.066 | 0.22 | TRUE |
| EZ-RS05 | EZ-RS05-1 | 12/1/10 | 0 | 1 | SO | 7440-66-6 | Zinc, total | 154000 | = | mg/kg | 4.4 | 13 | TRUE |
| EZ-RS09 | EZ-RS09-1 | 12/1/10 | 0 | 1 | SO | 7439-92-1 | Lead, total | 317 | = | mg/kg | 0.048 | 0.17 | TRUE |
| EZ-RS09 | EZ-RS09-1 | 12/1/10 | 0 | 1 | SO | 7439-96-5 | Manganese, total | 75.4 | = | mg/kg | 0.019 | 0.063 | TRUE |
| EZ-RS09 | EZ-RS09-1 | 12/1/10 | 0 | 1 | SO | 7440-38-2 | Arsenic, total | 8.8 | = | mg/kg | 0.16 | 0.54 | TRUE |
| EZ-RS09 | EZ-RS09-1 | 12/1/10 | 0 | 1 | SO | 7440-43-9 | Cadmium, total | 167 | = | mg/kg | 0.0072 | 0.025 | TRUE |
| EZ-RS09 | EZ-RS09-1 | 12/1/10 | 0 | 1 | SO | 7440-50-8 | Copper, total | 428 | = | mg/kg | 0.072 | 0.24 | TRUE |
| EZ-RS09 | EZ-RS09-1 | 12/1/10 | 0 | 1 | SO | 7440-66-6 | Zinc, total | 185000 | = | mg/kg | 4.8 | 14 | TRUE |
| EZ-RS12 | EZ-RS12-1 | 12/1/10 | 0 | 1 | SO | 7439-92-1 | Lead, total | 61.7 | = | mg/kg | 0.048 | 0.17 | TRUE |
| EZ-RS12 | EZ-RS12-1 | 12/1/10 | 0 | 1 | SO | 7439-96-5 | Manganese, total | 19100 | = | mg/kg | 1.9 | 6.2 | TRUE |
| EZ-RS12 | EZ-RS12-1 | 12/1/10 | 0 | 1 | SO | 7440-38-2 | Arsenic, total | 15.8 | = | mg/kg | 0.16 | 0.54 | TRUE |
| EZ-RS12 | EZ-RS12-1 | 12/1/10 | 0 | 1 | SO | 7440-43-9 | Cadmium, total | 8.2 | = | mg/kg | 0.0072 | 0.025 | TRUE |
| EZ-RS12 | EZ-RS12-1 | 12/1/10 | 0 | 1 | SO | 7440-50-8 | Copper, total | 1500 | = | mg/kg | 0.072 | 0.24 | TRUE |
| EZ-RS12 | EZ-RS12-1 | 12/1/10 | 0 | 1 | SO | 7440-66-6 | Zinc, total | 172000 | = | mg/kg | 4.8 | 14 | TRUE |
| EZ-RS16 | EZ-RS16-1 | 12/1/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 63.3 | = | mg/kg | 5 | 17 | TRUE |
| EZ-RS16 | EZ-RS16-1 | 12/1/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 297 | = | mg/kg | 0.02 | 0.065 | TRUE |
| EZ-RS16 | EZ-RS16-1 | 12/1/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 10.3 | = | mg/kg | 0.16 | 0.56 | TRUE |
| EZ-RS16 | EZ-RS16-1 | 12/1/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 7.4 | = | mg/kg | 0.0075 | 0.026 | TRUE |
| EZ-RS16 | EZ-RS16-1 | 12/1/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 2090 | = | mg/kg | 0.075 | 0.25 | TRUE |
| EZ-RS16 | EZ-RS16-1 | 12/1/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 296000 | = | mg/kg | 5 | 15 | TRUE |
| EZ-RS22 | EZ-RS22-1 | 12/1/10 | 0 | 0.7 | SO | 7439-92-1 | Lead, total | 412 | = | mg/kg | 0.051 | 0.18 | TRUE |
| EZ-RS22 | EZ-RS22-1 | 12/1/10 | 0 | 0.7 | SO | 7439-96-5 | Manganese, total | 319 | = | mg/kg | 0.021 | 0.067 | TRUE |
| EZ-RS22 | EZ-RS22-1 | 12/1/10 | 0 | 0.7 | SO | 7440-38-2 | Arsenic, total | 6.4 | = | mg/kg | 0.17 | 0.58 | TRUE |
| EZ-RS22 | EZ-RS22-1 | 12/1/10 | 0 | 0.7 | SO | 7440-43-9 | Cadmium, total | 24.6 | = | mg/kg | 0.0077 | 0.027 | TRUE |
| EZ-RS22 | EZ-RS22-1 | 12/1/10 | 0 | 0.7 | SO | 7440-50-8 | Copper, total | 186 | = | mg/kg | 0.077 | 0.26 | TRUE |
| EZ-RS22 | EZ-RS22-1 | 12/1/10 | 0 | 0.7 | SO | 7440-66-6 | Zinc, total | 54100 | = | mg/kg | 5.1 | 15 | TRUE |
| EZ-RS25 | EZ-RS25-1 | 12/2/10 | 0 | 1 | SO | 7439-92-1 | Lead, total | 169 | = | mg/kg | 0.046 | 0.16 | TRUE |
| EZ-RS25 | EZ-RS25-1 | 12/2/10 | 0 | 1 | SO | 7439-96-5 | Manganese, total | 490 | = | mg/kg | 0.018 | 0.06 | TRUE |
| EZ-RS25 | EZ-RS25-1 | 12/2/10 | 0 | 1 | SO | 7440-38-2 | Arsenic, total | 14 | = | mg/kg | 0.15 | 0.52 | TRUE |
| EZ-RS25 | EZ-RS25-1 | 12/2/10 | 0 | 1 | SO | 7440-43-9 | Cadmium, total | 17.2 | = | mg/kg | 0.0069 | 0.024 | TRUE |
| EZ-RS25 | EZ-RS25-1 | 12/2/10 | 0 | 1 | SO | 7440-50-8 | Copper, total | 505 | = | mg/kg | 0.069 | 0.23 | TRUE |
| EZ-RS25 | EZ-RS25-1 | 12/2/10 | 0 | 1 | SO | 7440-66-6 | Zinc, total | 165000 | = | mg/kg | 4.6 | 14 | TRUE |
| EZ-RS29 | EZ-RS29-1 | 12/3/10 | 0 | 1 | SO | 7439-92-1 | Lead, total | 5030 | J | mg/kg | 0.24 | 0.83 | TRUE |
| EZ-RS29 | EZ-RS29-1 | 12/3/10 | 0 | 1 | SO | 7439-96-5 | Manganese, total | 108 | = | mg/kg | 0.019 | 0.062 | TRUE |
| EZ-RS29 | EZ-RS29-1 | 12/3/10 | 0 | 1 | SO | 7440-38-2 | Arsenic, total | 13.6 | = | mg/kg | 0.15 | 0.53 | TRUE |
| EZ-RS29 | EZ-RS29-1 | 12/3/10 | 0 | 1 | SO | 7440-43-9 | Cadmium, total | 23 | J | mg/kg | 0.0071 | 0.025 | TRUE |
| EZ-RS29 | EZ-RS29-1 | 12/3/10 | 0 | 1 | SO | 7440-50-8 | Copper, total | 536 | J | mg/kg | 0.071 | 0.24 | TRUE |
| EZ-RS29 | EZ-RS29-1 | 12/3/10 | 0 | 1 | SO | 7440-66-6 | Zinc, total | 45900 | J | mg/kg | 4.7 | 14 | TRUE |
| EZ-RS30 | EZ-RS30-1 | 12/3/10 | 0 | 1 | SO | 7439-96-5 | Manganese, total | 196 | = | mg/kg | 0.02 | 0.065 | TRUE |
| EZ-RS30 | EZ-RS30-1 | 12/3/10 | 0 | 1 | SO | 7440-43-9 | Cadmium, total | 24.3 | = | mg/kg | 0.0075 | 0.026 | TRUE |
| EZ-RS30 | EZ-RS30-1 | 12/3/10 | 0 | 1 | SO | 7440-50-8 | Copper, total | 610 | = | mg/kg | 0.075 | 0.25 | TRUE |
| EZ-RS30 | EZ-RS30-1 | 12/3/10 | 0 | 1 | SO | 7440-66-6 | Zinc, total | 32700 | = | mg/kg | 5 | 15 | TRUE |
| EZ-RS30 | EZ-RS30-1FD | 12/3/10 | 0 | 1 | SO | 7439-92-1 | Lead, total | 2910 | = | mg/kg | 0.051 | 0.18 | TRUE |
| EZ-RS30 | EZ-RS30-1FD | 12/3/10 | 0 | 1 | SO | 7440-38-2 | Arsenic, total | 15.5 | = | mg/kg | 0.16 | 0.57 | TRUE |
| EZ-RSB02 | EZ-RSB02-2 | 12/1/10 | 1.8 | 2.8 | SO | 7439-92-1 | Lead, total | 16.3 | = | mg/kg | | 1 | TRUE |
| EZ-RSB02 | EZ-RSB02-2 | 12/1/10 | 1.8 | 2.8 | SO | 7439-92-1SV | Lead, sieve | 12.8 | J | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB02 | EZ-RSB02-2 | 12/1/10 | 1.8 | 2.8 | SO | 7439-96-5 | Manganese, total | 254 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB02 | EZ-RSB02-2 | 12/1/10 | 1.8 | 2.8 | SO | 7440-38-2 | Arsenic, total | 7.7 | J | mg/kg | | 1 | TRUE |
| EZ-RSB02 | EZ-RSB02-2 | 12/1/10 | 1.8 | 2.8 | SO | 7440-43-9 | Cadmium, total | 1.2 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB02 | EZ-RSB02-2 | 12/1/10 | 1.8 | 2.8 | SO | 7440-50-8 | Copper, total | 20.3 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB02 | EZ-RSB02-2 | 12/1/10 | 1.8 | 2.8 | SO | 7440-66-6 | Zinc, total | 459 | J | mg/kg | | 6 | TRUE |
| EZ-RSB04 | EZ-RSB04-2 | 12/1/10 | 1.4 | 2.4 | SO | 7439-92-1 | Lead, total | 12.2 | = | mg/kg | | 1 | TRUE |
| EZ-RSB04 | EZ-RSB04-2 | 12/1/10 | 1.4 | 2.4 | SO | 7439-92-1SV | Lead, sieve | 13.8 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB04 | EZ-RSB04-2 | 12/1/10 | 1.4 | 2.4 | SO | 7439-96-5 | Manganese, total | 208 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB04 | EZ-RSB04-2 | 12/1/10 | 1.4 | 2.4 | SO | 7440-38-2 | Arsenic, total | 8.2 | J | mg/kg | | 1 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-RSB04 | EZ-RSB04-2 | 12/1/10 | 1.4 | 2.4 | SO | 7440-43-9 | Cadmium, total | 4.2 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB04 | EZ-RSB04-2 | 12/1/10 | 1.4 | 2.4 | SO | 7440-50-8 | Copper, total | 16 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB04 | EZ-RSB04-2 | 12/1/10 | 1.4 | 2.4 | SO | 7440-66-6 | Zinc, total | 551 | J | mg/kg | | 6 | TRUE |
| EZ-RSB06 | EZ-RSB06-2 | 12/1/10 | 1.4 | 2.4 | SO | 7439-92-1 | Lead, total | 9.1 | = | mg/kg | | 1 | TRUE |
| EZ-RSB06 | EZ-RSB06-2 | 12/1/10 | 1.4 | 2.4 | SO | 7439-92-1SV | Lead, sieve | 15.3 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB06 | EZ-RSB06-2 | 12/1/10 | 1.4 | 2.4 | SO | 7439-96-5 | Manganese, total | 442 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB06 | EZ-RSB06-2 | 12/1/10 | 1.4 | 2.4 | SO | 7440-38-2 | Arsenic, total | 2.8 | J | mg/kg | | 1 | TRUE |
| EZ-RSB06 | EZ-RSB06-2 | 12/1/10 | 1.4 | 2.4 | SO | 7440-43-9 | Cadmium, total | 12.1 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB06 | EZ-RSB06-2 | 12/1/10 | 1.4 | 2.4 | SO | 7440-50-8 | Copper, total | 12.8 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB06 | EZ-RSB06-2 | 12/1/10 | 1.4 | 2.4 | SO | 7440-66-6 | Zinc, total | 491 | J | mg/kg | | 6 | TRUE |
| EZ-RSB07 | EZ-RSB07-2 | 12/1/10 | 1.6 | 2.6 | SO | 7439-92-1 | Lead, total | 10.5 | = | mg/kg | | 1 | TRUE |
| EZ-RSB07 | EZ-RSB07-2 | 12/1/10 | 1.6 | 2.6 | SO | 7439-92-1SV | Lead, sieve | 10.6 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB07 | EZ-RSB07-2 | 12/1/10 | 1.6 | 2.6 | SO | 7439-96-5 | Manganese, total | 229 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB07 | EZ-RSB07-2 | 12/1/10 | 1.6 | 2.6 | SO | 7440-38-2 | Arsenic, total | 3.5 | J | mg/kg | | 1 | TRUE |
| EZ-RSB07 | EZ-RSB07-2 | 12/1/10 | 1.6 | 2.6 | SO | 7440-43-9 | Cadmium, total | 0.51 | UJ | mg/kg | | 0.5 | FALSE |
| EZ-RSB07 | EZ-RSB07-2 | 12/1/10 | 1.6 | 2.6 | SO | 7440-50-8 | Copper, total | 18.2 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB07 | EZ-RSB07-2 | 12/1/10 | 1.6 | 2.6 | SO | 7440-66-6 | Zinc, total | 112 | J | mg/kg | | 6 | TRUE |
| EZ-RSB10 | EZ-RSB10-2 | 12/1/10 | 1.8 | 2.8 | SO | 7439-92-1 | Lead, total | 12.3 | = | mg/kg | | 1 | TRUE |
| EZ-RSB10 | EZ-RSB10-2 | 12/1/10 | 1.8 | 2.8 | SO | 7439-92-1SV | Lead, sieve | 13.6 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB10 | EZ-RSB10-2 | 12/1/10 | 1.8 | 2.8 | SO | 7439-96-5 | Manganese, total | 686 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB10 | EZ-RSB10-2 | 12/1/10 | 1.8 | 2.8 | SO | 7440-38-2 | Arsenic, total | 6.5 | J | mg/kg | | 1 | TRUE |
| EZ-RSB10 | EZ-RSB10-2 | 12/1/10 | 1.8 | 2.8 | SO | 7440-43-9 | Cadmium, total | 8.4 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB10 | EZ-RSB10-2 | 12/1/10 | 1.8 | 2.8 | SO | 7440-50-8 | Copper, total | 14.9 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB10 | EZ-RSB10-2 | 12/1/10 | 1.8 | 2.8 | SO | 7440-66-6 | Zinc, total | 705 | J | mg/kg | | 6 | TRUE |
| EZ-RSB15 | EZ-RSB15-2 | 12/1/10 | 1.2 | 2.2 | SO | 7439-92-1 | Lead, total | 12.9 | = | mg/kg | | 1 | TRUE |
| EZ-RSB15 | EZ-RSB15-2 | 12/1/10 | 1.2 | 2.2 | SO | 7439-92-1SV | Lead, sieve | 12.6 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB15 | EZ-RSB15-2 | 12/1/10 | 1.2 | 2.2 | SO | 7439-96-5 | Manganese, total | 194 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB15 | EZ-RSB15-2 | 12/1/10 | 1.2 | 2.2 | SO | 7440-38-2 | Arsenic, total | 9 | J | mg/kg | | 1 | TRUE |
| EZ-RSB15 | EZ-RSB15-2 | 12/1/10 | 1.2 | 2.2 | SO | 7440-43-9 | Cadmium, total | 5 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB15 | EZ-RSB15-2 | 12/1/10 | 1.2 | 2.2 | SO | 7440-50-8 | Copper, total | 19.8 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB15 | EZ-RSB15-2 | 12/1/10 | 1.2 | 2.2 | SO | 7440-66-6 | Zinc, total | 2470 | J | mg/kg | | 6 | TRUE |
| EZ-RSB21 | EZ-RSB21-2 | 12/1/10 | 1.7 | 2.7 | SO | 7439-92-1 | Lead, total | 17.3 | = | mg/kg | | 1 | TRUE |
| EZ-RSB21 | EZ-RSB21-2 | 12/1/10 | 1.7 | 2.7 | SO | 7439-92-1SV | Lead, sieve | 12.3 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB21 | EZ-RSB21-2 | 12/1/10 | 1.7 | 2.7 | SO | 7439-96-5 | Manganese, total | 920 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB21 | EZ-RSB21-2 | 12/1/10 | 1.7 | 2.7 | SO | 7440-38-2 | Arsenic, total | 9 | J | mg/kg | | 1 | TRUE |
| EZ-RSB21 | EZ-RSB21-2 | 12/1/10 | 1.7 | 2.7 | SO | 7440-43-9 | Cadmium, total | 1.7 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB21 | EZ-RSB21-2 | 12/1/10 | 1.7 | 2.7 | SO | 7440-50-8 | Copper, total | 17.2 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB21 | EZ-RSB21-2 | 12/1/10 | 1.7 | 2.7 | SO | 7440-66-6 | Zinc, total | 82.1 | J | mg/kg | | 6 | TRUE |
| EZ-RSB22 | EZ-RSB22-2 | 12/1/10 | 1.7 | 2.7 | SO | 7439-92-1 | Lead, total | 15.6 | = | mg/kg | | 1 | TRUE |
| EZ-RSB22 | EZ-RSB22-2 | 12/1/10 | 1.7 | 2.7 | SO | 7439-92-1SV | Lead, sieve | 14.8 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB22 | EZ-RSB22-2 | 12/1/10 | 1.7 | 2.7 | SO | 7439-96-5 | Manganese, total | 209 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB22 | EZ-RSB22-2 | 12/1/10 | 1.7 | 2.7 | SO | 7440-38-2 | Arsenic, total | 6.9 | J | mg/kg | | 1 | TRUE |
| EZ-RSB22 | EZ-RSB22-2 | 12/1/10 | 1.7 | 2.7 | SO | 7440-43-9 | Cadmium, total | 1.3 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB22 | EZ-RSB22-2 | 12/1/10 | 1.7 | 2.7 | SO | 7440-50-8 | Copper, total | 16.4 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB22 | EZ-RSB22-2 | 12/1/10 | 1.7 | 2.7 | SO | 7440-66-6 | Zinc, total | 801 | J | mg/kg | | 6 | TRUE |
| EZ-RSB23 | EZ-RSB23-2 | 12/1/10 | 1.6 | 2.6 | SO | 7439-92-1 | Lead, total | 14.7 | = | mg/kg | | 1 | TRUE |
| EZ-RSB23 | EZ-RSB23-2 | 12/1/10 | 1.6 | 2.6 | SO | 7439-92-1SV | Lead, sieve | 15.3 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB23 | EZ-RSB23-2 | 12/1/10 | 1.6 | 2.6 | SO | 7439-96-5 | Manganese, total | 358 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB23 | EZ-RSB23-2 | 12/1/10 | 1.6 | 2.6 | SO | 7440-38-2 | Arsenic, total | 7.8 | J | mg/kg | | 1 | TRUE |
| EZ-RSB23 | EZ-RSB23-2 | 12/1/10 | 1.6 | 2.6 | SO | 7440-43-9 | Cadmium, total | 16 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB23 | EZ-RSB23-2 | 12/1/10 | 1.6 | 2.6 | SO | 7440-50-8 | Copper, total | 22.5 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB23 | EZ-RSB23-2 | 12/1/10 | 1.6 | 2.6 | SO | 7440-66-6 | Zinc, total | 3060 | J | mg/kg | | 6 | TRUE |
| EZ-RSB26 | EZ-RSB26-2 | 12/2/10 | 1.4 | 2.4 | SO | 7439-92-1 | Lead, total | 89.6 | = | mg/kg | | 1 | TRUE |
| EZ-RSB26 | EZ-RSB26-2 | 12/2/10 | 1.4 | 2.4 | SO | 7439-92-1SV | Lead, sieve | 105 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB26 | EZ-RSB26-2 | 12/2/10 | 1.4 | 2.4 | SO | 7439-96-5 | Manganese, total | 293 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB26 | EZ-RSB26-2 | 12/2/10 | 1.4 | 2.4 | SO | 7440-38-2 | Arsenic, total | 11.1 | J | mg/kg | | 1 | TRUE |
| EZ-RSB26 | EZ-RSB26-2 | 12/2/10 | 1.4 | 2.4 | SO | 7440-43-9 | Cadmium, total | 6.1 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB26 | EZ-RSB26-2 | 12/2/10 | 1.4 | 2.4 | SO | 7440-50-8 | Copper, total | 28 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB26 | EZ-RSB26-2 | 12/2/10 | 1.4 | 2.4 | SO | 7440-66-6 | Zinc, total | 4520 | J | mg/kg | | 6 | TRUE |
| EZ-SS04 | EZ-SS04-1 | 11/18/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 0.78 | J- | mg/kg | | 1 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SS04 | EZ-SS04-1 | 11/18/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 8 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SS04 | EZ-SS04-1 | 11/18/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 367 | = | mg/kg | | 1.5 | TRUE |
| EZ-SS04 | EZ-SS04-1 | 11/18/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 7.4 | = | mg/kg | | 0.5 | TRUE |
| EZ-SS04 | EZ-SS04-1 | 11/18/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 8.4 | = | mg/kg | | 2.5 | TRUE |
| EZ-SS04 | EZ-SS04-1 | 11/18/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 1080 | J | mg/kg | | 6 | TRUE |
| EZ-SS05 | EZ-SS05-1 | 11/18/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 56.1 | J- | mg/kg | | 1 | TRUE |
| EZ-SS05 | EZ-SS05-1 | 11/18/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 169 | J | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SS05 | EZ-SS05-1 | 11/18/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 362 | = | mg/kg | | 1.5 | TRUE |
| EZ-SS05 | EZ-SS05-1 | 11/18/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 8.6 | = | mg/kg | | 1 | TRUE |
| EZ-SS05 | EZ-SS05-1 | 11/18/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 4.7 | = | mg/kg | | 0.5 | TRUE |
| EZ-SS05 | EZ-SS05-1 | 11/18/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 145 | = | mg/kg | | 2.5 | TRUE |
| EZ-SS05 | EZ-SS05-1 | 11/18/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 11100 | J | mg/kg | | 6 | TRUE |
| EZ-SS06 | EZ-SS06-1 | 11/18/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 106 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SS06 | EZ-SS06-1 | 11/18/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 94.5 | = | mg/kg | | 1.5 | TRUE |
| EZ-SS06 | EZ-SS06-1 | 11/18/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 8.2 | = | mg/kg | | 1 | TRUE |
| EZ-SS06 | EZ-SS06-1 | 11/18/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 1.7 | = | mg/kg | | 0.5 | TRUE |
| EZ-SS06 | EZ-SS06-1 | 11/18/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 31.5 | = | mg/kg | | 2.5 | TRUE |
| EZ-SS06 | EZ-SS06-1 | 11/18/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 1740 | J | mg/kg | | 6 | TRUE |
| EZ-SS07 | EZ-SS07-1 | 11/18/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 33.5 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SS07 | EZ-SS07-1 | 11/18/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 313 | = | mg/kg | | 1.5 | TRUE |
| EZ-SS07 | EZ-SS07-1 | 11/18/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 7.7 | = | mg/kg | | 1 | TRUE |
| EZ-SS07 | EZ-SS07-1 | 11/18/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 1 | = | mg/kg | | 0.5 | TRUE |
| EZ-SS07 | EZ-SS07-1 | 11/18/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 29.6 | = | mg/kg | | 2.5 | TRUE |
| EZ-SS07 | EZ-SS07-1 | 11/18/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 1520 | J | mg/kg | | 6 | TRUE |
| EZ-SS08 | EZ-SS08-1 | 11/18/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 104 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SS08 | EZ-SS08-1 | 11/18/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 534 | = | mg/kg | | 1.5 | TRUE |
| EZ-SS08 | EZ-SS08-1 | 11/18/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 15.4 | = | mg/kg | | 1 | TRUE |
| EZ-SS08 | EZ-SS08-1 | 11/18/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 4.1 | = | mg/kg | | 0.5 | TRUE |
| EZ-SS08 | EZ-SS08-1 | 11/18/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 108 | = | mg/kg | | 2.5 | TRUE |
| EZ-SS08 | EZ-SS08-1 | 11/18/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 7240 | J | mg/kg | | 6 | TRUE |
| EZ-SS09 | EZ-SS09-1 | 11/18/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 21.2 | J- | mg/kg | | 1 | TRUE |
| EZ-SS09 | EZ-SS09-1 | 11/18/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 60.8 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SS09 | EZ-SS09-1 | 11/18/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 68.3 | = | mg/kg | | 1.5 | TRUE |
| EZ-SS09 | EZ-SS09-1 | 11/18/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 3.2 | = | mg/kg | | 1 | TRUE |
| EZ-SS09 | EZ-SS09-1 | 11/18/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 5.2 | = | mg/kg | | 0.5 | TRUE |
| EZ-SS09 | EZ-SS09-1 | 11/18/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 14.1 | = | mg/kg | | 2.5 | TRUE |
| EZ-SS09 | EZ-SS09-1 | 11/18/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 957 | J | mg/kg | | 6 | TRUE |
| EZ-SS10 | EZ-SS10-1 | 11/18/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 35.3 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-SS10 | EZ-SS10-1 | 11/18/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 2380 | = | mg/kg | | 1.5 | TRUE |
| EZ-SS10 | EZ-SS10-1 | 11/18/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 11.6 | = | mg/kg | | 1 | TRUE |
| EZ-SS10 | EZ-SS10-1 | 11/18/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 2.5 | = | mg/kg | | 0.5 | TRUE |
| EZ-SS10 | EZ-SS10-1 | 11/18/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 26 | = | mg/kg | | 2.5 | TRUE |
| EZ-SS10 | EZ-SS10-1 | 11/18/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 2300 | J | mg/kg | | 6 | TRUE |
| EZ-SS11 | EZ-SS11-1 | 11/18/10 | 0 | 2 | SO | 7439-92-1 | Lead, total | 594 | J- | mg/kg | | 1 | TRUE |
| EZ-SS11 | EZ-SS11-1 | 11/18/10 | 0 | 2 | SO | 7439-96-5 | Manganese, total | 425 | = | mg/kg | | 1.5 | TRUE |
| EZ-SS11 | EZ-SS11-1 | 11/18/10 | 0 | 2 | SO | 7440-38-2 | Arsenic, total | 10.3 | = | mg/kg | | 1 | TRUE |
| EZ-SS11 | EZ-SS11-1 | 11/18/10 | 0 | 2 | SO | 7440-43-9 | Cadmium, total | 9.2 | = | mg/kg | | 0.5 | TRUE |
| EZ-SS11 | EZ-SS11-1 | 11/18/10 | 0 | 2 | SO | 7440-50-8 | Copper, total | 607 | J | mg/kg | | 2.5 | TRUE |
| EZ-SS11 | EZ-SS11-1 | 11/18/10 | 0 | 2 | SO | 7440-66-6 | Zinc, total | 26400 | J | mg/kg | | 6 | TRUE |
| EZ-SS11 | EZ-SS11-1FD | 11/18/10 | 0 | 2 | SO | 7439-92-1SV | Lead, sieve | 665 | = | mg/kg | 0.03 | 0.1 | TRUE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 100-01-6 | 4-NITROANILINE | 0.37 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 100-02-7 | 4-NITROPHENOL | 0.36 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 100-41-4 | ETHYLBENZENE | 0.0018 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 100-42-5 | STYRENE | 0.0017 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 100-52-7 | BENZALDEHYDE | 0.11 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0014 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0013 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.093 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 105-60-2 | CAPROLACTAM | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.2 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.002 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 106-47-8 | 4-CHLOROANILINE | 0.093 | UJ | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0015 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0018 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0015 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.1 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0056 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 108-88-3 | TOLUENE | 0.002 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 108-90-7 | CHLOROBENZENE | 0.002 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 108-95-2 | PHENOL | 0.093 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 110-82-7 | CYCLOHEXANE | 0.0054 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.02 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.02 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.02 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.02 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.11 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.16 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.077 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 120-12-7 | ANTHRACENE | 0.1 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0018 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.14 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.21 | UJ | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.02 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.02 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0023 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 129-00-0 | PYRENE | 0.18 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.14 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 132-64-9 | DIBENZOFURAN | 0.15 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0021 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0017 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0019 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 179601-23-1 | Xylenes, -m, -p | 0.0041 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 1912-24-9 | ATRAZINE | 0.093 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.19 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 206-44-0 | FLUORANTHENE | 0.18 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 208-96-8 | ACENAPHTHYLENE | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 218-01-9 | CHRYSENE | 0.16 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 50-32-8 | BENZO(A)PYRENE | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.19 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.16 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.02 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.093 | UJ | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0015 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.0027 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.0019 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.14 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 591-78-6 | 2-HEXANONE | 0.0023 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.16 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.1 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 67-66-3 | CHLOROFORM | 0.0018 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 67-72-1 | HEXACHLOROETHANE | 0.13 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.14 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 71-43-2 | BENZENE | 0.0019 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 74-83-9 | BROMOMETHANE | 0.0025 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 74-87-3 | CHLOROMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 75-00-3 | CHLOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 75-01-4 | VINYL CHLORIDE | 0.0018 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.0038 | J | mg/kg | | | TRUE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 75-15-0 | CARBON DISULFIDE | 0.0025 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 75-25-2 | BROMOFORM | 0.0016 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.0018 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.0018 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.0021 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0023 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0015 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0021 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.093 | UJ | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 78-59-1 | ISOPHORONE | 0.093 | UJ | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.0013 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0015 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0021 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 79-20-9 | METHYL ACETATE | 0.0058 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0018 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 83-32-9 | ACENAPHTHENE | 0.13 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.15 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 85-01-8 | PHENANTHRENE | 0.1 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.13 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 86-73-7 | FLUORENE | 0.15 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 86-74-8 | CARBAZOLE | 0.24 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.14 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.16 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.093 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 88-74-4 | 2-NITROANILINE | 0.2 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 88-75-5 | 2-NITROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 91-20-3 | NAPHTHALENE | 0.13 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.2 | UJ | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0025 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.14 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.002 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.14 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0021 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0016 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 98-86-2 | ACETOPHENONE | 0.14 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 98-95-3 | NITROBENZENE | 0.13 | U | mg/kg | | | FALSE |
| MA-8 | S-MA-8-2 | 7/19/02 | 1 | 2 | SO | 99-09-2 | 3-NITROANILINE | 0.077 | U | mg/kg | | | FALSE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 24000 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 27000 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 10 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 3900 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 550 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.022 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 23 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 2100 | J | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.4 | U | mg/kg | | | FALSE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 110 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 1.8 | U | mg/kg | | | FALSE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 2 | U | mg/kg | | | FALSE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 7.2 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 220 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 1.3 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 8.2 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 33 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 12 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 21 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 51 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 2500 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 2100 | = | mg/kg | | | TRUE |
| MA-9 | S-MA-9-2 | 7/17/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 1.5 | U | mg/kg | | | FALSE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 5700 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 110000 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 31000 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 1000 | J | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 8300 | J | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.065 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 59 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 140 | J | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 140 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 51 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.11 | J | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 190 | J | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 200 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 870 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 0.84 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 50 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 22 | J | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 110 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 3600 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 21 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 39000 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 2100 | = | mg/kg | | | TRUE |
| MP1-21-050301 | MP1-21-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 4.7 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 26000 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 15000 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 12 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 2600 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 38 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.022 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 15 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 1300 | J | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.078 | U | mg/kg | | | FALSE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 270 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 0.39 | U | mg/kg | | | FALSE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 0.66 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 4 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 65 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 1.1 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 0.12 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 27 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 4 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 11 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 41 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 130 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 3200 | = | mg/kg | | | TRUE |
| NA-8 | S-NA-8-2 | 7/17/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 0.33 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 100-01-6 | 4-NITROANILINE | 0.3 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 100-02-7 | 4-NITROPHENOL | 0.29 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 100-42-5 | STYRENE | 0.001 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 100-52-7 | BENZALDEHYDE | 0.087 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.00091 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.00082 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.075 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 105-60-2 | CAPROLACTAM | 0.094 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.16 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.1 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0012 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 106-47-8 | 4-CHLOROANILINE | 0.075 | UJ | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.00096 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.00093 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.081 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0035 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 108-95-2 | PHENOL | 0.075 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 110-82-7 | CYCLOHEXANE | 0.0034 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.087 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.094 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.062 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 120-12-7 | ANTHRACENE | 0.081 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0011 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.17 | UJ | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0014 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 129-00-0 | PYRENE | 0.14 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 132-64-9 | DIBENZOFURAN | 0.12 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 179601-23-1 | Xylenes, -m, -p | 0.0026 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 1912-24-9 | ATRAZINE | 0.075 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.094 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.094 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 206-44-0 | FLUORANTHENE | 0.14 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.12 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 208-96-8 | ACENAPHTHYLENE | 0.094 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 218-01-9 | CHRYSENE | 0.13 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 50-32-8 | BENZO(A)PYRENE | 0.094 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.16 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.075 | UJ | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.00093 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.00173 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 591-78-6 | 2-HEXANONE | 0.0014 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.1 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.081 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 67-72-1 | HEXACHLOROETHANE | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 26000 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 21 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.074 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 0.89 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 0.42 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 6.3 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 1.4 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 0.83 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 24 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 55 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 350 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0014 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.00093 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.075 | UJ | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 0.28 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 78-59-1 | ISOPHORONE | 0.075 | UJ | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.00085 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.00095 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 79-20-9 | METHYL ACETATE | 0.0036 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0011 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 83-32-9 | ACENAPHTHENE | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 85-01-8 | PHENANTHRENE | 0.081 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 86-73-7 | FLUORENE | 0.12 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 86-74-8 | CARBAZOLE | 0.19 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.075 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 88-74-4 | 2-NITROANILINE | 0.16 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 88-75-5 | 2-NITROPHENOL | 0.094 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.1 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.087 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.16 | UJ | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.1 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.1 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 98-86-2 | ACETOPHENONE | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 98-95-3 | NITROBENZENE | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2 | 7/19/02 | 1 | 2 | SO | 99-09-2 | 3-NITROANILINE | 0.062 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 100-41-4 | ETHYLBENZENE | 0.0011 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0012 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 108-88-3 | TOLUENE | 0.0013 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 108-90-7 | CHLOROBENZENE | 0.0013 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.016 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.016 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.016 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.016 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.001 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.016 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.016 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0013 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0011 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0012 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.016 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.0012 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 67-64-1 | ACETONE | 0.0044 | J | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 67-66-3 | CHLOROFORM | 0.0011 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 71-43-2 | BENZENE | 0.0012 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0011 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 29000 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 13 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 4300 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 230 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.056 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 1700 | J | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 130 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 280 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 32 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 9 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 2200 | = | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 74-83-9 | BROMOMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 74-87-3 | CHLOROMETHANE | 0.001 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 75-00-3 | CHLOROETHANE | 0.0011 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 75-01-4 | VINYL CHLORIDE | 0.0012 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.0032 | J | mg/kg | | | TRUE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 75-15-0 | CARBON DISULFIDE | 0.0016 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 75-25-2 | BROMOFORM | 0.001 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.0011 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.0011 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.0013 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0013 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0013 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.13 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 91-20-3 | NAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0016 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0013 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0013 | U | mg/kg | | | FALSE |
| NA-9 | S-NA-9-2D | 7/19/02 | 1 | 2 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.001 | U | mg/kg | | | FALSE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7429-90-5 | Aluminum, total | 11000 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-89-6 | Iron, total | 14000 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-92-1 | Lead, total | 87 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-95-4 | Magnesium, total | 1300 | J | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-96-5 | Manganese, total | 1000 | J | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7439-97-6 | Mercury, total | 0.02 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-02-0 | Nickel, total | 11 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-09-7 | Potassium, total | 910 | J | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-22-4 | Silver, total | 0.26 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-23-5 | Sodium, total | 36 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-28-0 | Thallium, total | 0.2 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-36-0 | Antimony, total | 19 | UJ | mg/kg | | | FALSE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-38-2 | Arsenic, total | 7.3 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-39-3 | Barium, total | 160 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-41-7 | Beryllium, total | 0.56 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-43-9 | Cadmium, total | 2.5 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-47-3 | Chromium, total | 14 | J | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-48-4 | Cobalt, total | 8.3 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-50-8 | Copper, total | 20 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-62-2 | Vanadium, total | 32 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-66-6 | Zinc, total | 1600 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7440-70-2 | Calcium, total | 8500 | = | mg/kg | | | TRUE |
| NA-S1 | NA-S1 | 3/1/05 | 0 | 0.5 | SO | 7782-49-2 | Selenium, total | 0.89 | J | mg/kg | | | TRUE |
| NA-S2 | NA-S2 | 3/1/05 | 0 | 0.5 | SO | 7440-28-0 | Thallium, total | 0.17 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2 | 3/1/05 | 0 | 0.5 | SO | 7440-36-0 | Antimony, total | 19 | UJ | mg/kg | | | FALSE |
| NA-S2 | NA-S2 | 3/1/05 | 0 | 0.5 | SO | 7440-39-3 | Barium, total | 120 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7429-90-5 | Aluminum, total | 8600 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7439-89-6 | Iron, total | 10000 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7439-92-1 | Lead, total | 230 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7439-95-4 | Magnesium, total | 1100 | J | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7439-96-5 | Manganese, total | 320 | J | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7439-97-6 | Mercury, total | 0.05 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-02-0 | Nickel, total | 37 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-09-7 | Potassium, total | 750 | J | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-22-4 | Silver, total | 0.38 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-23-5 | Sodium, total | 58 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-38-2 | Arsenic, total | 4.8 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-41-7 | Beryllium, total | 0.58 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-43-9 | Cadmium, total | 7.7 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-47-3 | Chromium, total | 13 | J | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-48-4 | Cobalt, total | 6.6 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-50-8 | Copper, total | 170 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-62-2 | Vanadium, total | 22 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-66-6 | Zinc, total | 7700 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7440-70-2 | Calcium, total | 1500 | = | mg/kg | | | TRUE |
| NA-S2 | NA-S2D | 3/1/05 | 0 | 0.5 | SO | 7782-49-2 | Selenium, total | 1.1 | J | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7429-90-5 | Aluminum, total | 11000 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7439-89-6 | Iron, total | 11000 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7439-92-1 | Lead, total | 40 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7439-95-4 | Magnesium, total | 1200 | J | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7439-96-5 | Manganese, total | 260 | J | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7439-97-6 | Mercury, total | 0.019 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-02-0 | Nickel, total | 9.6 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-09-7 | Potassium, total | 870 | J | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-22-4 | Silver, total | 0.11 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-23-5 | Sodium, total | 37 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-28-0 | Thallium, total | 0.16 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-36-0 | Antimony, total | 19 | UJ | mg/kg | | | FALSE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-38-2 | Arsenic, total | 3.7 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-39-3 | Barium, total | 150 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-41-7 | Beryllium, total | 0.53 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-43-9 | Cadmium, total | 2.7 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-47-3 | Chromium, total | 13 | J | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-48-4 | Cobalt, total | 3.7 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-50-8 | Copper, total | 19 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-62-2 | Vanadium, total | 28 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-66-6 | Zinc, total | 1500 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7440-70-2 | Calcium, total | 2300 | = | mg/kg | | | TRUE |
| NA-S3 | NA-S3 | 3/1/05 | 0 | 0.5 | SO | 7782-49-2 | Selenium, total | 0.59 | J | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7429-90-5 | Aluminum, total | 7600 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7439-89-6 | Iron, total | 7300 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7439-92-1 | Lead, total | 31 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7439-95-4 | Magnesium, total | 920 | J | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7439-96-5 | Manganese, total | 280 | J | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7439-97-6 | Mercury, total | 0.015 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-02-0 | Nickel, total | 6.6 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-09-7 | Potassium, total | 810 | J | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-22-4 | Silver, total | 0.1 | J | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-23-5 | Sodium, total | 33 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-28-0 | Thallium, total | 0.13 | J | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-36-0 | Antimony, total | 20 | UJ | mg/kg | | | FALSE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-38-2 | Arsenic, total | 3 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-39-3 | Barium, total | 84 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-41-7 | Beryllium, total | 0.38 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-43-9 | Cadmium, total | 1.5 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-47-3 | Chromium, total | 9.7 | J | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-48-4 | Cobalt, total | 2.9 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-50-8 | Copper, total | 10 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-62-2 | Vanadium, total | 19 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-66-6 | Zinc, total | 950 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7440-70-2 | Calcium, total | 1700 | = | mg/kg | | | TRUE |
| NA-S4 | NA-S4 | 3/1/05 | 0 | 0.5 | SO | 7782-49-2 | Selenium, total | 0.62 | J | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 8300 | J | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 24000 | = | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 76 | = | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 700 | J | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 490 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.028 | = | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 21 | = | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 600 | J | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 0.39 | = | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 460 | J | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.24 | J | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 17 | U | mg/kg | | | FALSE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 5.7 | J | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 290 | = | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 1.2 | = | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 23 | U | mg/kg | | | FALSE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 11 | = | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 8.2 | = | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 190 | J | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 29 | = | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 25000 | = | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 5000 | J | mg/kg | | | TRUE |
| NP-13-050301 | NP-13-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 1.8 | J | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 3900 | J | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 5500 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 74 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 570 | J | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 65 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.036 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 10 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 240 | J | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 0.48 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 220 | J | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.07 | J | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 16 | U | mg/kg | | | FALSE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 3.1 | J | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 210 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 0.66 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 32 | U | mg/kg | | | FALSE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 4.9 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 4.4 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 140 | J | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 12 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 39000 | = | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 1900 | J | mg/kg | | | TRUE |
| NP-14-050301 | NP-14-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 2.8 | J | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 9600 | J | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 31000 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 1200 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 3000 | J | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 510 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.1 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 1300 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 410 | J | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 9.5 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 170 | J | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.12 | J | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 110 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 11 | J | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 110 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 0.97 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 19 | U | mg/kg | | | FALSE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 62 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 500 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 1900 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 9.8 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 180000 | = | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 8200 | J | mg/kg | | | TRUE |
| NP-15-050301 | NP-15-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 8.1 | J | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 6000 | J | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 36000 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 550 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 3800 | J | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 1100 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.23 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 800 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 640 | J | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 21 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 1100 | J | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.11 | J | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 3.8 | J | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 12 | J | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 130 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 0.86 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 15 | U | mg/kg | | | FALSE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 22 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 430 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 1900 | J | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 18 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 150000 | = | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 16000 | J | mg/kg | | | TRUE |
| NP-16-050301 | NP-16-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 5.7 | J | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 20000 | J | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 60000 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 2500 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 5400 | J | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 880 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.024 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 7000 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 1400 | J | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 43 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 810 | J | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.085 | J | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 190 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 41 | J | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 350 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 2.4 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 24 | U | mg/kg | | | FALSE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 220 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 760 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 24000 | J | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 14 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 130000 | = | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 20000 | J | mg/kg | | | TRUE |
| RCO-10-050301 | RCO-10-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 4.8 | J | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 8300 | J | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 25000 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 530 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 3800 | J | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 570 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.056 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 1100 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 470 | J | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 13 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 730 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.098 | J | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 6.5 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 19 | J | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 230 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 2.9 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 21 | U | mg/kg | | | FALSE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 30 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 570 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 2200 | J | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 15 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 200000 | = | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 17000 | J | mg/kg | | | TRUE |
| RCO-5-050301 | RCO-5-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 5.8 | J | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 5300 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 75000 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 450 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 3400 | J | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 330 | J | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.053 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 790 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 770 | J | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 8.9 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 230 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.32 | U | mg/kg | | | FALSE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 16 | UJ | mg/kg | | | FALSE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 9.1 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 160 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 1.1 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 5.6 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 8.6 | J | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 140 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 3400 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 12 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 210000 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 6200 | = | mg/kg | | | TRUE |
| RR1-1-050301 | RR1-1-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 5.7 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 7300 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 60000 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 250 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 1400 | J | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 190 | J | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.038 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 610 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 490 | J | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 3.9 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 200 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.053 | J | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 16 | UJ | mg/kg | | | FALSE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 6.8 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 130 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 0.79 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 9.4 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 9.2 | J | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 70 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 2000 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 12 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 190000 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 3500 | = | mg/kg | | | TRUE |
| RR1-2-050301 | RR1-2-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 4.7 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 4500 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 88000 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 1600 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 340 | J | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 160 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.075 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 22 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 340 | J | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 1.8 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 130 | J | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.098 | J | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 16 | U | mg/kg | | | FALSE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 16 | J | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 480 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 0.86 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 35 | U | mg/kg | | | FALSE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 12 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 9.7 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 400 | J | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 27 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 7700 | = | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 950 | J | mg/kg | | | TRUE |
| RR1-3-050301 | RR1-3-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 1.7 | J | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 6000 | J | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 72000 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 120 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 6000 | J | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 290 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.038 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 890 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 630 | J | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 77 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 340 | J | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.32 | UJ | mg/kg | | | FALSE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 16 | U | mg/kg | | | FALSE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 7.9 | J | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 150 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 0.89 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 4.9 | U | mg/kg | | | FALSE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 6.8 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 880 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 2600 | J | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 10 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 130000 | = | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 9400 | J | mg/kg | | | TRUE |
| RR1-4-050301 | RR1-4-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 3.5 | J | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 35000 | J | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 77000 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 7700 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 1200 | J | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 750 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.012 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 10000 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 230 | J | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 29 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 250 | J | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 1 | J | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 400 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 21 | J | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 130 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 1.5 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 7.2 | U | mg/kg | | | FALSE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 290 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 93 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 34000 | J | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 5.7 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 140000 | = | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 3300 | J | mg/kg | | | TRUE |
| RR2-11-050301 | RR2-11-050301 | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 3.6 | J | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301 | 3/1/05 | | | SO | 7439-92-1 | Lead, total | 810 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301 | 3/1/05 | | | SO | 7439-97-6 | Mercury, total | 0.09 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301 | 3/1/05 | | | SO | 7440-28-0 | Thallium, total | 0.11 | J | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301 | 3/1/05 | | | SO | 7440-36-0 | Antimony, total | 41 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301 | 3/1/05 | | | SO | 7440-47-3 | Chromium, total | 47 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7429-90-5 | Aluminum, total | 11000 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7439-89-6 | Iron, total | 73000 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7439-95-4 | Magnesium, total | 5200 | J | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7439-96-5 | Manganese, total | 1300 | J | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-02-0 | Nickel, total | 1100 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-09-7 | Potassium, total | 1300 | J | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-22-4 | Silver, total | 34 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-23-5 | Sodium, total | 1700 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-38-2 | Arsenic, total | 15 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-39-3 | Barium, total | 420 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-41-7 | Beryllium, total | 2 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-43-9 | Cadmium, total | 10 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-48-4 | Cobalt, total | 560 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-50-8 | Copper, total | 3400 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-62-2 | Vanadium, total | 20 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-66-6 | Zinc, total | 150000 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7440-70-2 | Calcium, total | 19000 | = | mg/kg | | | TRUE |
| RRO-12-050301 | RRO-12-050301D | 3/1/05 | | | SO | 7782-49-2 | Selenium, total | 5.5 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 100-01-6 | 4-NITROANILINE | 0.32 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 100-02-7 | 4-NITROPHENOL | 0.31 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 100-41-4 | ETHYLBENZENE | 0.0018 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 100-42-5 | STYRENE | 0.0016 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 100-52-7 | BENZALDEHYDE | 0.093 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0014 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0013 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.079 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 105-60-2 | CAPROLACTAM | 0.099 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.17 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.002 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 106-47-8 | 4-CHLOROANILINE | 0.079 | UJ | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0015 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0018 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0015 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.086 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0055 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 108-88-3 | TOLUENE | 0.002 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 108-90-7 | CHLOROBENZENE | 0.002 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 108-95-2 | PHENOL | 0.079 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 110-82-7 | CYCLOHEXANE | 0.0053 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.093 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.099 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.11 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.14 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.066 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 120-12-7 | ANTHRACENE | 0.086 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0018 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.18 | UJ | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0023 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 129-00-0 | PYRENE | 0.15 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 132-64-9 | DIBENZOFURAN | 0.13 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0021 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0019 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 179601-23-1 | Xylenes, -m, -p | 0.0041 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 1912-24-9 | ATRAZINE | 0.079 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.099 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.099 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.16 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 206-44-0 | FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.13 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 208-96-8 | ACENAPHTHYLENE | 0.099 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 218-01-9 | CHRYSENE | 0.14 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 50-32-8 | BENZO(A)PYRENE | 0.099 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.17 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.14 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.079 | UJ | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0015 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.0027 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.0019 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.12 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 591-78-6 | 2-HEXANONE | 0.0023 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.14 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.086 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 67-64-1 | ACETONE | 0.03 | J | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 67-66-3 | CHLOROFORM | 0.0017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 67-72-1 | HEXACHLOROETHANE | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.12 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 71-43-2 | BENZENE | 0.0019 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 9500 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 47000 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 100 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 1300 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 580 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.038 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 8.6 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 860 | J | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.094 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 120 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 2.1 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 0.96 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 6.4 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 130 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 0.61 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 25 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 12 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 7.7 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 18 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 28 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 2200 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 1600 | = | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 74-83-9 | BROMOMETHANE | 0.0025 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 74-87-3 | CHLOROMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 75-00-3 | CHLOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 75-01-4 | VINYL CHLORIDE | 0.0018 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.0047 | J | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 75-15-0 | CARBON DISULFIDE | 0.0025 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 75-25-2 | BROMOFORM | 0.0016 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.0017 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.0018 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.0021 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0023 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0015 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0021 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.079 | UJ | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 0.31 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 78-59-1 | ISOPHORONE | 0.079 | UJ | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.0013 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 0.0081 | J | mg/kg | | | TRUE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0015 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0021 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 79-20-9 | METHYL ACETATE | 0.0058 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0018 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 83-32-9 | ACENAPHTHENE | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 85-01-8 | PHENANTHRENE | 0.086 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 86-73-7 | FLUORENE | 0.13 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 86-74-8 | CARBAZOLE | 0.21 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.12 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.14 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.079 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 88-74-4 | 2-NITROANILINE | 0.17 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 88-75-5 | 2-NITROPHENOL | 0.099 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 91-20-3 | NAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.093 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.17 | UJ | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0025 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.12 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.002 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0021 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0016 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 98-86-2 | ACETOPHENONE | 0.12 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 98-95-3 | NITROBENZENE | 0.11 | U | mg/kg | | | FALSE |
| WA-8 | S-WA-8-2 | 7/19/02 | 1 | 2 | SO | 99-09-2 | 3-NITROANILINE | 0.066 | U | mg/kg | | | FALSE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7429-90-5 | Aluminum, total | 14000 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7439-89-6 | Iron, total | 9100 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7439-92-1 | Lead, total | 48 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7439-95-4 | Magnesium, total | 1500 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7439-96-5 | Manganese, total | 120 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7439-97-6 | Mercury, total | 0.27 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-02-0 | Nickel, total | 8.8 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-09-7 | Potassium, total | 1200 | J | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-22-4 | Silver, total | 0.087 | U | mg/kg | | | FALSE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-23-5 | Sodium, total | 26 | U | mg/kg | | | FALSE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-28-0 | Thallium, total | 0.36 | U | mg/kg | | | FALSE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-36-0 | Antimony, total | 0.43 | U | mg/kg | | | FALSE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-38-2 | Arsenic, total | 2.3 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-39-3 | Barium, total | 140 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-41-7 | Beryllium, total | 0.69 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-43-9 | Cadmium, total | 70 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-47-3 | Chromium, total | 16 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-48-4 | Cobalt, total | 2.1 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-50-8 | Copper, total | 17 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-62-2 | Vanadium, total | 26 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-66-6 | Zinc, total | 1400 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7440-70-2 | Calcium, total | 970 | = | mg/kg | | | TRUE |
| WA-9 | S-WA-9-2 | 7/17/02 | 1 | 2 | SO | 7782-49-2 | Selenium, total | 0.3 | U | mg/kg | | | FALSE |
| X301 | X301 | 4/25/05 | | | SO | 108-95-2 | PHENOL | 0.048 | J | mg/kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 129-00-0 | PYRENE | 0.1 | J | mg/kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.055 | J | mg/kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.11 | J | mg/kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 206-44-0 | FLUORANTHENE | 0.12 | J | mg/kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 218-01-9 | CHRYSENE | 0.11 | J | mg/kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 50-32-8 | BENZO(A)PYRENE | 0.043 | J | mg/kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.051 | J | mg/kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 57-12-5 | CYANIDE | 0.3 | UJ | mg/Kg | | | FALSE |
| X301 | X301 | 4/25/05 | | | SO | 7429-90-5 | Aluminum, total | 6860 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7439-89-6 | Iron, total | 43400 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7439-92-1 | Lead, total | 3190 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7439-95-4 | Magnesium, total | 2140 | J- | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7439-96-5 | Manganese, total | 517 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7439-97-6 | Mercury, total | 2.3 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-02-0 | Nickel, total | 52.3 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-09-7 | Potassium, total | 362 | J | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-22-4 | Silver, total | 2 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-23-5 | Sodium, total | 5660 | J+ | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-36-0 | Antimony, total | 13.3 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-38-2 | Arsenic, total | 11.1 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-39-3 | Barium, total | 356 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-41-7 | Beryllium, total | 1.1 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-43-9 | Cadmium, total | 88.5 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-47-3 | Chromium, total | 16.2 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-48-4 | Cobalt, total | 18.9 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-50-8 | Copper, total | 394 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-62-2 | Vanadium, total | 25.2 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-66-6 | Zinc, total | 70200 | = | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7440-70-2 | Calcium, total | 8160 | J- | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 7782-49-2 | Selenium, total | 4.5 | J- | mg/Kg | | | TRUE |
| X301 | X301 | 4/25/05 | | | SO | 85-01-8 | PHENANTHRENE | 0.061 | J | mg/kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 129-00-0 | PYRENE | 0.054 | J | mg/kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.041 | J | mg/kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 206-44-0 | FLUORANTHENE | 0.071 | J | mg/kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 218-01-9 | CHRYSENE | 0.04 | J | mg/kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 57-12-5 | CYANIDE | 0.06 | UJ | mg/Kg | | | FALSE |
| X302 | X302 | 4/25/05 | | | SO | 7429-90-5 | Aluminum, total | 4000 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7439-89-6 | Iron, total | 8330 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7439-92-1 | Lead, total | 83.7 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7439-95-4 | Magnesium, total | 4720 | J- | mg/Kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X302 | X302 | 4/25/05 | | | SO | 7439-96-5 | Manganese, total | 374 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7439-97-6 | Mercury, total | 0.058 | J | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-02-0 | Nickel, total | 628 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-09-7 | Potassium, total | 129 | J | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-22-4 | Silver, total | 1 | U | mg/Kg | | | FALSE |
| X302 | X302 | 4/25/05 | | | SO | 7440-23-5 | Sodium, total | 19800 | J+ | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-36-0 | Antimony, total | 13 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-38-2 | Arsenic, total | 7 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-39-3 | Barium, total | 58.9 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-41-7 | Beryllium, total | 1.1 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-43-9 | Cadmium, total | 9 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-47-3 | Chromium, total | 8.6 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-48-4 | Cobalt, total | 417 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-50-8 | Copper, total | 304 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-62-2 | Vanadium, total | 13.3 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-66-6 | Zinc, total | 391000 | = | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7440-70-2 | Calcium, total | 10300 | J- | mg/Kg | | | TRUE |
| X302 | X302 | 4/25/05 | | | SO | 7782-49-2 | Selenium, total | 3.7 | UJ | mg/Kg | | | FALSE |
| X303 | X303 | 4/25/05 | | | SO | 57-12-5 | CYANIDE | 0.2 | J | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7429-90-5 | Aluminum, total | 5530 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7439-89-6 | Iron, total | 117000 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7439-92-1 | Lead, total | 5680 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7439-95-4 | Magnesium, total | 1610 | J- | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7439-96-5 | Manganese, total | 231 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7439-97-6 | Mercury, total | 0.061 | J | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-02-0 | Nickel, total | 60.1 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-09-7 | Potassium, total | 143 | J | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-22-4 | Silver, total | 10.4 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-23-5 | Sodium, total | 6830 | J+ | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-36-0 | Antimony, total | 28.6 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-38-2 | Arsenic, total | 158 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-39-3 | Barium, total | 1930 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-41-7 | Beryllium, total | 1.1 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-43-9 | Cadmium, total | 67.4 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-47-3 | Chromium, total | 20.6 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-48-4 | Cobalt, total | 30.2 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-50-8 | Copper, total | 3280 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-62-2 | Vanadium, total | 26.9 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-66-6 | Zinc, total | 88900 | = | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7440-70-2 | Calcium, total | 2100 | J- | mg/Kg | | | TRUE |
| X303 | X303 | 4/25/05 | | | SO | 7782-49-2 | Selenium, total | 12.2 | J- | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 57-12-5 | CYANIDE | 0.19 | J | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7429-90-5 | Aluminum, total | 4490 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7439-89-6 | Iron, total | 117000 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7439-92-1 | Lead, total | 36500 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7439-95-4 | Magnesium, total | 492 | J- | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7439-96-5 | Manganese, total | 5200 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7439-97-6 | Mercury, total | 1.6 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-02-0 | Nickel, total | 30.2 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-09-7 | Potassium, total | 1370 | J | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-22-4 | Silver, total | 80 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-23-5 | Sodium, total | 4320 | J+ | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-36-0 | Antimony, total | 355 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-38-2 | Arsenic, total | 124 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-39-3 | Barium, total | 286 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-41-7 | Beryllium, total | 0.56 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-43-9 | Cadmium, total | 0.56 | U | mg/Kg | | | FALSE |
| X304 | X304 | 4/25/05 | | | SO | 7440-47-3 | Chromium, total | 18.7 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-48-4 | Cobalt, total | 103 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-50-8 | Copper, total | 3190 | = | mg/Kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X304 | X304 | 4/25/05 | | | SO | 7440-62-2 | Vanadium, total | 53.9 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-66-6 | Zinc, total | 25900 | = | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7440-70-2 | Calcium, total | 1060 | J- | mg/Kg | | | TRUE |
| X304 | X304 | 4/25/05 | | | SO | 7782-49-2 | Selenium, total | 10.9 | J- | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 57-12-5 | CYANIDE | 0.24 | J | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7429-90-5 | Aluminum, total | 3910 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7439-89-6 | Iron, total | 53600 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7439-92-1 | Lead, total | 7860 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7439-95-4 | Magnesium, total | 657 | J- | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7439-96-5 | Manganese, total | 151 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7439-97-6 | Mercury, total | 0.078 | J | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-02-0 | Nickel, total | 30.4 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-09-7 | Potassium, total | 156 | J | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-22-4 | Silver, total | 2.9 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-23-5 | Sodium, total | 3610 | J+ | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-36-0 | Antimony, total | 13.1 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-38-2 | Arsenic, total | 37.1 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-39-3 | Barium, total | 623 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-41-7 | Beryllium, total | 0.54 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-43-9 | Cadmium, total | 30.4 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-47-3 | Chromium, total | 15.3 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-48-4 | Cobalt, total | 16.5 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-50-8 | Copper, total | 757 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-62-2 | Vanadium, total | 18.1 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-66-6 | Zinc, total | 35100 | = | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7440-70-2 | Calcium, total | 1250 | J- | mg/Kg | | | TRUE |
| X305 | X305 | 4/25/05 | | | SO | 7782-49-2 | Selenium, total | 6.7 | J- | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 57-12-5 | CYANIDE | 0.11 | J- | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7429-90-5 | Aluminum, total | 4890 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7439-89-6 | Iron, total | 35700 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7439-92-1 | Lead, total | 7390 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7439-95-4 | Magnesium, total | 446 | J- | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7439-96-5 | Manganese, total | 188 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7439-97-6 | Mercury, total | 0.11 | U | mg/Kg | | | FALSE |
| X306 | X306 | 4/25/05 | | | SO | 7440-02-0 | Nickel, total | 28 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-09-7 | Potassium, total | 159 | J | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-22-4 | Silver, total | 2.1 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-23-5 | Sodium, total | 3880 | J+ | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-36-0 | Antimony, total | 6.7 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-38-2 | Arsenic, total | 26.7 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-39-3 | Barium, total | 430 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-41-7 | Beryllium, total | 0.95 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-43-9 | Cadmium, total | 17.6 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-47-3 | Chromium, total | 10.1 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-48-4 | Cobalt, total | 12.5 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-50-8 | Copper, total | 488 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-62-2 | Vanadium, total | 18.1 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-66-6 | Zinc, total | 41700 | = | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7440-70-2 | Calcium, total | 1500 | J- | mg/Kg | | | TRUE |
| X306 | X306 | 4/25/05 | | | SO | 7782-49-2 | Selenium, total | 4.7 | J- | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 129-00-0 | PYRENE | 0.17 | J | mg/kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.05 | J | mg/kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.13 | J | mg/kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 206-44-0 | FLUORANTHENE | 0.25 | J | mg/kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.057 | J | mg/kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 218-01-9 | CHRYSENE | 0.15 | J | mg/kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 50-32-8 | BENZO(A)PYRENE | 0.065 | J | mg/kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.088 | J | mg/kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 57-12-5 | CYANIDE | 0.43 | J | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7429-90-5 | Aluminum, total | 4150 | = | mg/Kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X307 | X307 | 4/25/05 | | | SO | 7439-89-6 | Iron, total | 56700 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7439-92-1 | Lead, total | 7230 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7439-95-4 | Magnesium, total | 2170 | J- | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7439-96-5 | Manganese, total | 492 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7439-97-6 | Mercury, total | 0.2 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-02-0 | Nickel, total | 65.3 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-09-7 | Potassium, total | 199 | J | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-22-4 | Silver, total | 3.6 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-23-5 | Sodium, total | 10900 | J+ | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-36-0 | Antimony, total | 320 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-38-2 | Arsenic, total | 141 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-39-3 | Barium, total | 103 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-41-7 | Beryllium, total | 0.34 | J | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-43-9 | Cadmium, total | 152 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-47-3 | Chromium, total | 169 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-48-4 | Cobalt, total | 10.7 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-50-8 | Copper, total | 454 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-62-2 | Vanadium, total | 18.3 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-66-6 | Zinc, total | 194000 | = | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7440-70-2 | Calcium, total | 11300 | J- | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 7782-49-2 | Selenium, total | 6.1 | J- | mg/Kg | | | TRUE |
| X307 | X307 | 4/25/05 | | | SO | 85-01-8 | PHENANTHRENE | 0.09 | J | mg/kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 57-12-5 | CYANIDE | 0.07 | J | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7429-90-5 | Aluminum, total | 41400 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7439-89-6 | Iron, total | 32400 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7439-92-1 | Lead, total | 20300 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7439-95-4 | Magnesium, total | 1340 | J- | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7439-96-5 | Manganese, total | 707 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7439-97-6 | Mercury, total | 0.081 | J | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-02-0 | Nickel, total | 9100 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-09-7 | Potassium, total | 110 | J | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-22-4 | Silver, total | 27.3 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-23-5 | Sodium, total | 17500 | J+ | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-36-0 | Antimony, total | 429 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-38-2 | Arsenic, total | 48.1 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-39-3 | Barium, total | 82 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-41-7 | Beryllium, total | 2.9 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-43-9 | Cadmium, total | 18.2 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-47-3 | Chromium, total | 902 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-48-4 | Cobalt, total | 60.9 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-50-8 | Copper, total | 21900 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-62-2 | Vanadium, total | 14.3 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-66-6 | Zinc, total | 381000 | = | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7440-70-2 | Calcium, total | 1140 | J- | mg/Kg | | | TRUE |
| X308 | X308 | 4/25/05 | | | SO | 7782-49-2 | Selenium, total | 1.7 | J- | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 57-12-5 | CYANIDE | 0.14 | J | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7429-90-5 | Aluminum, total | 39800 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7439-89-6 | Iron, total | 142000 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7439-92-1 | Lead, total | 13000 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7439-95-4 | Magnesium, total | 810 | J- | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7439-96-5 | Manganese, total | 1280 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7439-97-6 | Mercury, total | 0.14 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-02-0 | Nickel, total | 5350 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-09-7 | Potassium, total | 86.5 | J | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-22-4 | Silver, total | 26 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-23-5 | Sodium, total | 14600 | J+ | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-36-0 | Antimony, total | 665 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-38-2 | Arsenic, total | 34.2 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-39-3 | Barium, total | 55.3 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-41-7 | Beryllium, total | 0.34 | J | mg/Kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X309 | X309 | 4/26/05 | | | SO | 7440-43-9 | Cadmium, total | 60.5 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-47-3 | Chromium, total | 278 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-48-4 | Cobalt, total | 34.5 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-50-8 | Copper, total | 33100 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-62-2 | Vanadium, total | 19.9 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-66-6 | Zinc, total | 258000 | = | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7440-70-2 | Calcium, total | 723 | J- | mg/Kg | | | TRUE |
| X309 | X309 | 4/26/05 | | | SO | 7782-49-2 | Selenium, total | 11.2 | J- | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 57-12-5 | CYANIDE | 0.2 | J- | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7429-90-5 | Aluminum, total | 75500 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7439-89-6 | Iron, total | 55200 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7439-92-1 | Lead, total | 16800 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7439-95-4 | Magnesium, total | 1440 | J- | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7439-96-5 | Manganese, total | 1080 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7439-97-6 | Mercury, total | 0.11 | J | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-02-0 | Nickel, total | 17200 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-09-7 | Potassium, total | 50.4 | J | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-22-4 | Silver, total | 26.6 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-23-5 | Sodium, total | 20800 | J+ | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-36-0 | Antimony, total | 628 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-38-2 | Arsenic, total | 61.1 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-39-3 | Barium, total | 55.5 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-41-7 | Beryllium, total | 0.24 | J | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-43-9 | Cadmium, total | 29 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-47-3 | Chromium, total | 1460 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-48-4 | Cobalt, total | 114 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-50-8 | Copper, total | 20300 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-62-2 | Vanadium, total | 18.1 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-66-6 | Zinc, total | 383000 | = | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7440-70-2 | Calcium, total | 1310 | J- | mg/Kg | | | TRUE |
| X310 | X310 | 4/26/05 | | | SO | 7782-49-2 | Selenium, total | 3.6 | J- | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 57-12-5 | CYANIDE | 0.08 | J | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7429-90-5 | Aluminum, total | 47200 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7439-89-6 | Iron, total | 53500 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7439-92-1 | Lead, total | 18400 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7439-95-4 | Magnesium, total | 926 | J- | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7439-96-5 | Manganese, total | 938 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7439-97-6 | Mercury, total | 0.052 | U | mg/Kg | | | FALSE |
| X311 | X311 | 4/26/05 | | | SO | 7440-02-0 | Nickel, total | 13000 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-09-7 | Potassium, total | 39.5 | J | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-22-4 | Silver, total | 45.5 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-23-5 | Sodium, total | 22500 | J+ | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-36-0 | Antimony, total | 621 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-38-2 | Arsenic, total | 52.6 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-39-3 | Barium, total | 40.7 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-41-7 | Beryllium, total | 0.12 | J | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-43-9 | Cadmium, total | 42 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-47-3 | Chromium, total | 1620 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-48-4 | Cobalt, total | 79.9 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-50-8 | Copper, total | 19800 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-62-2 | Vanadium, total | 14.4 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-66-6 | Zinc, total | 407000 | = | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7440-70-2 | Calcium, total | 751 | J- | mg/Kg | | | TRUE |
| X311 | X311 | 4/26/05 | | | SO | 7782-49-2 | Selenium, total | 2.7 | J- | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 57-12-5 | CYANIDE | 0.17 | J | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7429-90-5 | Aluminum, total | 58600 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7439-89-6 | Iron, total | 45500 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7439-92-1 | Lead, total | 16400 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7439-95-4 | Magnesium, total | 1620 | J- | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7439-96-5 | Manganese, total | 1120 | = | mg/Kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X312 | X312 | 4/26/05 | | | SO | 7439-97-6 | Mercury, total | 0.12 | U | mg/Kg | | | FALSE |
| X312 | X312 | 4/26/05 | | | SO | 7440-02-0 | Nickel, total | 9110 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-09-7 | Potassium, total | 64.1 | J | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-22-4 | Silver, total | 23.4 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-23-5 | Sodium, total | 20500 | J+ | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-36-0 | Antimony, total | 608 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-38-2 | Arsenic, total | 53.4 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-39-3 | Barium, total | 58.3 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-41-7 | Beryllium, total | 0.37 | J | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-43-9 | Cadmium, total | 34.9 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-47-3 | Chromium, total | 1480 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-48-4 | Cobalt, total | 72.8 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-50-8 | Copper, total | 23900 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-62-2 | Vanadium, total | 35.1 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-66-6 | Zinc, total | 354000 | = | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7440-70-2 | Calcium, total | 1100 | J- | mg/Kg | | | TRUE |
| X312 | X312 | 4/26/05 | | | SO | 7782-49-2 | Selenium, total | 3.1 | J- | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 129-00-0 | PYRENE | 0.049 | J | mg/kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.068 | J | mg/kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 206-44-0 | FLUORANTHENE | 0.074 | J | mg/kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 218-01-9 | CHRYSENE | 0.066 | J | mg/kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 57-12-5 | CYANIDE | 0.23 | J | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7429-90-5 | Aluminum, total | 4840 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7439-89-6 | Iron, total | 29100 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7439-92-1 | Lead, total | 29100 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7439-95-4 | Magnesium, total | 1370 | J- | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7439-96-5 | Manganese, total | 471 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7439-97-6 | Mercury, total | 0.15 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-02-0 | Nickel, total | 287 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-09-7 | Potassium, total | 755 | J | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-22-4 | Silver, total | 6.6 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-23-5 | Sodium, total | 23200 | J+ | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-36-0 | Antimony, total | 109 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-38-2 | Arsenic, total | 175 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-39-3 | Barium, total | 285 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-41-7 | Beryllium, total | 0.54 | J | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-43-9 | Cadmium, total | 97.8 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-47-3 | Chromium, total | 41.5 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-48-4 | Cobalt, total | 21 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-50-8 | Copper, total | 1400 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-62-2 | Vanadium, total | 14.9 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-66-6 | Zinc, total | 387000 | = | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7440-70-2 | Calcium, total | 7630 | J- | mg/Kg | | | TRUE |
| X313 | X313 | 4/26/05 | | | SO | 7782-49-2 | Selenium, total | 5.8 | J- | mg/Kg | | | TRUE |
| XRF 008 | XRF 008C | 5/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 27700 | = | mg/kg | | | TRUE |
| XRF 008 | XRF 008C | 5/1/08 | 0 | 0.25 | SO | 7440-02-0 | Nickel, total | 1460 | = | mg/kg | | | TRUE |
| XRF 008 | XRF 008C | 5/1/08 | 0 | 0.25 | SO | 7440-38-2 | Arsenic, total | 60.7 | = | mg/kg | | | TRUE |
| XRF 008 | XRF 008C | 5/1/08 | 0 | 0.25 | SO | 7440-39-3 | Barium, total | 655 | = | mg/kg | | | TRUE |
| XRF 008 | XRF 008C | 5/1/08 | 0 | 0.25 | SO | 7440-43-9 | Cadmium, total | 140 | = | mg/kg | | | TRUE |
| XRF 008 | XRF 008C | 5/1/08 | 0 | 0.25 | SO | 7440-47-3 | Chromium, total | 43 | = | mg/kg | | | TRUE |
| XRF 008 | XRF 008C | 5/1/08 | 0 | 0.25 | SO | 7440-50-8 | Copper, total | 5010 | = | mg/kg | | | TRUE |
| XRF 008 | XRF 008C | 5/1/08 | 0 | 0.25 | SO | 7440-66-6 | Zinc, total | 332000 | = | mg/kg | | | TRUE |
| XRF 028 | XRF 028C | 5/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 6750 | = | mg/kg | | | TRUE |
| XRF 028 | XRF 028C | 5/1/08 | 0 | 0.25 | SO | 7440-02-0 | Nickel, total | 638 | = | mg/kg | | | TRUE |
| XRF 028 | XRF 028C | 5/1/08 | 0 | 0.25 | SO | 7440-38-2 | Arsenic, total | 46.7 | = | mg/kg | | | TRUE |
| XRF 028 | XRF 028C | 5/1/08 | 0 | 0.25 | SO | 7440-39-3 | Barium, total | 4670 | = | mg/kg | | | TRUE |
| XRF 028 | XRF 028C | 5/1/08 | 0 | 0.25 | SO | 7440-43-9 | Cadmium, total | 133 | = | mg/kg | | | TRUE |
| XRF 028 | XRF 028C | 5/1/08 | 0 | 0.25 | SO | 7440-47-3 | Chromium, total | 75.4 | = | mg/kg | | | TRUE |
| XRF 028 | XRF 028C | 5/1/08 | 0 | 0.25 | SO | 7440-50-8 | Copper, total | 4000 | = | mg/kg | | | TRUE |
| XRF 028 | XRF 028C | 5/1/08 | 0 | 0.25 | SO | 7440-66-6 | Zinc, total | 273000 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XRF 033 | XRF 033C | 5/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 5460 | = | mg/kg | | | TRUE |
| XRF 033 | XRF 033C | 5/1/08 | 0 | 0.25 | SO | 7440-02-0 | Nickel, total | 49 | = | mg/kg | | | TRUE |
| XRF 033 | XRF 033C | 5/1/08 | 0 | 0.25 | SO | 7440-38-2 | Arsenic, total | 4 | = | mg/kg | | | TRUE |
| XRF 033 | XRF 033C | 5/1/08 | 0 | 0.25 | SO | 7440-39-3 | Barium, total | 107 | = | mg/kg | | | TRUE |
| XRF 033 | XRF 033C | 5/1/08 | 0 | 0.25 | SO | 7440-43-9 | Cadmium, total | 284 | = | mg/kg | | | TRUE |
| XRF 033 | XRF 033C | 5/1/08 | 0 | 0.25 | SO | 7440-47-3 | Chromium, total | 6 | = | mg/kg | | | TRUE |
| XRF 033 | XRF 033C | 5/1/08 | 0 | 0.25 | SO | 7440-50-8 | Copper, total | 1280 | = | mg/kg | | | TRUE |
| XRF 033 | XRF 033C | 5/1/08 | 0 | 0.25 | SO | 7440-66-6 | Zinc, total | 137000 | = | mg/kg | | | TRUE |
| XRF 043 | XRF 043C | 5/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 3860 | = | mg/kg | | | TRUE |
| XRF 043 | XRF 043C | 5/1/08 | 0 | 0.25 | SO | 7440-02-0 | Nickel, total | 17800 | = | mg/kg | | | TRUE |
| XRF 043 | XRF 043C | 5/1/08 | 0 | 0.25 | SO | 7440-38-2 | Arsenic, total | 61.5 | = | mg/kg | | | TRUE |
| XRF 043 | XRF 043C | 5/1/08 | 0 | 0.25 | SO | 7440-39-3 | Barium, total | 537 | = | mg/kg | | | TRUE |
| XRF 043 | XRF 043C | 5/1/08 | 0 | 0.25 | SO | 7440-43-9 | Cadmium, total | 14 | = | mg/kg | | | TRUE |
| XRF 043 | XRF 043C | 5/1/08 | 0 | 0.25 | SO | 7440-47-3 | Chromium, total | 288 | = | mg/kg | | | TRUE |
| XRF 043 | XRF 043C | 5/1/08 | 0 | 0.25 | SO | 7440-50-8 | Copper, total | 49900 | = | mg/kg | | | TRUE |
| XRF 043 | XRF 043C | 5/1/08 | 0 | 0.25 | SO | 7440-66-6 | Zinc, total | 70600 | = | mg/kg | | | TRUE |
| XRF 047 | XRF 047C | 5/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 15500 | = | mg/kg | | | TRUE |
| XRF 047 | XRF 047C | 5/1/08 | 0 | 0.25 | SO | 7440-02-0 | Nickel, total | 15300 | = | mg/kg | | | TRUE |
| XRF 047 | XRF 047C | 5/1/08 | 0 | 0.25 | SO | 7440-38-2 | Arsenic, total | 28 | = | mg/kg | | | TRUE |
| XRF 047 | XRF 047C | 5/1/08 | 0 | 0.25 | SO | 7440-39-3 | Barium, total | 160 | = | mg/kg | | | TRUE |
| XRF 047 | XRF 047C | 5/1/08 | 0 | 0.25 | SO | 7440-43-9 | Cadmium, total | 69 | = | mg/kg | | | TRUE |
| XRF 047 | XRF 047C | 5/1/08 | 0 | 0.25 | SO | 7440-47-3 | Chromium, total | 419 | = | mg/kg | | | TRUE |
| XRF 047 | XRF 047C | 5/1/08 | 0 | 0.25 | SO | 7440-50-8 | Copper, total | 27300 | = | mg/kg | | | TRUE |
| XRF 047 | XRF 047C | 5/1/08 | 0 | 0.25 | SO | 7440-66-6 | Zinc, total | 183000 | = | mg/kg | | | TRUE |
| XRF 050 | XRF 050C | 5/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 15200 | = | mg/kg | | | TRUE |
| XRF 050 | XRF 050C | 5/1/08 | 0 | 0.25 | SO | 7440-02-0 | Nickel, total | 13800 | = | mg/kg | | | TRUE |
| XRF 050 | XRF 050C | 5/1/08 | 0 | 0.25 | SO | 7440-38-2 | Arsenic, total | 36 | = | mg/kg | | | TRUE |
| XRF 050 | XRF 050C | 5/1/08 | 0 | 0.25 | SO | 7440-39-3 | Barium, total | 85 | = | mg/kg | | | TRUE |
| XRF 050 | XRF 050C | 5/1/08 | 0 | 0.25 | SO | 7440-43-9 | Cadmium, total | 40 | = | mg/kg | | | TRUE |
| XRF 050 | XRF 050C | 5/1/08 | 0 | 0.25 | SO | 7440-47-3 | Chromium, total | 365 | = | mg/kg | | | TRUE |
| XRF 050 | XRF 050C | 5/1/08 | 0 | 0.25 | SO | 7440-50-8 | Copper, total | 36100 | = | mg/kg | | | TRUE |
| XRF 050 | XRF 050C | 5/1/08 | 0 | 0.25 | SO | 7440-66-6 | Zinc, total | 314000 | = | mg/kg | | | TRUE |
| XRF 056 | XRF 056C | 5/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 12200 | = | mg/kg | | | TRUE |
| XRF 056 | XRF 056C | 5/1/08 | 0 | 0.25 | SO | 7440-02-0 | Nickel, total | 281 | = | mg/kg | | | TRUE |
| XRF 056 | XRF 056C | 5/1/08 | 0 | 0.25 | SO | 7440-38-2 | Arsenic, total | 38 | = | mg/kg | | | TRUE |
| XRF 056 | XRF 056C | 5/1/08 | 0 | 0.25 | SO | 7440-39-3 | Barium, total | 110 | = | mg/kg | | | TRUE |
| XRF 056 | XRF 056C | 5/1/08 | 0 | 0.25 | SO | 7440-43-9 | Cadmium, total | 108 | = | mg/kg | | | TRUE |
| XRF 056 | XRF 056C | 5/1/08 | 0 | 0.25 | SO | 7440-47-3 | Chromium, total | 15 | = | mg/kg | | | TRUE |
| XRF 056 | XRF 056C | 5/1/08 | 0 | 0.25 | SO | 7440-50-8 | Copper, total | 2320 | = | mg/kg | | | TRUE |
| XRF 056 | XRF 056C | 5/1/08 | 0 | 0.25 | SO | 7440-66-6 | Zinc, total | 403000 | = | mg/kg | | | TRUE |
| XRF 060 | XRF 060C | 5/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 8200 | = | mg/kg | | | TRUE |
| XRF 060 | XRF 060C | 5/1/08 | 0 | 0.25 | SO | 7440-02-0 | Nickel, total | 167 | = | mg/kg | | | TRUE |
| XRF 060 | XRF 060C | 5/1/08 | 0 | 0.25 | SO | 7440-38-2 | Arsenic, total | 13 | = | mg/kg | | | TRUE |
| XRF 060 | XRF 060C | 5/1/08 | 0 | 0.25 | SO | 7440-39-3 | Barium, total | 57 | = | mg/kg | | | TRUE |
| XRF 060 | XRF 060C | 5/1/08 | 0 | 0.25 | SO | 7440-43-9 | Cadmium, total | 42 | = | mg/kg | | | TRUE |
| XRF 060 | XRF 060C | 5/1/08 | 0 | 0.25 | SO | 7440-47-3 | Chromium, total | 14 | = | mg/kg | | | TRUE |
| XRF 060 | XRF 060C | 5/1/08 | 0 | 0.25 | SO | 7440-50-8 | Copper, total | 900 | = | mg/kg | | | TRUE |
| XRF 060 | XRF 060C | 5/1/08 | 0 | 0.25 | SO | 7440-66-6 | Zinc, total | 130000 | = | mg/kg | | | TRUE |
| XRF 061 | XRF 061C | 5/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 10300 | = | mg/kg | | | TRUE |
| XRF 061 | XRF 061C | 5/1/08 | 0 | 0.25 | SO | 7440-02-0 | Nickel, total | 291 | = | mg/kg | | | TRUE |
| XRF 061 | XRF 061C | 5/1/08 | 0 | 0.25 | SO | 7440-38-2 | Arsenic, total | 19 | = | mg/kg | | | TRUE |
| XRF 061 | XRF 061C | 5/1/08 | 0 | 0.25 | SO | 7440-39-3 | Barium, total | 175 | = | mg/kg | | | TRUE |
| XRF 061 | XRF 061C | 5/1/08 | 0 | 0.25 | SO | 7440-43-9 | Cadmium, total | 120 | = | mg/kg | | | TRUE |
| XRF 061 | XRF 061C | 5/1/08 | 0 | 0.25 | SO | 7440-47-3 | Chromium, total | 19 | = | mg/kg | | | TRUE |
| XRF 061 | XRF 061C | 5/1/08 | 0 | 0.25 | SO | 7440-50-8 | Copper, total | 1610 | = | mg/kg | | | TRUE |
| XRF 061 | XRF 061C | 5/1/08 | 0 | 0.25 | SO | 7440-66-6 | Zinc, total | 290000 | = | mg/kg | | | TRUE |
| XRF 063 | XRF 063C | 5/1/08 | 0 | 0.25 | SO | 7439-92-1 | Lead, total | 11700 | = | mg/kg | | | TRUE |
| XRF 063 | XRF 063C | 5/1/08 | 0 | 0.25 | SO | 7440-02-0 | Nickel, total | 309 | = | mg/kg | | | TRUE |
| XRF 063 | XRF 063C | 5/1/08 | 0 | 0.25 | SO | 7440-38-2 | Arsenic, total | 41 | = | mg/kg | | | TRUE |
| XRF 063 | XRF 063C | 5/1/08 | 0 | 0.25 | SO | 7440-39-3 | Barium, total | 383 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XRF 063 | XRF 063C | 5/1/08 | 0 | 0.25 | SO | 7440-43-9 | Cadmium, total | 64 | = | mg/kg | | | TRUE |
| XRF 063 | XRF 063C | 5/1/08 | 0 | 0.25 | SO | 7440-47-3 | Chromium, total | 104 | = | mg/kg | | | TRUE |
| XRF 063 | XRF 063C | 5/1/08 | 0 | 0.25 | SO | 7440-50-8 | Copper, total | 890 | = | mg/kg | | | TRUE |
| XRF 063 | XRF 063C | 5/1/08 | 0 | 0.25 | SO | 7440-66-6 | Zinc, total | 357000 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 100-01-6 | 4-NITROANILINE | 0.29 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 100-02-7 | 4-NITROPHENOL | 0.28 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 100-41-4 | ETHYLBENZENE | 0.0017 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 100-42-5 | STYRENE | 0.0016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 100-52-7 | BENZALDEHYDE | 0.084 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0014 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0013 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.072 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 105-60-2 | CAPROLACTAM | 0.09 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.096 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0019 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 106-47-8 | 4-CHLOROANILINE | 0.072 | UJ | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0015 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0018 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0014 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.078 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0054 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 108-88-3 | TOLUENE | 0.002 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 108-90-7 | CHLOROBENZENE | 0.002 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 108-95-2 | PHENOL | 0.072 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 110-82-7 | CYCLOHEXANE | 0.0052 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.084 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.09 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.096 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.06 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 120-12-7 | ANTHRACENE | 0.078 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0018 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.16 | UJ | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0022 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 129-00-0 | PYRENE | 0.14 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 132-64-9 | DIBENZOFURAN | 0.12 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.002 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0017 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0019 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 179601-23-1 | Xylenes, -m, -p | 0.004 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 1912-24-9 | ATRAZINE | 0.072 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.09 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.09 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.14 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 206-44-0 | FLUORANTHENE | 0.14 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.12 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 208-96-8 | ACENAPHTHYLENE | 0.09 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 218-01-9 | CHRYSENE | 0.13 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 50-32-8 | BENZO(A)PYRENE | 0.09 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.15 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.072 | UJ | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.0027 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.0019 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.11 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 591-78-6 | 2-HEXANONE | 0.0022 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.096 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.078 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 67-66-3 | CHLOROFORM | 0.0017 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 67-72-1 | HEXACHLOROETHANE | 0.1 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.11 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 71-43-2 | BENZENE | 0.0018 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7429-90-5 | Aluminum, total | 14000 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7439-89-6 | Iron, total | 18000 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7439-92-1 | Lead, total | 8.9 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7439-95-4 | Magnesium, total | 12000 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7439-96-5 | Manganese, total | 200 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7439-97-6 | Mercury, total | 0.013 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-02-0 | Nickel, total | 21 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-09-7 | Potassium, total | 2300 | J | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-22-4 | Silver, total | 0.081 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-23-5 | Sodium, total | 39 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-28-0 | Thallium, total | 0.9 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-36-0 | Antimony, total | 0.41 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-38-2 | Arsenic, total | 6.1 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-39-3 | Barium, total | 50 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-41-7 | Beryllium, total | 0.87 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-43-9 | Cadmium, total | 56 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-47-3 | Chromium, total | 20 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-48-4 | Cobalt, total | 6.4 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-50-8 | Copper, total | 14 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-62-2 | Vanadium, total | 29 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-66-6 | Zinc, total | 5700 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7440-70-2 | Calcium, total | 19000 | = | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 74-83-9 | BROMOMETHANE | 0.0024 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 74-87-3 | CHLOROMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 75-00-3 | CHLOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 75-01-4 | VINYL CHLORIDE | 0.0018 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.0039 | J | mg/kg | | | TRUE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 75-15-0 | CARBON DISULFIDE | 0.0024 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 75-25-2 | BROMOFORM | 0.0016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.0017 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.002 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0022 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.002 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.072 | UJ | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 7782-49-2 | Selenium, total | 0.3 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 78-59-1 | ISOPHORONE | 0.072 | UJ | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.0013 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0015 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.002 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 79-20-9 | METHYL ACETATE | 0.0056 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0018 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 83-32-9 | ACENAPHTHENE | 0.1 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.096 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 85-01-8 | PHENANTHRENE | 0.078 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.096 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.1 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 86-73-7 | FLUORENE | 0.12 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 86-74-8 | CARBAZOLE | 0.19 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.11 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.13 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.072 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 88-74-4 | 2-NITROANILINE | 0.16 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 88-75-5 | 2-NITROPHENOL | 0.09 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 91-20-3 | NAPHTHALENE | 0.1 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.096 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.084 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.16 | UJ | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.096 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0024 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.11 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.002 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.096 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.002 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0016 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 98-86-2 | ACETOPHENONE | 0.11 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 98-95-3 | NITROBENZENE | 0.1 | U | mg/kg | | | FALSE |
| A1-23 | S-A1-23-7 | 7/19/02 | 6 | 7 | SO | 99-09-2 | 3-NITROANILINE | 0.06 | U | mg/kg | | | FALSE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7429-90-5 | Aluminum, total | 12000 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7439-89-6 | Iron, total | 16000 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7439-92-1 | Lead, total | 19 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7439-95-4 | Magnesium, total | 1800 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7439-96-5 | Manganese, total | 180 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7439-97-6 | Mercury, total | 0.0051 | U | mg/kg | | | FALSE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-02-0 | Nickel, total | 11 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-09-7 | Potassium, total | 1900 | J | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-22-4 | Silver, total | 0.15 | U | mg/kg | | | FALSE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-23-5 | Sodium, total | 69 | J | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-28-0 | Thallium, total | 0.71 | U | mg/kg | | | FALSE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-36-0 | Antimony, total | 0.77 | U | mg/kg | | | FALSE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-38-2 | Arsenic, total | 5.1 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-39-3 | Barium, total | 66 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-41-7 | Beryllium, total | 0.79 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-43-9 | Cadmium, total | 6.1 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-47-3 | Chromium, total | 16 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-48-4 | Cobalt, total | 4.5 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-50-8 | Copper, total | 16 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-62-2 | Vanadium, total | 24 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-66-6 | Zinc, total | 2000 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7440-70-2 | Calcium, total | 1600 | = | mg/kg | | | TRUE |
| A1-24 | S-A1-24-10 | 7/16/02 | 9 | 10 | SO | 7782-49-2 | Selenium, total | 1.7 | J | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7429-90-5 | Aluminum, total | 15000 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7439-89-6 | Iron, total | 15000 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7439-92-1 | Lead, total | 9.1 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7439-95-4 | Magnesium, total | 3000 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7439-96-5 | Manganese, total | 98 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7439-97-6 | Mercury, total | 0.0047 | U | mg/kg | | | FALSE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-02-0 | Nickel, total | 16 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-09-7 | Potassium, total | 1900 | J | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-22-4 | Silver, total | 0.067 | U | mg/kg | | | FALSE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-23-5 | Sodium, total | 42 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-28-0 | Thallium, total | 0.41 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-36-0 | Antimony, total | 0.34 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-38-2 | Arsenic, total | 3.7 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-39-3 | Barium, total | 66 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-41-7 | Beryllium, total | 0.78 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-43-9 | Cadmium, total | 5.6 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-47-3 | Chromium, total | 20 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-48-4 | Cobalt, total | 3.9 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-50-8 | Copper, total | 11 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-62-2 | Vanadium, total | 28 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-66-6 | Zinc, total | 1100 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7440-70-2 | Calcium, total | 2200 | = | mg/kg | | | TRUE |
| A1-3 | S-A1-3-9 | 7/15/02 | 8 | 9 | SO | 7782-49-2 | Selenium, total | 0.27 | U | mg/kg | | | FALSE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7429-90-5 | Aluminum, total | 8300 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7439-89-6 | Iron, total | 10000 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7439-92-1 | Lead, total | 8.2 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7439-95-4 | Magnesium, total | 22000 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7439-96-5 | Manganese, total | 400 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7439-97-6 | Mercury, total | 0.0088 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-02-0 | Nickel, total | 19 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-09-7 | Potassium, total | 1800 | J | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-22-4 | Silver, total | 0.067 | U | mg/kg | | | FALSE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-23-5 | Sodium, total | 61 | U | mg/kg | | | FALSE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-28-0 | Thallium, total | 0.47 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-36-0 | Antimony, total | 0.33 | U | mg/kg | | | FALSE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-38-2 | Arsenic, total | 1.9 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-39-3 | Barium, total | 46 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-41-7 | Beryllium, total | 0.62 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-43-9 | Cadmium, total | 87 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-47-3 | Chromium, total | 12 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-48-4 | Cobalt, total | 7.1 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-50-8 | Copper, total | 9.1 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-62-2 | Vanadium, total | 16 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-66-6 | Zinc, total | 11000 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7440-70-2 | Calcium, total | 36000 | = | mg/kg | | | TRUE |
| A1-6 | S-A1-6-9 | 7/15/02 | 8 | 9 | SO | 7782-49-2 | Selenium, total | 0.28 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 100-01-6 | 4-NITROANILINE | 0.31 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 100-02-7 | 4-NITROPHENOL | 0.3 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 100-41-4 | ETHYLBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 100-42-5 | STYRENE | 0.0013 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 100-52-7 | BENZALDEHYDE | 0.09 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0011 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.001 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.077 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 105-60-2 | CAPROLACTAM | 0.097 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.17 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.1 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0015 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 106-47-8 | 4-CHLOROANILINE | 0.077 | UJ | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0012 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0011 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.084 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0043 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 108-88-3 | TOLUENE | 0.0016 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 108-90-7 | CHLOROBENZENE | 0.0016 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 108-95-2 | PHENOL | 0.077 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 110-82-7 | CYCLOHEXANE | 0.0042 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.017 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.017 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.017 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.017 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.09 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.097 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.14 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.065 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 120-12-7 | ANTHRACENE | 0.084 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.17 | UJ | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.017 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.017 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0018 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 129-00-0 | PYRENE | 0.15 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 132-64-9 | DIBENZOFURAN | 0.13 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0016 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0013 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0015 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 179601-23-1 | Xylenes, -m, -p | 0.0032 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 1912-24-9 | ATRAZINE | 0.077 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.097 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.097 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 206-44-0 | FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.13 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 208-96-8 | ACENAPHTHYLENE | 0.097 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 218-01-9 | CHRYSENE | 0.14 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 50-32-8 | BENZO(A)PYRENE | 0.097 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.14 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.017 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.077 | UJ | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0011 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.0021 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.0015 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.12 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 591-78-6 | 2-HEXANONE | 0.0018 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.14 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.1 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.084 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 67-66-3 | CHLOROFORM | 0.0014 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 67-72-1 | HEXACHLOROETHANE | 0.11 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.12 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 71-43-2 | BENZENE | 0.0015 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7429-90-5 | Aluminum, total | 17000 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7439-89-6 | Iron, total | 14000 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7439-92-1 | Lead, total | 22 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7439-95-4 | Magnesium, total | 2000 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7439-96-5 | Manganese, total | 120 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7439-97-6 | Mercury, total | 0.028 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-02-0 | Nickel, total | 12 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-09-7 | Potassium, total | 1400 | J | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-22-4 | Silver, total | 0.14 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-23-5 | Sodium, total | 33 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-28-0 | Thallium, total | 0.7 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-36-0 | Antimony, total | 0.71 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-38-2 | Arsenic, total | 4.3 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-39-3 | Barium, total | 100 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-41-7 | Beryllium, total | 1.1 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-43-9 | Cadmium, total | 44 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-47-3 | Chromium, total | 21 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-48-4 | Cobalt, total | 4.4 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-50-8 | Copper, total | 14 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-62-2 | Vanadium, total | 39 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-66-6 | Zinc, total | 2800 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7440-70-2 | Calcium, total | 1100 | = | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 74-83-9 | BROMOMETHANE | 0.0019 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 74-87-3 | CHLOROMETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 75-00-3 | CHLOROETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 75-01-4 | VINYL CHLORIDE | 0.0014 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.0031 | J | mg/kg | | | TRUE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 75-15-0 | CARBON DISULFIDE | 0.0019 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 75-25-2 | BROMOFORM | 0.0012 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.0016 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0018 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0011 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.077 | UJ | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 7782-49-2 | Selenium, total | 0.58 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 78-59-1 | ISOPHORONE | 0.077 | UJ | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.001 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0012 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0016 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 79-20-9 | METHYL ACETATE | 0.0045 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 83-32-9 | ACENAPHTHENE | 0.11 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 85-01-8 | PHENANTHRENE | 0.084 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.11 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 86-73-7 | FLUORENE | 0.13 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 86-74-8 | CARBAZOLE | 0.2 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.12 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.14 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.077 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 88-74-4 | 2-NITROANILINE | 0.17 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 88-75-5 | 2-NITROPHENOL | 0.097 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 91-20-3 | NAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.1 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.09 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.17 | UJ | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.1 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0019 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.12 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0016 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.1 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0016 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0013 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 98-86-2 | ACETOPHENONE | 0.12 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 98-95-3 | NITROBENZENE | 0.11 | U | mg/kg | | | FALSE |
| A1-7 | S-A1-7-3 | 7/19/02 | 2 | 3 | SO | 99-09-2 | 3-NITROANILINE | 0.065 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 100-01-6 | 4-NITROANILINE | 0.31 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 100-02-7 | 4-NITROPHENOL | 0.3 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 100-41-4 | ETHYLBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 100-42-5 | STYRENE | 0.0013 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 100-52-7 | BENZALDEHYDE | 0.09 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0011 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.001 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.077 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 105-60-2 | CAPROLACTAM | 0.097 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.17 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.1 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0015 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 106-47-8 | 4-CHLOROANILINE | 0.077 | UJ | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0012 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0011 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.084 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0043 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 108-88-3 | TOLUENE | 0.0015 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 108-90-7 | CHLOROBENZENE | 0.0016 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 108-95-2 | PHENOL | 0.077 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 110-82-7 | CYCLOHEXANE | 0.0041 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.017 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.017 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.017 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.017 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.09 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.097 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.14 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.064 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 120-12-7 | ANTHRACENE | 0.084 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.17 | UJ | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.017 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.017 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0017 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 129-00-0 | PYRENE | 0.15 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 132-64-9 | DIBENZOFURAN | 0.13 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0016 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0013 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0015 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 179601-23-1 | Xylenes, -m, -p | 0.0032 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 1912-24-9 | ATRAZINE | 0.077 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.097 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.097 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 206-44-0 | FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.13 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 208-96-8 | ACENAPHTHYLENE | 0.097 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 218-01-9 | CHRYSENE | 0.14 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 50-32-8 | BENZO(A)PYRENE | 0.097 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.14 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.017 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.077 | UJ | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0011 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.0021 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.0015 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.12 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 591-78-6 | 2-HEXANONE | 0.0017 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.14 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.1 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.084 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 67-66-3 | CHLOROFORM | 0.0013 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 67-72-1 | HEXACHLOROETHANE | 0.11 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.12 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 71-43-2 | BENZENE | 0.0014 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7429-90-5 | Aluminum, total | 27000 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7439-89-6 | Iron, total | 21000 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7439-92-1 | Lead, total | 23 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7439-95-4 | Magnesium, total | 2900 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7439-96-5 | Manganese, total | 82 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7439-97-6 | Mercury, total | 0.019 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-02-0 | Nickel, total | 17 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-09-7 | Potassium, total | 1800 | J | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-22-4 | Silver, total | 0.084 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-23-5 | Sodium, total | 26 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-28-0 | Thallium, total | 0.59 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-36-0 | Antimony, total | 0.46 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-38-2 | Arsenic, total | 3.9 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-39-3 | Barium, total | 110 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-41-7 | Beryllium, total | 1.1 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-43-9 | Cadmium, total | 6.8 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-47-3 | Chromium, total | 28 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-48-4 | Cobalt, total | 4 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-50-8 | Copper, total | 35 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-62-2 | Vanadium, total | 46 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-66-6 | Zinc, total | 1800 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7440-70-2 | Calcium, total | 1200 | = | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 74-83-9 | BROMOMETHANE | 0.0019 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 74-87-3 | CHLOROMETHANE | 0.0012 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 75-00-3 | CHLOROETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 75-01-4 | VINYL CHLORIDE | 0.0014 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.0029 | J | mg/kg | | | TRUE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 75-15-0 | CARBON DISULFIDE | 0.0019 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 75-25-2 | BROMOFORM | 0.0012 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.0013 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.0016 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0017 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0011 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.077 | UJ | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 7782-49-2 | Selenium, total | 0.31 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 78-59-1 | ISOPHORONE | 0.077 | UJ | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.001 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 0.0021 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0012 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0016 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 79-20-9 | METHYL ACETATE | 0.0044 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 83-32-9 | ACENAPHTHENE | 0.11 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 85-01-8 | PHENANTHRENE | 0.084 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.11 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 86-73-7 | FLUORENE | 0.13 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 86-74-8 | CARBAZOLE | 0.2 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.12 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.14 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.077 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 88-74-4 | 2-NITROANILINE | 0.17 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 88-75-5 | 2-NITROPHENOL | 0.097 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 91-20-3 | NAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.1 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.09 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.17 | UJ | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.1 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0019 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.12 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0016 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.1 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0016 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0013 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 98-86-2 | ACETOPHENONE | 0.12 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 98-95-3 | NITROBENZENE | 0.11 | U | mg/kg | | | FALSE |
| A2-15 | S-A2-15-3 | 7/19/02 | 2 | 3 | SO | 99-09-2 | 3-NITROANILINE | 0.064 | U | mg/kg | | | FALSE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7429-90-5 | Aluminum, total | 23000 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7439-89-6 | Iron, total | 19000 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7439-92-1 | Lead, total | 11 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7439-95-4 | Magnesium, total | 2100 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7439-96-5 | Manganese, total | 87 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7439-97-6 | Mercury, total | 0.036 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-02-0 | Nickel, total | 13 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-09-7 | Potassium, total | 1300 | J | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-22-4 | Silver, total | 0.09 | U | mg/kg | | | FALSE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-23-5 | Sodium, total | 30 | U | mg/kg | | | FALSE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-28-0 | Thallium, total | 0.73 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-36-0 | Antimony, total | 0.45 | U | mg/kg | | | FALSE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-38-2 | Arsenic, total | 4.2 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-39-3 | Barium, total | 99 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-41-7 | Beryllium, total | 0.96 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-43-9 | Cadmium, total | 4.2 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-47-3 | Chromium, total | 27 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-48-4 | Cobalt, total | 3.4 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-50-8 | Copper, total | 15 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-62-2 | Vanadium, total | 47 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-66-6 | Zinc, total | 2700 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7440-70-2 | Calcium, total | 840 | = | mg/kg | | | TRUE |
| A2-23 | S-A2-23-3 | 7/18/02 | 2 | 3 | SO | 7782-49-2 | Selenium, total | 0.32 | U | mg/kg | | | FALSE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7429-90-5 | Aluminum, total | 21000 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7439-89-6 | Iron, total | 16000 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7439-92-1 | Lead, total | 7.4 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7439-95-4 | Magnesium, total | 1800 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7439-96-5 | Manganese, total | 140 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7439-97-6 | Mercury, total | 0.023 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-02-0 | Nickel, total | 13 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-09-7 | Potassium, total | 1200 | J | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-22-4 | Silver, total | 0.071 | U | mg/kg | | | FALSE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-23-5 | Sodium, total | 20 | U | mg/kg | | | FALSE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-28-0 | Thallium, total | 0.6 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-36-0 | Antimony, total | 0.47 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-38-2 | Arsenic, total | 4.1 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-39-3 | Barium, total | 76 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-41-7 | Beryllium, total | 0.94 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-43-9 | Cadmium, total | 13 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-47-3 | Chromium, total | 25 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-48-4 | Cobalt, total | 3.5 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-50-8 | Copper, total | 11 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-62-2 | Vanadium, total | 39 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-66-6 | Zinc, total | 2700 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7440-70-2 | Calcium, total | 620 | = | mg/kg | | | TRUE |
| A2-24 | S-A2-24-3 | 7/18/02 | 2 | 3 | SO | 7782-49-2 | Selenium, total | 0.3 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 100-01-6 | 4-NITROANILINE | 0.31 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 100-02-7 | 4-NITROPHENOL | 0.31 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 100-41-4 | ETHYLBENZENE | 0.0016 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 100-42-5 | STYRENE | 0.0015 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 100-52-7 | BENZALDEHYDE | 0.091 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0013 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0012 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.078 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 105-60-2 | CAPROLACTAM | 0.098 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.17 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.1 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0018 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 106-47-8 | 4-CHLOROANILINE | 0.078 | UJ | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0014 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 107-06-2 | 1,2-DICHLOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0014 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.085 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 108-87-2 | METHYLCYCLOHEXANE | 0.0052 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 108-88-3 | TOLUENE | 0.0019 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 108-90-7 | CHLOROBENZENE | 0.0019 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 108-95-2 | PHENOL | 0.078 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 110-82-7 | CYCLOHEXANE | 0.005 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.091 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.098 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.14 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 118-74-1 | HEXACHLOROBENZENE | 0.065 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 120-12-7 | ANTHRACENE | 0.085 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 120-83-2 | 2,4-DICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 121-14-2 | 2,4-DINITROTOLUENE | 0.18 | UJ | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0015 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0021 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 129-00-0 | PYRENE | 0.15 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 131-11-3 | DIMETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 132-64-9 | DIBENZOFURAN | 0.13 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0019 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0016 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0018 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 179601-23-1 | Xylenes, -m, -p | 0.0038 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 1912-24-9 | ATRAZINE | 0.078 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.098 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.098 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 205-99-2 | BENZO(B)FLUORANTHENE | 0.16 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 206-44-0 | FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 207-08-9 | BENZO(K)FLUORANTHENE | 0.13 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 208-96-8 | ACENAPHTHYLENE | 0.098 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 218-01-9 | CHRYSENE | 0.14 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 50-32-8 | BENZO(A)PYRENE | 0.098 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 51-28-5 | 2,4-DINITROPHENOL | 0.16 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.14 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.078 | UJ | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 542-75-6 | TOTAL, 1,3-DICHLOROPROPENE (CIS AND TRA | 0.0025 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 56-23-5 | CARBON TETRACHLORIDE | 0.0018 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 56-55-3 | BENZO(A)ANTHRACENE | 0.12 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 591-78-6 | 2-HEXANONE | 0.0021 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.14 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 606-20-2 | 2,6-DINITROTOLUENE | 0.1 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.085 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 67-66-3 | CHLOROFORM | 0.0016 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 67-72-1 | HEXACHLOROETHANE | 0.11 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.12 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 71-43-2 | BENZENE | 0.0017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0015 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7429-90-5 | Aluminum, total | 29000 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7439-89-6 | Iron, total | 31000 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7439-92-1 | Lead, total | 23 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7439-95-4 | Magnesium, total | 3800 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7439-96-5 | Manganese, total | 610 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7439-97-6 | Mercury, total | 0.025 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-02-0 | Nickel, total | 24 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-09-7 | Potassium, total | 2400 | J | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-22-4 | Silver, total | 0.089 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-23-5 | Sodium, total | 81 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-28-0 | Thallium, total | 1.1 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-36-0 | Antimony, total | 0.9 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-38-2 | Arsenic, total | 12 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-39-3 | Barium, total | 210 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-41-7 | Beryllium, total | 1.5 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-43-9 | Cadmium, total | 1.6 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-47-3 | Chromium, total | 32 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-48-4 | Cobalt, total | 9.5 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-50-8 | Copper, total | 23 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-62-2 | Vanadium, total | 69 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-66-6 | Zinc, total | 620 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7440-70-2 | Calcium, total | 1300 | = | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 74-83-9 | BROMOMETHANE | 0.0023 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 74-87-3 | CHLOROMETHANE | 0.0015 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 75-00-3 | CHLOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 75-01-4 | VINYL CHLORIDE | 0.0017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 75-09-2 | METHYLENE CHLORIDE | 0.0036 | J | mg/kg | | | TRUE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 75-15-0 | CARBON DISULFIDE | 0.0023 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 75-25-2 | BROMOFORM | 0.0015 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 75-27-4 | BROMODICHLOROMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 75-34-3 | 1,1-DICHLOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 75-35-4 | 1,1-DICHLOROETHENE | 0.0019 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0021 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0019 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.078 | UJ | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 7782-49-2 | Selenium, total | 0.33 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 78-59-1 | ISOPHORONE | 0.078 | UJ | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 78-87-5 | 1,2-DICHLOROPROPANE | 0.0012 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 0.0025 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0019 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 79-20-9 | METHYL ACETATE | 0.0053 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 83-32-9 | ACENAPHTHENE | 0.11 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 84-66-2 | DIETHYL PHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 85-01-8 | PHENANTHRENE | 0.085 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.11 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 86-73-7 | FLUORENE | 0.13 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 86-74-8 | CARBAZOLE | 0.2 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 87-68-3 | HEXACHLOROBUTADIENE | 0.12 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 87-86-5 | PENTACHLOROPHENOL | 0.14 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.078 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 88-74-4 | 2-NITROANILINE | 0.17 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 88-75-5 | 2-NITROPHENOL | 0.098 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 91-20-3 | NAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 91-57-6 | 2-METHYLNAPHTHALENE | 0.1 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 91-58-7 | 2-CHLORONAPHTHALENE | 0.091 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.17 | UJ | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 92-52-4 | BIPHENYL (DIPHENYL) | 0.1 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0023 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.12 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0019 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 95-57-8 | 2-CHLOROPHENOL | 0.1 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0019 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0015 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 98-86-2 | ACETOPHENONE | 0.12 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 98-95-3 | NITROBENZENE | 0.11 | U | mg/kg | | | FALSE |
| A2-7 | S-A2-7-3 | 7/19/02 | 2 | 3 | SO | 99-09-2 | 3-NITROANILINE | 0.065 | U | mg/kg | | | FALSE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7429-90-5 | Aluminum, total | 32000 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7439-89-6 | Iron, total | 31000 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7439-92-1 | Lead, total | 16 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7439-95-4 | Magnesium, total | 4100 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7439-96-5 | Manganese, total | 280 | J | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7439-97-6 | Mercury, total | 0.023 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-02-0 | Nickel, total | 18 | J | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-09-7 | Potassium, total | 2400 | J | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-22-4 | Silver, total | 0.086 | U | mg/kg | | | FALSE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-23-5 | Sodium, total | 120 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-28-0 | Thallium, total | 1.1 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-36-0 | Antimony, total | 0.73 | J | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-38-2 | Arsenic, total | 13 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-39-3 | Barium, total | 190 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-41-7 | Beryllium, total | 1.2 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-43-9 | Cadmium, total | 19 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-47-3 | Chromium, total | 37 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-48-4 | Cobalt, total | 6.1 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-50-8 | Copper, total | 21 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-62-2 | Vanadium, total | 72 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-66-6 | Zinc, total | 2000 | J | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7440-70-2 | Calcium, total | 3400 | = | mg/kg | | | TRUE |
| A3-19 | S-A3-19-5 | 7/19/02 | 4 | 5 | SO | 7782-49-2 | Selenium, total | 0.64 | U | mg/kg | | | FALSE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7429-90-5 | Aluminum, total | 18000 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7439-89-6 | Iron, total | 18000 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7439-92-1 | Lead, total | 13 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7439-95-4 | Magnesium, total | 2700 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7439-96-5 | Manganese, total | 230 | J | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7439-97-6 | Mercury, total | 0.0064 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-02-0 | Nickel, total | 13 | J | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-09-7 | Potassium, total | 1500 | J | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-22-4 | Silver, total | 0.079 | U | mg/kg | | | FALSE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-23-5 | Sodium, total | 93 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-28-0 | Thallium, total | 0.49 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-36-0 | Antimony, total | 0.86 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-38-2 | Arsenic, total | 6.8 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-39-3 | Barium, total | 110 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-41-7 | Beryllium, total | 0.79 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-43-9 | Cadmium, total | 21 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-47-3 | Chromium, total | 24 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-48-4 | Cobalt, total | 6.4 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-50-8 | Copper, total | 12 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-62-2 | Vanadium, total | 47 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-66-6 | Zinc, total | 3900 | J | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7440-70-2 | Calcium, total | 1100 | = | mg/kg | | | TRUE |
| A3-22 | S-A3-22-6 | 7/19/02 | 5 | 6 | SO | 7782-49-2 | Selenium, total | 0.28 | U | mg/kg | | | FALSE |
| EZ-RSB01 | EZ-RSB01-2 | 11/30/10 | 2 | 3 | SO | 7439-92-1 | Lead, total | 20.2 | = | mg/kg | | 1 | TRUE |
| EZ-RSB01 | EZ-RSB01-2 | 11/30/10 | 2 | 3 | SO | 7439-92-1SV | Lead, sieve | 18.1 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB01 | EZ-RSB01-2 | 11/30/10 | 2 | 3 | SO | 7439-96-5 | Manganese, total | 1430 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB01 | EZ-RSB01-2 | 11/30/10 | 2 | 3 | SO | 7440-38-2 | Arsenic, total | 7.1 | J | mg/kg | | 1 | TRUE |
| EZ-RSB01 | EZ-RSB01-2 | 11/30/10 | 2 | 3 | SO | 7440-43-9 | Cadmium, total | 0.84 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB01 | EZ-RSB01-2 | 11/30/10 | 2 | 3 | SO | 7440-50-8 | Copper, total | 14.1 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB01 | EZ-RSB01-2 | 11/30/10 | 2 | 3 | SO | 7440-66-6 | Zinc, total | 767 | J | mg/kg | | 6 | TRUE |
| EZ-RSB03 | EZ-RSB03-2 | 11/30/10 | 2 | 3 | SO | 7439-92-1 | Lead, total | 17.7 | = | mg/kg | | 1 | TRUE |
| EZ-RSB03 | EZ-RSB03-2 | 11/30/10 | 2 | 3 | SO | 7439-92-1SV | Lead, sieve | 16.2 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB03 | EZ-RSB03-2 | 11/30/10 | 2 | 3 | SO | 7439-96-5 | Manganese, total | 261 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB03 | EZ-RSB03-2 | 11/30/10 | 2 | 3 | SO | 7440-38-2 | Arsenic, total | 9.1 | J | mg/kg | | 1 | TRUE |
| EZ-RSB03 | EZ-RSB03-2 | 11/30/10 | 2 | 3 | SO | 7440-43-9 | Cadmium, total | 20.5 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB03 | EZ-RSB03-2 | 11/30/10 | 2 | 3 | SO | 7440-50-8 | Copper, total | 19.5 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB03 | EZ-RSB03-2 | 11/30/10 | 2 | 3 | SO | 7440-66-6 | Zinc, total | 816 | J | mg/kg | | 6 | TRUE |
| EZ-RSB05 | EZ-RSB05-2 | 12/1/10 | 4.5 | 5.5 | SO | 7439-92-1 | Lead, total | 15.9 | = | mg/kg | | 1 | TRUE |
| EZ-RSB05 | EZ-RSB05-2 | 12/1/10 | 4.5 | 5.5 | SO | 7439-92-1SV | Lead, sieve | 17.6 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB05 | EZ-RSB05-2 | 12/1/10 | 4.5 | 5.5 | SO | 7439-96-5 | Manganese, total | 1440 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB05 | EZ-RSB05-2 | 12/1/10 | 4.5 | 5.5 | SO | 7440-38-2 | Arsenic, total | 7.3 | J | mg/kg | | 1 | TRUE |
| EZ-RSB05 | EZ-RSB05-2 | 12/1/10 | 4.5 | 5.5 | SO | 7440-43-9 | Cadmium, total | 1.1 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB05 | EZ-RSB05-2 | 12/1/10 | 4.5 | 5.5 | SO | 7440-50-8 | Copper, total | 16.1 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB05 | EZ-RSB05-2 | 12/1/10 | 4.5 | 5.5 | SO | 7440-66-6 | Zinc, total | 1290 | J | mg/kg | | 6 | TRUE |
| EZ-RSB08 | EZ-RSB08-2FD | 12/1/10 | 5 | 6 | SO | 7439-92-1 | Lead, total | 164 | = | mg/kg | | 1 | TRUE |
| EZ-RSB08 | EZ-RSB08-2FD | 12/1/10 | 5 | 6 | SO | 7439-92-1SV | Lead, sieve | 169 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB08 | EZ-RSB08-2FD | 12/1/10 | 5 | 6 | SO | 7439-96-5 | Manganese, total | 237 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB08 | EZ-RSB08-2FD | 12/1/10 | 5 | 6 | SO | 7440-38-2 | Arsenic, total | 8.2 | J | mg/kg | | 1 | TRUE |
| EZ-RSB08 | EZ-RSB08-2FD | 12/1/10 | 5 | 6 | SO | 7440-43-9 | Cadmium, total | 16 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB08 | EZ-RSB08-2FD | 12/1/10 | 5 | 6 | SO | 7440-50-8 | Copper, total | 27.7 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB08 | EZ-RSB08-2FD | 12/1/10 | 5 | 6 | SO | 7440-66-6 | Zinc, total | 2010 | J | mg/kg | | 6 | TRUE |
| EZ-RSB09 | EZ-RSB09-2 | 12/1/10 | 3.3 | 4.3 | SO | 7439-92-1 | Lead, total | 12.4 | = | mg/kg | | 1 | TRUE |
| EZ-RSB09 | EZ-RSB09-2 | 12/1/10 | 3.3 | 4.3 | SO | 7439-92-1SV | Lead, sieve | 14.8 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB09 | EZ-RSB09-2 | 12/1/10 | 3.3 | 4.3 | SO | 7439-96-5 | Manganese, total | 262 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB09 | EZ-RSB09-2 | 12/1/10 | 3.3 | 4.3 | SO | 7440-38-2 | Arsenic, total | 5.2 | J | mg/kg | | 1 | TRUE |
| EZ-RSB09 | EZ-RSB09-2 | 12/1/10 | 3.3 | 4.3 | SO | 7440-43-9 | Cadmium, total | 66 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB09 | EZ-RSB09-2 | 12/1/10 | 3.3 | 4.3 | SO | 7440-50-8 | Copper, total | 12.2 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB09 | EZ-RSB09-2 | 12/1/10 | 3.3 | 4.3 | SO | 7440-66-6 | Zinc, total | 1210 | J | mg/kg | | 6 | TRUE |
| EZ-RSB11 | EZ-RSB11-2 | 12/1/10 | 5 | 6 | SO | 7439-92-1 | Lead, total | 13.5 | = | mg/kg | | 1 | TRUE |
| EZ-RSB11 | EZ-RSB11-2 | 12/1/10 | 5 | 6 | SO | 7439-92-1SV | Lead, sieve | 14 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB11 | EZ-RSB11-2 | 12/1/10 | 5 | 6 | SO | 7439-96-5 | Manganese, total | 513 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB11 | EZ-RSB11-2 | 12/1/10 | 5 | 6 | SO | 7440-38-2 | Arsenic, total | 11.2 | J | mg/kg | | 1 | TRUE |
| EZ-RSB11 | EZ-RSB11-2 | 12/1/10 | 5 | 6 | SO | 7440-43-9 | Cadmium, total | 0.52 | UJ | mg/kg | | 0.5 | FALSE |
| EZ-RSB11 | EZ-RSB11-2 | 12/1/10 | 5 | 6 | SO | 7440-50-8 | Copper, total | 19 | J | mg/kg | | 2.5 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-RSB11 | EZ-RSB11-2 | 12/1/10 | 5 | 6 | SO | 7440-66-6 | Zinc, total | 470 | J | mg/kg | | 6 | TRUE |
| EZ-RSB12 | EZ-RSB12-2 | 12/1/10 | 3.6 | 5.6 | SO | 7439-92-1 | Lead, total | 9.3 | = | mg/kg | | 1 | TRUE |
| EZ-RSB12 | EZ-RSB12-2 | 12/1/10 | 3.6 | 5.6 | SO | 7439-92-1SV | Lead, sieve | 17.7 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB12 | EZ-RSB12-2 | 12/1/10 | 3.6 | 5.6 | SO | 7439-96-5 | Manganese, total | 224 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB12 | EZ-RSB12-2 | 12/1/10 | 3.6 | 5.6 | SO | 7440-38-2 | Arsenic, total | 7.7 | J | mg/kg | | 1 | TRUE |
| EZ-RSB12 | EZ-RSB12-2 | 12/1/10 | 3.6 | 5.6 | SO | 7440-43-9 | Cadmium, total | 2.5 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB12 | EZ-RSB12-2 | 12/1/10 | 3.6 | 5.6 | SO | 7440-50-8 | Copper, total | 15.7 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB12 | EZ-RSB12-2 | 12/1/10 | 3.6 | 5.6 | SO | 7440-66-6 | Zinc, total | 398 | J | mg/kg | | 6 | TRUE |
| EZ-RSB14 | EZ-RSB14-2 | 12/1/10 | 4.5 | 5.5 | SO | 7439-92-1 | Lead, total | 11.3 | J | mg/kg | | 1 | TRUE |
| EZ-RSB14 | EZ-RSB14-2 | 12/1/10 | 4.5 | 5.5 | SO | 7439-92-1SV | Lead, sieve | 16.4 | J | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB14 | EZ-RSB14-2 | 12/1/10 | 4.5 | 5.5 | SO | 7439-96-5 | Manganese, total | 931 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB14 | EZ-RSB14-2 | 12/1/10 | 4.5 | 5.5 | SO | 7440-38-2 | Arsenic, total | 5.5 | = | mg/kg | | 1 | TRUE |
| EZ-RSB14 | EZ-RSB14-2 | 12/1/10 | 4.5 | 5.5 | SO | 7440-43-9 | Cadmium, total | 3.9 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB14 | EZ-RSB14-2 | 12/1/10 | 4.5 | 5.5 | SO | 7440-50-8 | Copper, total | 12.5 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB14 | EZ-RSB14-2 | 12/1/10 | 4.5 | 5.5 | SO | 7440-66-6 | Zinc, total | 768 | D | mg/kg | | 6 | TRUE |
| EZ-RSB16 | EZ-RSB16-2 | 12/1/10 | 6.8 | 7.8 | SO | 7439-92-1 | Lead, total | 32.9 | = | mg/kg | | 1 | TRUE |
| EZ-RSB16 | EZ-RSB16-2 | 12/1/10 | 6.8 | 7.8 | SO | 7439-92-1SV | Lead, sieve | 10.6 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB16 | EZ-RSB16-2 | 12/1/10 | 6.8 | 7.8 | SO | 7439-96-5 | Manganese, total | 2210 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB16 | EZ-RSB16-2 | 12/1/10 | 6.8 | 7.8 | SO | 7440-38-2 | Arsenic, total | 15.9 | J | mg/kg | | 1 | TRUE |
| EZ-RSB16 | EZ-RSB16-2 | 12/1/10 | 6.8 | 7.8 | SO | 7440-43-9 | Cadmium, total | 90.3 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB16 | EZ-RSB16-2 | 12/1/10 | 6.8 | 7.8 | SO | 7440-50-8 | Copper, total | 7.8 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB16 | EZ-RSB16-2 | 12/1/10 | 6.8 | 7.8 | SO | 7440-66-6 | Zinc, total | 1910 | J | mg/kg | | 6 | TRUE |
| EZ-RSB17 | EZ-RSB17-2 | 12/1/10 | 2.8 | 3.8 | SO | 7439-92-1 | Lead, total | 12.2 | = | mg/kg | | 1 | TRUE |
| EZ-RSB17 | EZ-RSB17-2 | 12/1/10 | 2.8 | 3.8 | SO | 7439-92-1SV | Lead, sieve | 12.8 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB17 | EZ-RSB17-2 | 12/1/10 | 2.8 | 3.8 | SO | 7439-96-5 | Manganese, total | 256 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB17 | EZ-RSB17-2 | 12/1/10 | 2.8 | 3.8 | SO | 7440-38-2 | Arsenic, total | 6.3 | J | mg/kg | | 1 | TRUE |
| EZ-RSB17 | EZ-RSB17-2 | 12/1/10 | 2.8 | 3.8 | SO | 7440-43-9 | Cadmium, total | 3.3 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB17 | EZ-RSB17-2 | 12/1/10 | 2.8 | 3.8 | SO | 7440-50-8 | Copper, total | 15.1 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB17 | EZ-RSB17-2 | 12/1/10 | 2.8 | 3.8 | SO | 7440-66-6 | Zinc, total | 241 | J | mg/kg | | 6 | TRUE |
| EZ-RSB18 | EZ-RSB18-2 | 12/1/10 | 6.6 | 7.6 | SO | 7439-92-1 | Lead, total | 9.4 | = | mg/kg | | 1 | TRUE |
| EZ-RSB18 | EZ-RSB18-2 | 12/1/10 | 6.6 | 7.6 | SO | 7439-92-1SV | Lead, sieve | 7.3 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB18 | EZ-RSB18-2 | 12/1/10 | 6.6 | 7.6 | SO | 7439-96-5 | Manganese, total | 37.1 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB18 | EZ-RSB18-2 | 12/1/10 | 6.6 | 7.6 | SO | 7440-38-2 | Arsenic, total | 3.3 | J | mg/kg | | 1 | TRUE |
| EZ-RSB18 | EZ-RSB18-2 | 12/1/10 | 6.6 | 7.6 | SO | 7440-43-9 | Cadmium, total | 1.3 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB18 | EZ-RSB18-2 | 12/1/10 | 6.6 | 7.6 | SO | 7440-50-8 | Copper, total | 10.6 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB18 | EZ-RSB18-2 | 12/1/10 | 6.6 | 7.6 | SO | 7440-66-6 | Zinc, total | 109 | J | mg/kg | | 6 | TRUE |
| EZ-RSB19 | EZ-RSB19-2 | 12/2/10 | 2.1 | 3.1 | SO | 7439-92-1 | Lead, total | 17.6 | = | mg/kg | | 1 | TRUE |
| EZ-RSB19 | EZ-RSB19-2 | 12/2/10 | 2.1 | 3.1 | SO | 7439-96-5 | Manganese, total | 304 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-RSB19 | EZ-RSB19-2 | 12/2/10 | 2.1 | 3.1 | SO | 7440-38-2 | Arsenic, total | 8.7 | J | mg/kg | | 1 | TRUE |
| EZ-RSB19 | EZ-RSB19-2FD | 12/1/10 | 2.1 | 3.1 | SO | 7439-92-1SV | Lead, sieve | 15.2 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB19 | EZ-RSB19-2FD | 12/1/10 | 2.1 | 3.1 | SO | 7440-43-9 | Cadmium, total | 32.4 | J | mg/kg | | 0.5 | TRUE |
| EZ-RSB19 | EZ-RSB19-2FD | 12/1/10 | 2.1 | 3.1 | SO | 7440-50-8 | Copper, total | 10.5 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB19 | EZ-RSB19-2FD | 12/1/10 | 2.1 | 3.1 | SO | 7440-66-6 | Zinc, total | 1380 | J | mg/kg | | 6 | TRUE |
| EZ-RSB24 | EZ-RSB24-2 | 12/2/10 | 3 | 4 | SO | 7439-92-1 | Lead, total | 16.6 | = | mg/kg | | 1 | TRUE |
| EZ-RSB24 | EZ-RSB24-2 | 12/2/10 | 3 | 4 | SO | 7439-92-1SV | Lead, sieve | 22.5 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB24 | EZ-RSB24-2 | 12/2/10 | 3 | 4 | SO | 7439-96-5 | Manganese, total | 298 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB24 | EZ-RSB24-2 | 12/2/10 | 3 | 4 | SO | 7440-38-2 | Arsenic, total | 9.6 | J | mg/kg | | 1 | TRUE |
| EZ-RSB24 | EZ-RSB24-2 | 12/2/10 | 3 | 4 | SO | 7440-43-9 | Cadmium, total | 2.1 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB24 | EZ-RSB24-2 | 12/2/10 | 3 | 4 | SO | 7440-50-8 | Copper, total | 25.1 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB24 | EZ-RSB24-2 | 12/2/10 | 3 | 4 | SO | 7440-66-6 | Zinc, total | 620 | J | mg/kg | | 6 | TRUE |
| EZ-RSB25 | EZ-RSB25-2 | 12/2/10 | 2.6 | 3.6 | SO | 7439-92-1 | Lead, total | 17.7 | = | mg/kg | | 1 | TRUE |
| EZ-RSB25 | EZ-RSB25-2 | 12/2/10 | 2.6 | 3.6 | SO | 7439-92-1SV | Lead, sieve | 14.4 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB25 | EZ-RSB25-2 | 12/2/10 | 2.6 | 3.6 | SO | 7439-96-5 | Manganese, total | 424 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB25 | EZ-RSB25-2 | 12/2/10 | 2.6 | 3.6 | SO | 7440-38-2 | Arsenic, total | 12.1 | J | mg/kg | | 1 | TRUE |
| EZ-RSB25 | EZ-RSB25-2 | 12/2/10 | 2.6 | 3.6 | SO | 7440-43-9 | Cadmium, total | 0.72 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB25 | EZ-RSB25-2 | 12/2/10 | 2.6 | 3.6 | SO | 7440-50-8 | Copper, total | 20.2 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB25 | EZ-RSB25-2 | 12/2/10 | 2.6 | 3.6 | SO | 7440-66-6 | Zinc, total | 129 | J | mg/kg | | 6 | TRUE |
| EZ-RSB27 | EZ-RSB27-2 | 12/2/10 | 3 | 5 | SO | 7439-92-1 | Lead, total | 8.1 | = | mg/kg | | 1 | TRUE |
| EZ-RSB27 | EZ-RSB27-2 | 12/2/10 | 3 | 5 | SO | 7439-92-1SV | Lead, sieve | 19 | J | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB27 | EZ-RSB27-2 | 12/2/10 | 3 | 5 | SO | 7439-96-5 | Manganese, total | 376 | J | mg/kg | | 1.5 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-RSB27 | EZ-RSB27-2 | 12/2/10 | 3 | 5 | SO | 7440-38-2 | Arsenic, total | 1.7 | J | mg/kg | | 1 | TRUE |
| EZ-RSB27 | EZ-RSB27-2 | 12/2/10 | 3 | 5 | SO | 7440-43-9 | Cadmium, total | 3.6 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB27 | EZ-RSB27-2 | 12/2/10 | 3 | 5 | SO | 7440-50-8 | Copper, total | 7.1 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB27 | EZ-RSB27-2 | 12/2/10 | 3 | 5 | SO | 7440-66-6 | Zinc, total | 990 | J | mg/kg | | 6 | TRUE |
| EZ-RSB28 | EZ-RSB28-2 | 12/2/10 | 3 | 5 | SO | 7439-92-1 | Lead, total | 11.4 | = | mg/kg | | 1 | TRUE |
| EZ-RSB28 | EZ-RSB28-2 | 12/2/10 | 3 | 5 | SO | 7439-92-1SV | Lead, sieve | 21.7 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB28 | EZ-RSB28-2 | 12/2/10 | 3 | 5 | SO | 7439-96-5 | Manganese, total | 181 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB28 | EZ-RSB28-2 | 12/2/10 | 3 | 5 | SO | 7440-38-2 | Arsenic, total | 4.3 | J | mg/kg | | 1 | TRUE |
| EZ-RSB28 | EZ-RSB28-2 | 12/2/10 | 3 | 5 | SO | 7440-43-9 | Cadmium, total | 3.3 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB28 | EZ-RSB28-2 | 12/2/10 | 3 | 5 | SO | 7440-50-8 | Copper, total | 6.6 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB28 | EZ-RSB28-2 | 12/2/10 | 3 | 5 | SO | 7440-66-6 | Zinc, total | 875 | J | mg/kg | | 6 | TRUE |
| EZ-RSB29 | EZ-RSB29-2 | 12/3/10 | 6.5 | 7.5 | SO | 7439-92-1 | Lead, total | 16.1 | = | mg/kg | | 1 | TRUE |
| EZ-RSB29 | EZ-RSB29-2 | 12/3/10 | 6.5 | 7.5 | SO | 7439-92-1SV | Lead, sieve | 25.5 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB29 | EZ-RSB29-2 | 12/3/10 | 6.5 | 7.5 | SO | 7440-38-2 | Arsenic, total | 7.4 | J | mg/kg | | 1 | TRUE |
| EZ-RSB29 | EZ-RSB29-2 | 12/3/10 | 6.5 | 7.5 | SO | 7440-50-8 | Copper, total | 18.7 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB29 | EZ-RSB29-2FD | 12/3/10 | 6.5 | 7.5 | SO | 7439-96-5 | Manganese, total | 925 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB29 | EZ-RSB29-2FD | 12/3/10 | 6.5 | 7.5 | SO | 7440-43-9 | Cadmium, total | 106 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB29 | EZ-RSB29-2FD | 12/3/10 | 6.5 | 7.5 | SO | 7440-66-6 | Zinc, total | 47800 | J | mg/kg | | 6 | TRUE |
| EZ-RSB30 | EZ-RSB30-2 | 12/3/10 | 3.3 | 4.3 | SO | 7439-92-1 | Lead, total | 34.9 | = | mg/kg | | 1 | TRUE |
| EZ-RSB30 | EZ-RSB30-2 | 12/3/10 | 3.3 | 4.3 | SO | 7439-92-1SV | Lead, sieve | 29.8 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB30 | EZ-RSB30-2 | 12/3/10 | 3.3 | 4.3 | SO | 7439-96-5 | Manganese, total | 252 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB30 | EZ-RSB30-2 | 12/3/10 | 3.3 | 4.3 | SO | 7440-38-2 | Arsenic, total | 4.9 | J | mg/kg | | 1 | TRUE |
| EZ-RSB30 | EZ-RSB30-2 | 12/3/10 | 3.3 | 4.3 | SO | 7440-43-9 | Cadmium, total | 197 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB30 | EZ-RSB30-2 | 12/3/10 | 3.3 | 4.3 | SO | 7440-50-8 | Copper, total | 10.9 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB30 | EZ-RSB30-2 | 12/3/10 | 3.3 | 4.3 | SO | 7440-66-6 | Zinc, total | 4760 | J | mg/kg | | 6 | TRUE |
| EZ-RSB31 | EZ-RSB31-2 | 12/3/10 | 2.4 | 3.4 | SO | 7439-92-1 | Lead, total | 15.2 | = | mg/kg | | 1 | TRUE |
| EZ-RSB31 | EZ-RSB31-2 | 12/3/10 | 2.4 | 3.4 | SO | 7439-92-1SV | Lead, sieve | 0.03 | U | mg/kg | 0.03 | 0.1 | FALSE |
| EZ-RSB31 | EZ-RSB31-2 | 12/3/10 | 2.4 | 3.4 | SO | 7439-96-5 | Manganese, total | 190 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB31 | EZ-RSB31-2 | 12/3/10 | 2.4 | 3.4 | SO | 7440-38-2 | Arsenic, total | 7.3 | J | mg/kg | | 1 | TRUE |
| EZ-RSB31 | EZ-RSB31-2 | 12/3/10 | 2.4 | 3.4 | SO | 7440-43-9 | Cadmium, total | 3.6 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB31 | EZ-RSB31-2 | 12/3/10 | 2.4 | 3.4 | SO | 7440-50-8 | Copper, total | 15.6 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB31 | EZ-RSB31-2 | 12/3/10 | 2.4 | 3.4 | SO | 7440-66-6 | Zinc, total | 1150 | J | mg/kg | | 6 | TRUE |
| EZ-RSB32 | EZ-RSB32-2 | 12/3/10 | 6.4 | 7.4 | SO | 7439-92-1 | Lead, total | 17.8 | J | mg/kg | | 1 | TRUE |
| EZ-RSB32 | EZ-RSB32-2 | 12/3/10 | 6.4 | 7.4 | SO | 7439-92-1SV | Lead, sieve | 39.5 | = | mg/kg | 0.03 | 0.1 | TRUE |
| EZ-RSB32 | EZ-RSB32-2 | 12/3/10 | 6.4 | 7.4 | SO | 7439-96-5 | Manganese, total | 822 | J | mg/kg | | 1.5 | TRUE |
| EZ-RSB32 | EZ-RSB32-2 | 12/3/10 | 6.4 | 7.4 | SO | 7440-38-2 | Arsenic, total | 12 | J | mg/kg | | 1 | TRUE |
| EZ-RSB32 | EZ-RSB32-2 | 12/3/10 | 6.4 | 7.4 | SO | 7440-43-9 | Cadmium, total | 0.92 | = | mg/kg | | 0.5 | TRUE |
| EZ-RSB32 | EZ-RSB32-2 | 12/3/10 | 6.4 | 7.4 | SO | 7440-50-8 | Copper, total | 17.4 | J | mg/kg | | 2.5 | TRUE |
| EZ-RSB32 | EZ-RSB32-2 | 12/3/10 | 6.4 | 7.4 | SO | 7440-66-6 | Zinc, total | 130 | J | mg/kg | | 6 | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7429-90-5 | Aluminum, total | 26000 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7439-89-6 | Iron, total | 29000 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7439-92-1 | Lead, total | 12 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7439-95-4 | Magnesium, total | 4300 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7439-96-5 | Manganese, total | 240 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7439-97-6 | Mercury, total | 0.03 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-02-0 | Nickel, total | 21 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-09-7 | Potassium, total | 2100 | J | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-22-4 | Silver, total | 0.086 | U | mg/kg | | | FALSE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-23-5 | Sodium, total | 220 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-28-0 | Thallium, total | 1.4 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-36-0 | Antimony, total | 0.96 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-38-2 | Arsenic, total | 11 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-39-3 | Barium, total | 160 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-41-7 | Beryllium, total | 1.3 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-43-9 | Cadmium, total | 2 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-47-3 | Chromium, total | 30 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-48-4 | Cobalt, total | 4.4 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-50-8 | Copper, total | 23 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-62-2 | Vanadium, total | 62 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-66-6 | Zinc, total | 550 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7440-70-2 | Calcium, total | 2500 | = | mg/kg | | | TRUE |
| MA-6 | S-MA-6-4 | 7/17/02 | 3 | 4 | SO | 7782-49-2 | Selenium, total | 0.27 | U | mg/kg | | | FALSE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 20.2 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 6.3 | = | mg/kg | 0.5 | 0.5 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 493 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 2 | = | mg/kg | 0.3 | 0.3 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.006 | U | mg/kg | 0.006 | 0.006 | FALSE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 4 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 0.65 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 0.086 | = | mg/kg | 0.03 | 0.03 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 8.9 | J | mg/kg | | 2.5 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 3.6 | J | mg/kg | 0.12 | 0.12 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 428 | J | mg/kg | | 6 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 44 | = | mg/kg | 5 | 5 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 1.7 | = | mg/kg | 1.3 | 1.3 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-2 | 12/4/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 710 | U | mg/kg | 710 | 2500 | FALSE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 350 | J | mg/kg | 4 | 4 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 287 | = | mg/kg | | 1.5 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 12 | = | mg/kg | 2 | 2 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 9.5 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 28.8 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 67.9 | J | mg/kg | | 2.5 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 45 | J | mg/kg | 1 | 1 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 8100 | J | mg/kg | | 6 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 15000 | = | mg/kg | 800 | 800 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2 | 12/2/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 2900 | J | mg/kg | 390 | 390 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2FD | 12/2/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 328 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2FD | 12/2/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.008 | U | mg/kg | 0.008 | 0.008 | FALSE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2FD | 12/2/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 40 | = | mg/kg | 0.2 | 0.2 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-2FD | 12/2/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 65000 | J | mg/kg | 890 | 3100 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 65.1 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 40 | = | mg/kg | 0.5 | 0.5 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 91.2 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 2.9 | = | mg/kg | 0.2 | 0.2 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.006 | U | mg/kg | 0.006 | 0.006 | FALSE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 6.9 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 5.5 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 10 | = | mg/kg | 0.02 | 0.02 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 18.1 | J | mg/kg | | 2.5 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 5.3 | J | mg/kg | 0.11 | 0.11 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 4480 | J | mg/kg | | 6 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 3200 | = | mg/kg | 200 | 200 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 52 | J | mg/kg | 18 | 18 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-2 | 12/2/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 700 | U | mg/kg | 700 | 2400 | FALSE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7429-90-5 | Aluminum, total | 9600 | = | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7439-89-6 | Iron, total | 19000 | = | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7439-92-1 | Lead, total | 75 | = | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7439-95-4 | Magnesium, total | 3200 | J | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7439-96-5 | Manganese, total | 750 | = | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7439-97-6 | Mercury, total | 0.064 | = | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-02-0 | Nickel, total | 15 | = | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-09-7 | Potassium, total | 860 | J | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-22-4 | Silver, total | 0.079 | U | mg/kg | | | FALSE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-23-5 | Sodium, total | 86 | UJ | mg/kg | | | FALSE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-28-0 | Thallium, total | 0.55 | UJ | mg/kg | | | FALSE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-36-0 | Antimony, total | 1.8 | = | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-38-2 | Arsenic, total | 7.2 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-39-3 | Barium, total | 71 | J | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-41-7 | Beryllium, total | 0.75 | J | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-43-9 | Cadmium, total | 3.7 | = | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-47-3 | Chromium, total | 14 | J | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-48-4 | Cobalt, total | 12 | = | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-50-8 | Copper, total | 18 | = | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-62-2 | Vanadium, total | 27 | J | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-66-6 | Zinc, total | 5100 | J | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7440-70-2 | Calcium, total | 15000 | = | mg/kg | | | TRUE |
| SD-ED-14 | SD-ED-14 | 7/8/02 | | | SE | 7782-49-2 | Selenium, total | 0.53 | UJ | mg/kg | | | FALSE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7429-90-5 | Aluminum, total | 3900 | = | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7439-89-6 | Iron, total | 11000 | = | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7439-92-1 | Lead, total | 20 | = | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7439-95-4 | Magnesium, total | 3500 | J | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7439-96-5 | Manganese, total | 740 | = | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7439-97-6 | Mercury, total | 0.0046 | U | mg/kg | | | FALSE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-02-0 | Nickel, total | 7.9 | = | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-09-7 | Potassium, total | 440 | J | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-22-4 | Silver, total | 0.066 | U | mg/kg | | | FALSE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-23-5 | Sodium, total | 40 | UJ | mg/kg | | | FALSE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-28-0 | Thallium, total | 0.46 | UJ | mg/kg | | | FALSE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-36-0 | Antimony, total | 0.84 | = | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-38-2 | Arsenic, total | 5.8 | J | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-39-3 | Barium, total | 44 | J | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-41-7 | Beryllium, total | 0.39 | J | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-43-9 | Cadmium, total | 2.3 | = | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-47-3 | Chromium, total | 7.1 | J | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-48-4 | Cobalt, total | 6.6 | = | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-50-8 | Copper, total | 4.8 | = | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-62-2 | Vanadium, total | 16 | J | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-66-6 | Zinc, total | 530 | J | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7440-70-2 | Calcium, total | 6000 | = | mg/kg | | | TRUE |
| SD-ED-15 | SD-ED-15 | 7/8/02 | | | SE | 7782-49-2 | Selenium, total | 0.44 | UJ | mg/kg | | | FALSE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7429-90-5 | Aluminum, total | 6600 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7439-89-6 | Iron, total | 8500 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7439-92-1 | Lead, total | 87 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7439-95-4 | Magnesium, total | 1800 | J | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7439-96-5 | Manganese, total | 390 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7439-97-6 | Mercury, total | 0.15 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-02-0 | Nickel, total | 17 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-09-7 | Potassium, total | 620 | J | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-22-4 | Silver, total | 0.46 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-23-5 | Sodium, total | 26 | UJ | mg/kg | | | FALSE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-28-0 | Thallium, total | 0.75 | UJ | mg/kg | | | FALSE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-36-0 | Antimony, total | 1.9 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-38-2 | Arsenic, total | 3.2 | J | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-39-3 | Barium, total | 63 | J | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-41-7 | Beryllium, total | 0.5 | J | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-43-9 | Cadmium, total | 8.9 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-47-3 | Chromium, total | 10 | J | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-48-4 | Cobalt, total | 6 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-50-8 | Copper, total | 53 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-62-2 | Vanadium, total | 15 | J | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-66-6 | Zinc, total | 8400 | J | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7440-70-2 | Calcium, total | 4100 | = | mg/kg | | | TRUE |
| SD-ED-16 | SD-ED-16 | 7/8/02 | | | SE | 7782-49-2 | Selenium, total | 0.72 | UJ | mg/kg | | | FALSE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7429-90-5 | Aluminum, total | 7700 | = | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7439-89-6 | Iron, total | 7300 | = | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7439-92-1 | Lead, total | 26 | = | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7439-95-4 | Magnesium, total | 1900 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7439-96-5 | Manganese, total | 230 | = | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7439-97-6 | Mercury, total | 0.065 | = | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-02-0 | Nickel, total | 6.7 | = | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-09-7 | Potassium, total | 570 | J | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-22-4 | Silver, total | 0.1 | U | mg/kg | | | FALSE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-23-5 | Sodium, total | 88 | UJ | mg/kg | | | FALSE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-28-0 | Thallium, total | 0.71 | UJ | mg/kg | | | FALSE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-36-0 | Antimony, total | 0.52 | = | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-38-2 | Arsenic, total | 3.4 | J | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-39-3 | Barium, total | 50 | J | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-41-7 | Beryllium, total | 0.36 | J | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-43-9 | Cadmium, total | 1.2 | = | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-47-3 | Chromium, total | 8.1 | J | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-48-4 | Cobalt, total | 2.8 | = | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-50-8 | Copper, total | 9.9 | = | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-62-2 | Vanadium, total | 11 | J | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-66-6 | Zinc, total | 500 | J | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7440-70-2 | Calcium, total | 7200 | = | mg/kg | | | TRUE |
| SD-WD-1 | SD-WD-1 | 7/8/02 | | | SE | 7782-49-2 | Selenium, total | 0.67 | UJ | mg/kg | | | FALSE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7429-90-5 | Aluminum, total | 6200 | = | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7439-89-6 | Iron, total | 9800 | = | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7439-92-1 | Lead, total | 49 | = | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7439-95-4 | Magnesium, total | 2400 | J | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7439-96-5 | Manganese, total | 420 | = | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7439-97-6 | Mercury, total | 0.06 | = | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-02-0 | Nickel, total | 8.9 | = | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-09-7 | Potassium, total | 470 | J | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-22-4 | Silver, total | 0.09 | U | mg/kg | | | FALSE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-23-5 | Sodium, total | 67 | UJ | mg/kg | | | FALSE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-28-0 | Thallium, total | 0.58 | UJ | mg/kg | | | FALSE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-36-0 | Antimony, total | 0.45 | U | mg/kg | | | FALSE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-38-2 | Arsenic, total | 3.9 | J | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-39-3 | Barium, total | 53 | J | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-41-7 | Beryllium, total | 0.43 | J | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-43-9 | Cadmium, total | 1.6 | = | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-47-3 | Chromium, total | 8.9 | J | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-48-4 | Cobalt, total | 4 | = | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-50-8 | Copper, total | 15 | = | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-62-2 | Vanadium, total | 12 | J | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-66-6 | Zinc, total | 1400 | J | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7440-70-2 | Calcium, total | 14000 | = | mg/kg | | | TRUE |
| SD-WD-2 | SD-WD-2 | 7/8/02 | | | SE | 7782-49-2 | Selenium, total | 0.55 | UJ | mg/kg | | | FALSE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7429-90-5 | Aluminum, total | 2400 | = | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7439-89-6 | Iron, total | 6900 | = | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7439-92-1 | Lead, total | 32 | = | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7439-95-4 | Magnesium, total | 1700 | J | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7439-96-5 | Manganese, total | 190 | = | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7439-97-6 | Mercury, total | 0.031 | = | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-02-0 | Nickel, total | 4.7 | = | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-09-7 | Potassium, total | 300 | J | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-22-4 | Silver, total | 0.091 | U | mg/kg | | | FALSE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-23-5 | Sodium, total | 79 | UJ | mg/kg | | | FALSE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-28-0 | Thallium, total | 0.59 | UJ | mg/kg | | | FALSE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-36-0 | Antimony, total | 0.48 | = | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-38-2 | Arsenic, total | 2.5 | J | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-39-3 | Barium, total | 51 | J | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-41-7 | Beryllium, total | 0.31 | J | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-43-9 | Cadmium, total | 0.96 | = | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-47-3 | Chromium, total | 5.9 | J | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-48-4 | Cobalt, total | 1.9 | = | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-50-8 | Copper, total | 27 | = | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-62-2 | Vanadium, total | 7.8 | J | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-66-6 | Zinc, total | 400 | J | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7440-70-2 | Calcium, total | 8200 | = | mg/kg | | | TRUE |
| SD-WD-3 | SD-WD-3 | 7/8/02 | | | SE | 7782-49-2 | Selenium, total | 0.56 | UJ | mg/kg | | | FALSE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7429-90-5 | Aluminum, total | 2300 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7439-89-6 | Iron, total | 6900 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7439-92-1 | Lead, total | 29 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7439-95-4 | Magnesium, total | 2700 | J | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7439-96-5 | Manganese, total | 330 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7439-97-6 | Mercury, total | 0.012 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-02-0 | Nickel, total | 4.2 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-09-7 | Potassium, total | 270 | J | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-22-4 | Silver, total | 0.089 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-23-5 | Sodium, total | 61 | UJ | mg/kg | | | FALSE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-28-0 | Thallium, total | 0.55 | UJ | mg/kg | | | FALSE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-36-0 | Antimony, total | 0.83 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-38-2 | Arsenic, total | 3.2 | J | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-39-3 | Barium, total | 30 | J | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-41-7 | Beryllium, total | 0.27 | J | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-43-9 | Cadmium, total | 0.83 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-47-3 | Chromium, total | 6.7 | J | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-48-4 | Cobalt, total | 3.4 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-50-8 | Copper, total | 5.7 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-62-2 | Vanadium, total | 9.5 | J | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-66-6 | Zinc, total | 520 | J | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7440-70-2 | Calcium, total | 10000 | = | mg/kg | | | TRUE |
| SD-WD-4 | SD-WD-4 | 7/8/02 | | | SE | 7782-49-2 | Selenium, total | 0.52 | UJ | mg/kg | | | FALSE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7429-90-5 | Aluminum, total | 4200 | = | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7439-89-6 | Iron, total | 20000 | = | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7439-92-1 | Lead, total | 290 | J | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7439-95-4 | Magnesium, total | 1000 | = | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7439-96-5 | Manganese, total | 380 | = | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7439-97-6 | Mercury, total | 0.9 | = | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-02-0 | Nickel, total | 12 | = | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-09-7 | Potassium, total | 400 | J | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-22-4 | Silver, total | 0.25 | J | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-23-5 | Sodium, total | 23 | UJ | mg/kg | | | FALSE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-28-0 | Thallium, total | 0.65 | UJ | mg/kg | | | FALSE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-36-0 | Antimony, total | 1.7 | = | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-38-2 | Arsenic, total | 8 | J | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-39-3 | Barium, total | 67 | J | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-41-7 | Beryllium, total | 0.52 | J | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-43-9 | Cadmium, total | 23 | = | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-47-3 | Chromium, total | 10 | J | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-48-4 | Cobalt, total | 4.1 | = | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-50-8 | Copper, total | 51 | = | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-62-2 | Vanadium, total | 13 | J | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-66-6 | Zinc, total | 10000 | J | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7440-70-2 | Calcium, total | 3600 | = | mg/kg | | | TRUE |
| SD-WD-6 | SD-WD-6 | 7/8/02 | | | SE | 7782-49-2 | Selenium, total | 0.62 | UJ | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 100-01-6 | 4-NITROANILINE | 0.39 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 100-02-7 | 4-NITROPHENOL | 0.38 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 100-41-4 | ETHYLBENZENE | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 100-42-5 | STYRENE | 0.0014 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 100-52-7 | BENZALDEHYDE | 0.11 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0012 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0011 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.098 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 105-60-2 | CAPROLACTAM | 0.12 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.21 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.13 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0016 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 106-47-8 | 4-CHLOROANILINE | 0.098 | UJ | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0013 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 107-06-2 | 1,2-DICHLOROETHANE | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0012 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.11 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 108-87-2 | METHYLCYCLOHEXANE | 0.0047 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 108-88-3 | TOLUENE | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 108-90-7 | CHLOROBENZENE | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 108-95-2 | PHENOL | 0.098 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 110-82-7 | CYCLOHEXANE | 0.0045 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.021 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.021 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.021 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.021 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.11 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.12 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 118-74-1 | HEXACHLOROBENZENE | 0.081 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 120-12-7 | ANTHRACENE | 0.11 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 120-83-2 | 2,4-DICHLOROPHENOL | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 121-14-2 | 2,4-DINITROTOLUENE | 0.22 | UJ | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0014 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.021 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.021 | UJ | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0019 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 129-00-0 | PYRENE | 0.19 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 131-11-3 | DIMETHYL PHTHALATE | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 132-64-9 | DIBENZOFURAN | 0.16 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0014 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0016 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 179601-23-1 | Xylenes, -m, -p | 0.0035 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 1912-24-9 | ATRAZINE | 0.098 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.12 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.12 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 205-99-2 | BENZO(B)FLUORANTHENE | 0.2 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 206-44-0 | FLUORANTHENE | 0.19 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 207-08-9 | BENZO(K)FLUORANTHENE | 0.16 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 208-96-8 | ACENAPHTHYLENE | 0.12 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 218-01-9 | CHRYSENE | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 50-32-8 | BENZO(A)PYRENE | 0.12 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 51-28-5 | 2,4-DINITROPHENOL | 0.2 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.021 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.098 | UJ | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0012 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 56-23-5 | CARBON TETRACHLORIDE | 0.0016 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 56-55-3 | BENZO(A)ANTHRACENE | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 591-78-6 | 2-HEXANONE | 0.0019 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 606-20-2 | 2,6-DINITROTOLUENE | 0.13 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.11 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 67-66-3 | CHLOROFORM | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 67-72-1 | HEXACHLOROETHANE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.15 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 71-43-2 | BENZENE | 0.0016 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7429-90-5 | Aluminum, total | 6400 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7439-89-6 | Iron, total | 45000 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7439-92-1 | Lead, total | 2700 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7439-95-4 | Magnesium, total | 1200 | J | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7439-96-5 | Manganese, total | 110 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7439-97-6 | Mercury, total | 0.16 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-02-0 | Nickel, total | 27 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-09-7 | Potassium, total | 610 | J | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-22-4 | Silver, total | 2.4 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-23-5 | Sodium, total | 89 | UJ | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-28-0 | Thallium, total | 0.62 | UJ | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-36-0 | Antimony, total | 12 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-38-2 | Arsenic, total | 25 | J | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-39-3 | Barium, total | 190 | J | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-41-7 | Beryllium, total | 0.69 | J | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-43-9 | Cadmium, total | 96 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-47-3 | Chromium, total | 22 | J | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-48-4 | Cobalt, total | 6.1 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-50-8 | Copper, total | 320 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-62-2 | Vanadium, total | 23 | J | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-66-6 | Zinc, total | 23000 | J | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7440-70-2 | Calcium, total | 2600 | = | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 74-83-9 | BROMOMETHANE | 0.0021 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 74-87-3 | CHLOROMETHANE | 0.0013 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 75-00-3 | CHLOROETHANE | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 75-01-4 | VINYL CHLORIDE | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 75-09-2 | METHYLENE CHLORIDE | 0.0016 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 75-15-0 | CARBON DISULFIDE | 0.0021 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 75-25-2 | BROMOFORM | 0.0013 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 75-27-4 | BROMODICHLOROMETHANE | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 75-34-3 | 1,1-DICHLOROETHANE | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 75-35-4 | 1,1-DICHLOROETHENE | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0019 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0012 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.098 | UJ | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 7782-49-2 | Selenium, total | 1.4 | J | mg/kg | | | TRUE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 78-59-1 | ISOPHORONE | 0.098 | UJ | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 78-87-5 | 1,2-DICHLOROPROPANE | 0.0011 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0013 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 79-20-9 | METHYL ACETATE | 0.0048 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 83-32-9 | ACENAPHTHENE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 84-66-2 | DIETHYL PHTHALATE | 0.16 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 85-01-8 | PHENANTHRENE | 0.11 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 86-73-7 | FLUORENE | 0.16 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 86-74-8 | CARBAZOLE | 0.25 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 87-68-3 | HEXACHLOROBUTADIENE | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 87-86-5 | PENTACHLOROPHENOL | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.098 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 88-74-4 | 2-NITROANILINE | 0.21 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 88-75-5 | 2-NITROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 91-20-3 | NAPHTHALENE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 91-57-6 | 2-METHYLNAPHTHALENE | 0.13 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 91-58-7 | 2-CHLORONAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.21 | UJ | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 92-52-4 | BIPHENYL (DIPHENYL) | 0.13 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0021 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 95-57-8 | 2-CHLOROPHENOL | 0.13 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0014 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 98-86-2 | ACETOPHENONE | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 98-95-3 | NITROBENZENE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-7 | SD-WD-7 | 7/8/02 | | | SE | 99-09-2 | 3-NITROANILINE | 0.081 | U | mg/kg | | | FALSE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7429-90-5 | Aluminum, total | 19000 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7439-89-6 | Iron, total | 20000 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7439-92-1 | Lead, total | 450 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7439-95-4 | Magnesium, total | 2300 | J | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7439-96-5 | Manganese, total | 360 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7439-97-6 | Mercury, total | 1.4 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-02-0 | Nickel, total | 26 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-09-7 | Potassium, total | 1400 | J | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-22-4 | Silver, total | 0.99 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-23-5 | Sodium, total | 27 | UJ | mg/kg | | | FALSE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-28-0 | Thallium, total | 0.77 | UJ | mg/kg | | | FALSE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-36-0 | Antimony, total | 2.8 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-38-2 | Arsenic, total | 7 | J | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-39-3 | Barium, total | 99 | J | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-41-7 | Beryllium, total | 1.1 | J | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-43-9 | Cadmium, total | 17 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-47-3 | Chromium, total | 26 | J | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-48-4 | Cobalt, total | 14 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-50-8 | Copper, total | 97 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-62-2 | Vanadium, total | 30 | J | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-66-6 | Zinc, total | 7600 | J | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7440-70-2 | Calcium, total | 2900 | = | mg/kg | | | TRUE |
| SD-WD-8 | SD-WD-8 | 7/9/02 | | | SE | 7782-49-2 | Selenium, total | 0.73 | UJ | mg/kg | | | FALSE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 319 | = | mg/kg | | 1 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 14 | = | mg/kg | 0.5 | 0.5 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 336 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 1.2 | = | mg/kg | 0.3 | 0.3 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.006 | UJ | mg/kg | 0.006 | 0.006 | FALSE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 11 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 8.7 | J | mg/kg | | 0.5 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 0.44 | J | mg/kg | 0.03 | 0.03 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 184 | J | mg/kg | | 2.5 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 3.2 | J | mg/kg | 0.12 | 0.12 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 4170 | J | mg/kg | | 6 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 300 | J | mg/kg | 10 | 10 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 79 | = | mg/kg | 20 | 20 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-2 | 12/1/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 3000 | J | mg/kg | 880 | 3100 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 297 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 220 | = | mg/kg | 6 | 6 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 73.6 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 18 | = | mg/kg | 3 | 3 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.029 | = | mg/kg | 0.007 | 0.007 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 5.2 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 15.9 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 17 | = | mg/kg | 0.3 | 0.3 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 204 | J+ | mg/kg | | 2.5 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 80 | J | mg/kg | 1.4 | 1.4 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 24000 | J | mg/kg | | 6 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 27000 | = | mg/kg | 1200 | 1200 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 110 | = | mg/kg | 9.5 | 9.5 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-2 | 12/3/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 18000 | = | mg/kg | 870 | 3000 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 66.8 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 110 | = | mg/kg | 1.3 | 1.3 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 36.1 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 3.2 | = | mg/kg | 0.7 | 0.7 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.007 | U | mg/kg | 0.007 | 0.007 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 2.2 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 57.8 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 57 | = | mg/kg | 0.07 | 0.07 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 18.1 | J | mg/kg | | 2.5 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 19 | J | mg/kg | 0.3 | 0.3 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 2380 | J | mg/kg | | 6 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 2800 | = | mg/kg | 200 | 200 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 230 | = | mg/kg | 29 | 29 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-2 | 12/3/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 36000 | = | mg/kg | 750 | 2600 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2 | 12/4/10 | 0 | 0.5 | SO/SE | 7439-92-1 | Lead, total | 917 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2 | 12/4/10 | 0 | 0.5 | SO/SE | 7439-92-1S | Lead, SEM | 370 | J | mg/kg | 5 | 5 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2 | 12/4/10 | 0 | 0.5 | SO/SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2 | 12/4/10 | 0 | 0.5 | SO/SE | 7440-02-0S | Nickel, SEM | 150 | = | mg/kg | 3 | 3 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2 | 12/4/10 | 0 | 0.5 | SO/SE | 7440-43-9 | Cadmium, total | 46.3 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2 | 12/4/10 | 0 | 0.5 | SO/SE | 7440-43-9S | Cadmium, SEM | 30 | = | mg/kg | 0.3 | 0.3 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2 | 12/4/10 | 0 | 0.5 | SO/SE | 7440-50-8S | Copper, SEM | 4.7 | J | mg/kg | 1.2 | 1.2 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2 | 12/4/10 | 0 | 0.5 | SO/SE | AVS | Acid Volatile Sulfide | 230 | J | mg/kg | 46 | 46 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2 | 12/4/10 | 0 | 0.5 | SO/SE | TOC | Total organic carbon (TOC) | 91000 | = | mg/kg | 1500 | 5200 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2FD | 12/4/10 | 0 | 0.5 | SO/SE | 7439-96-5 | Manganese, total | 937 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2FD | 12/4/10 | 0 | 0.5 | SO/SE | 7440-22-4S | Silver, SEM | 0.14 | = | mg/kg | 0.012 | 0.012 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2FD | 12/4/10 | 0 | 0.5 | SO/SE | 7440-38-2 | Arsenic, total | 14.7 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2FD | 12/4/10 | 0 | 0.5 | SO/SE | 7440-50-8 | Copper, total | 1090 | J+ | mg/kg | | 2.5 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2FD | 12/4/10 | 0 | 0.5 | SO/SE | 7440-66-6 | Zinc, total | 276000 | J | mg/kg | | 6 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-2FD | 12/4/10 | 0 | 0.5 | SO/SE | 7440-66-6S | Zinc, SEM | 240000 | = | mg/kg | 10000 | 10000 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2 | 12/5/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 45.7 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2 | 12/5/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 77 | J | mg/kg | 1 | 1 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2 | 12/5/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 441 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2 | 12/5/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2 | 12/5/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 25 | J | mg/kg | 0.4 | 0.4 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2 | 12/5/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 3.8 | J | mg/kg | 0.04 | 0.04 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2 | 12/5/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 51 | J | mg/kg | 0.2 | 0.2 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2 | 12/5/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 19000 | J | mg/kg | 700 | 700 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2 | 12/5/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 1400 | J | mg/kg | 140 | 140 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2FD | 12/5/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.007 | U | mg/kg | 0.007 | 0.007 | FALSE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2FD | 12/5/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 9.1 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2FD | 12/5/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 2.8 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2FD | 12/5/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 87.7 | J | mg/kg | | 2.5 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2FD | 12/5/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 12900 | J | mg/kg | | 6 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-2FD | 12/5/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 860 | U | mg/kg | 860 | 3000 | FALSE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 138 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 12 | = | mg/kg | 1 | 1 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 239 | J+ | mg/kg | | 1.5 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 2.1 | = | mg/kg | 0.5 | 0.5 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.006 | U | mg/kg | 0.006 | 0.006 | FALSE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 4.9 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 9 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 0.58 | = | mg/kg | 0.05 | 0.05 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 90.8 | J | mg/kg | | 2.5 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 4.6 | J | mg/kg | 0.2 | 0.2 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 18800 | J | mg/kg | | 6 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 1500 | = | mg/kg | 100 | 100 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 97 | J | mg/kg | 19 | 19 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-2 | 12/5/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 810 | U | mg/kg | 810 | 2800 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 13.4 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 7.9 | = | mg/kg | 1 | 1 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 134 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 0.99 | = | mg/kg | 0.5 | 0.5 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.007 | U | mg/kg | 0.007 | 0.007 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 3.4 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 0.55 | U | mg/kg | | 0.5 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 0.12 | = | mg/kg | 0.05 | 0.05 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 12.5 | J | mg/kg | | 2.5 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 2.8 | J | mg/kg | 0.3 | 0.3 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 241 | J | mg/kg | | 6 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 280 | = | mg/kg | 30 | 30 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 89 | J | mg/kg | 21 | 21 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-2 | 12/5/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 780 | U | mg/kg | 780 | 2700 | FALSE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 50.8 | = | mg/kg | | 1 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 19 | = | mg/kg | 0.6 | 0.6 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 672 | = | mg/kg | | 1.5 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 3.6 | = | mg/kg | 0.3 | 0.3 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.007 | U | mg/kg | 0.007 | 0.007 | FALSE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 10.2 | J | mg/kg | | 1 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 4 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 1.2 | = | mg/kg | 0.03 | 0.03 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 29.2 | = | mg/kg | | 2.5 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 9.1 | J | mg/kg | 0.14 | 0.14 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 4150 | J | mg/kg | | 6 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 1500 | = | mg/kg | 100 | 100 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 31 | J | mg/kg | 30 | 30 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-2 | 12/6/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 1000 | U | mg/kg | 1000 | 3600 | FALSE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 519 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 280 | = | mg/kg | 2 | 2 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 1530 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 3.6 | = | mg/kg | 1.2 | 1.2 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.006 | U | mg/kg | 0.006 | 0.006 | FALSE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 17 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 11.6 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 7.6 | = | mg/kg | 0.12 | 0.12 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 78.3 | J | mg/kg | | 2.5 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 28 | J | mg/kg | 0.6 | 0.6 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 3690 | J | mg/kg | | 6 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 3000 | = | mg/kg | 200 | 200 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 220 | J | mg/kg | 19 | 19 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-2 | 12/1/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 770 | U | mg/kg | 770 | 2700 | FALSE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 222 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 180 | = | mg/kg | 0.5 | 0.5 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 384 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 0.9 | = | mg/kg | 0.3 | 0.3 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.015 | = | mg/kg | 0.006 | 0.006 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 7.5 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 2.7 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 7 | = | mg/kg | 0.03 | 0.03 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 54.4 | J | mg/kg | | 2.5 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 11 | J | mg/kg | 0.12 | 0.12 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 1930 | J | mg/kg | | 6 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 630 | = | mg/kg | 50 | 50 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 4.1 | J | mg/kg | 3.3 | 3.3 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-2 | 12/2/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 780 | U | mg/kg | 780 | 2700 | FALSE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7439-92-1 | Lead, total | 243 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7439-92-1S | Lead, SEM | 210 | = | mg/kg | 1 | 1 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7439-96-5 | Manganese, total | 104 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7440-02-0S | Nickel, SEM | 1.4 | = | mg/kg | 0.5 | 0.5 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7440-22-4S | Silver, SEM | 0.054 | = | mg/kg | 0.006 | 0.006 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7440-38-2 | Arsenic, total | 4.4 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7440-43-9 | Cadmium, total | 5.6 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7440-43-9S | Cadmium, SEM | 4.4 | = | mg/kg | 0.05 | 0.05 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7440-50-8 | Copper, total | 23.6 | J | mg/kg | | 2.5 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7440-50-8S | Copper, SEM | 28 | J | mg/kg | 0.2 | 0.2 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7440-66-6 | Zinc, total | 819 | J | mg/kg | | 6 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | 7440-66-6S | Zinc, SEM | 1600 | = | mg/kg | 100 | 100 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | AVS | Acid Volatile Sulfide | 34 | J | mg/kg | 19 | 19 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-2 | 12/2/10 | 0 | 0.5 | SO/SE | TOC | Total organic carbon (TOC) | 750 | U | mg/kg | 750 | 2600 | FALSE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 1070 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 900 | = | mg/kg | 5 | 5 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 715 | J | mg/kg | | 1.5 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 14 | = | mg/kg | 3 | 3 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.022 | = | mg/kg | 0.006 | 0.006 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 13.4 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 34.7 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 58 | = | mg/kg | 0.3 | 0.3 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 165 | J+ | mg/kg | | 2.5 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 130 | J | mg/kg | 1.3 | 1.3 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 9970 | J | mg/kg | | 6 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 11000 | = | mg/kg | 500 | 500 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 1.7 | J | mg/kg | 1.3 | 1.3 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-2 | 12/4/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 40000 | = | mg/kg | 760 | 2700 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 703 | = | mg/kg | | 1 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 820 | = | mg/kg | 10 | 10 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 453 | = | mg/kg | | 1.5 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 6.8 | = | mg/kg | 5 | 5 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.034 | = | mg/kg | 0.007 | 0.007 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 11.7 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 7.9 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 11 | = | mg/kg | 0.5 | 0.5 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 186 | J+ | mg/kg | | 2.5 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 100 | J | mg/kg | 3 | 3 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 5100 | = | mg/kg | | 6 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 7200 | = | mg/kg | 300 | 300 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 140 | = | mg/kg | 21 | 21 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-2 | 12/7/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 790 | U | mg/kg | 790 | 2700 | FALSE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7439-92-1 | Lead, total | 229 | = | mg/kg | | 1 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7439-92-1S | Lead, SEM | 180 | = | mg/kg | 2 | 2 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7439-96-5 | Manganese, total | 326 | = | mg/kg | | 1.5 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7439-97-6S | Mercury, SEM | 2 | U | mg/kg | 2 | 2 | FALSE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7440-02-0S | Nickel, SEM | 6.3 | = | mg/kg | 1.1 | 1.1 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7440-22-4S | Silver, SEM | 0.013 | = | mg/kg | 0.006 | 0.006 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7440-38-2 | Arsenic, total | 9.4 | J | mg/kg | | 1 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7440-43-9 | Cadmium, total | 3.4 | = | mg/kg | | 0.5 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7440-43-9S | Cadmium, SEM | 4.7 | = | mg/kg | 0.11 | 0.11 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7440-50-8 | Copper, total | 70.8 | = | mg/kg | | 2.5 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7440-50-8S | Copper, SEM | 39 | J | mg/kg | 0.6 | 0.6 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7440-66-6 | Zinc, total | 3570 | = | mg/kg | | 6 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | 7440-66-6S | Zinc, SEM | 3400 | = | mg/kg | 200 | 200 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | AVS | Acid Volatile Sulfide | 28 | J | mg/kg | 12 | 12 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-2 | 12/7/10 | 0 | 0.5 | SE | TOC | Total organic carbon (TOC) | 810 | U | mg/kg | 810 | 2800 | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 100-01-6 | 4-NITROANILINE | 0.31 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 100-02-7 | 4-NITROPHENOL | 0.3 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 100-41-4 | ETHYLBENZENE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 100-42-5 | STYRENE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 100-52-7 | BENZALDEHYDE | 0.09 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.001 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.00091 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.077 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 105-60-2 | CAPROLACTAM | 0.096 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.17 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.1 | UJ | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 106-47-8 | 4-CHLOROANILINE | 0.077 | UJ | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 107-06-2 | 1,2-DICHLOROETHANE | 0.0013 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.001 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.083 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 108-87-2 | METHYLCYCLOHEXANE | 0.0039 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 108-88-3 | TOLUENE | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 108-90-7 | CHLOROBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 108-95-2 | PHENOL | 0.077 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 110-82-7 | CYCLOHEXANE | 0.0038 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.09 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.096 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 118-74-1 | HEXACHLOROBENZENE | 0.064 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 120-12-7 | ANTHRACENE | 0.083 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0013 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 120-83-2 | 2,4-DICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 121-14-2 | 2,4-DINITROTOLUENE | 0.17 | UJ | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.017 | UJ | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0016 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 129-00-0 | PYRENE | 0.15 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 131-11-3 | DIMETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 132-64-9 | DIBENZOFURAN | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0013 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 179601-23-1 | Xylenes, -m, -p | 0.0029 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 1912-24-9 | ATRAZINE | 0.077 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.096 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.096 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 205-99-2 | BENZO(B)FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 206-44-0 | FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 207-08-9 | BENZO(K)FLUORANTHENE | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 208-96-8 | ACENAPHTHYLENE | 0.096 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 218-01-9 | CHRYSENE | 0.13 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 50-32-8 | BENZO(A)PYRENE | 0.096 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 51-28-5 | 2,4-DINITROPHENOL | 0.16 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.077 | UJ | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 541-73-1 | 1,3-DICHLOROBENZENE | 0.001 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 56-23-5 | CARBON TETRACHLORIDE | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 56-55-3 | BENZO(A)ANTHRACENE | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 591-78-6 | 2-HEXANONE | 0.0016 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 606-20-2 | 2,6-DINITROTOLUENE | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.083 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 67-66-3 | CHLOROFORM | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 67-72-1 | HEXACHLOROETHANE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 71-43-2 | BENZENE | 0.0013 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7429-90-5 | Aluminum, total | 6100 | = | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7439-89-6 | Iron, total | 5100 | = | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7439-92-1 | Lead, total | 25 | J | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7439-95-4 | Magnesium, total | 760 | J | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7439-96-5 | Manganese, total | 70 | = | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7439-97-6 | Mercury, total | 0.019 | = | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-02-0 | Nickel, total | 4.6 | = | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-09-7 | Potassium, total | 660 | J | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-22-4 | Silver, total | 0.079 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-23-5 | Sodium, total | 92 | UJ | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-28-0 | Thallium, total | 0.56 | UJ | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-36-0 | Antimony, total | 0.62 | = | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-38-2 | Arsenic, total | 2.4 | J | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-39-3 | Barium, total | 82 | J | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-41-7 | Beryllium, total | 0.36 | J | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-43-9 | Cadmium, total | 2.4 | = | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-47-3 | Chromium, total | 11 | J | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-48-4 | Cobalt, total | 1.2 | = | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-50-8 | Copper, total | 8.9 | = | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-62-2 | Vanadium, total | 13 | J | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-66-6 | Zinc, total | 830 | J | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7440-70-2 | Calcium, total | 1300 | = | mg/kg | | | TRUE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 74-83-9 | BROMOMETHANE | 0.0017 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 74-87-3 | CHLOROMETHANE | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 75-00-3 | CHLOROETHANE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 75-01-4 | VINYL CHLORIDE | 0.0013 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 75-09-2 | METHYLENE CHLORIDE | 0.0013 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 75-15-0 | CARBON DISULFIDE | 0.0017 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 75-25-2 | BROMOFORM | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 75-27-4 | BROMODICHLOROMETHANE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 75-34-3 | 1,1-DICHLOROETHANE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 75-35-4 | 1,1-DICHLOROETHENE | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.001 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.077 | UJ | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 7782-49-2 | Selenium, total | 0.53 | UJ | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 78-59-1 | ISOPHORONE | 0.077 | UJ | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 78-87-5 | 1,2-DICHLOROPROPANE | 0.00094 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 79-20-9 | METHYL ACETATE | 0.004 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0013 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 83-32-9 | ACENAPHTHENE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 84-66-2 | DIETHYL PHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 85-01-8 | PHENANTHRENE | 0.083 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 86-73-7 | FLUORENE | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 86-74-8 | CARBAZOLE | 0.2 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 87-68-3 | HEXACHLOROBUTADIENE | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 87-86-5 | PENTACHLOROPHENOL | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.077 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 88-74-4 | 2-NITROANILINE | 0.17 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 88-75-5 | 2-NITROPHENOL | 0.096 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 91-20-3 | NAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 91-57-6 | 2-METHYLNAPHTHALENE | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 91-58-7 | 2-CHLORONAPHTHALENE | 0.09 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.17 | UJ | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 92-52-4 | BIPHENYL (DIPHENYL) | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0017 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 95-57-8 | 2-CHLOROPHENOL | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 98-86-2 | ACETOPHENONE | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 98-95-3 | NITROBENZENE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-12 | SD-ED-12 | 7/9/02 | | | SE | 99-09-2 | 3-NITROANILINE | 0.064 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 100-01-6 | 4-NITROANILINE | 0.32 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 100-02-7 | 4-NITROPHENOL | 0.32 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 100-41-4 | ETHYLBENZENE | 0.001 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 100-42-5 | STYRENE | 0.00096 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 100-52-7 | BENZALDEHYDE | 0.094 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.00084 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.00076 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.08 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 105-60-2 | CAPROLACTAM | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.17 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 106-47-8 | 4-CHLOROANILINE | 0.08 | UJ | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.00089 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 107-06-2 | 1,2-DICHLOROETHANE | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.00085 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.087 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 108-87-2 | METHYLCYCLOHEXANE | 0.0032 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 108-88-3 | TOLUENE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 108-90-7 | CHLOROBENZENE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 108-95-2 | PHENOL | 0.08 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 110-82-7 | CYCLOHEXANE | 0.0031 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.094 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.14 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 118-74-1 | HEXACHLOROBENZENE | 0.067 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 120-12-7 | ANTHRACENE | 0.087 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 120-83-2 | 2,4-DICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 121-14-2 | 2,4-DINITROTOLUENE | 0.18 | UJ | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 124-48-1 | DIBROMOCHLOROMETHANE | 0.00095 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.017 | UJ | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0013 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 129-00-0 | PYRENE | 0.15 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 131-11-3 | DIMETHYL PHTHALATE | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 132-64-9 | DIBENZOFURAN | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.001 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 179601-23-1 | Xylenes, -m, -p | 0.0024 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 1912-24-9 | ATRAZINE | 0.08 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 205-99-2 | BENZO(B)FLUORANTHENE | 0.16 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 206-44-0 | FLUORANTHENE | 0.15 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 207-08-9 | BENZO(K)FLUORANTHENE | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 208-96-8 | ACENAPHTHYLENE | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 218-01-9 | CHRYSENE | 0.14 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 50-32-8 | BENZO(A)PYRENE | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 51-28-5 | 2,4-DINITROPHENOL | 0.17 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.14 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.017 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.08 | UJ | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 541-73-1 | 1,3-DICHLOROBENZENE | 0.00085 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 56-23-5 | CARBON TETRACHLORIDE | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 56-55-3 | BENZO(A)ANTHRACENE | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 591-78-6 | 2-HEXANONE | 0.0013 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.14 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 606-20-2 | 2,6-DINITROTOLUENE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.087 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 67-66-3 | CHLOROFORM | 0.001 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 67-72-1 | HEXACHLOROETHANE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 71-43-2 | BENZENE | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.00097 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7429-90-5 | Aluminum, total | 4900 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7439-89-6 | Iron, total | 15000 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7439-92-1 | Lead, total | 84 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7439-95-4 | Magnesium, total | 5400 | J | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7439-96-5 | Manganese, total | 340 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7439-97-6 | Mercury, total | 0.024 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-02-0 | Nickel, total | 15 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-09-7 | Potassium, total | 530 | J | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-22-4 | Silver, total | 0.39 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-23-5 | Sodium, total | 21 | UJ | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-28-0 | Thallium, total | 0.52 | UJ | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-36-0 | Antimony, total | 2.3 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-38-2 | Arsenic, total | 6.1 | J | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-39-3 | Barium, total | 59 | J | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-41-7 | Beryllium, total | 0.43 | J | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-43-9 | Cadmium, total | 13 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-47-3 | Chromium, total | 8.5 | J | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-48-4 | Cobalt, total | 7.3 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-50-8 | Copper, total | 52 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-62-2 | Vanadium, total | 16 | J | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-66-6 | Zinc, total | 11000 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7440-70-2 | Calcium, total | 23000 | = | mg/kg | | | TRUE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 74-83-9 | BROMOMETHANE | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 74-87-3 | CHLOROMETHANE | 0.00094 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 75-00-3 | CHLOROETHANE | 0.001 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 75-01-4 | VINYL CHLORIDE | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 75-09-2 | METHYLENE CHLORIDE | 0.0011 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 75-15-0 | CARBON DISULFIDE | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 75-25-2 | BROMOFORM | 0.00093 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 75-27-4 | BROMODICHLOROMETHANE | 0.001 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 75-34-3 | 1,1-DICHLOROETHANE | 0.001 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 75-35-4 | 1,1-DICHLOROETHENE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0013 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.00085 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.08 | UJ | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 7782-49-2 | Selenium, total | 0.5 | UJ | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 78-59-1 | ISOPHORONE | 0.08 | UJ | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 78-87-5 | 1,2-DICHLOROPROPANE | 0.00078 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.00088 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 79-20-9 | METHYL ACETATE | 0.0034 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.001 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 83-32-9 | ACENAPHTHENE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 84-66-2 | DIETHYL PHTHALATE | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 85-01-8 | PHENANTHRENE | 0.087 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 86-73-7 | FLUORENE | 0.13 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 86-74-8 | CARBAZOLE | 0.21 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 87-68-3 | HEXACHLOROBUTADIENE | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 87-86-5 | PENTACHLOROPHENOL | 0.14 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.08 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 88-74-4 | 2-NITROANILINE | 0.17 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 88-75-5 | 2-NITROPHENOL | 0.1 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 91-20-3 | NAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 91-57-6 | 2-METHYLNAPHTHALENE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 91-58-7 | 2-CHLORONAPHTHALENE | 0.094 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.17 | UJ | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 92-52-4 | BIPHENYL (DIPHENYL) | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0014 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 95-57-8 | 2-CHLOROPHENOL | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0012 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.00095 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 98-86-2 | ACETOPHENONE | 0.12 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 98-95-3 | NITROBENZENE | 0.11 | U | mg/kg | | | FALSE |
| SD-ED-13 | SD-ED-13 | 7/9/02 | | | SE | 99-09-2 | 3-NITROANILINE | 0.067 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 100-41-4 | ETHYLBENZENE | 0.0021 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 100-42-5 | STYRENE | 0.0022 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0035 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0027 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0027 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0038 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 107-06-2 | 1,2-DICHLOROETHANE | 0.0029 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0067 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 108-87-2 | METHYLCYCLOHEXANE | 0.0032 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 108-88-3 | TOLUENE | 0.0038 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 108-90-7 | CHLOROBENZENE | 0.0026 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 110-82-7 | CYCLOHEXANE | 0.0032 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0035 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0038 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0048 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0038 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0035 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0035 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 179601-23-1 | Xylenes, -m, -p | 0.0042 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 541-73-1 | 1,3-DICHLOROBENZENE | 0.002 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 56-23-5 | CARBON TETRACHLORIDE | 0.0035 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 591-78-6 | 2-HEXANONE | 0.0083 | UJ | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 67-64-1 | ACETONE | 0.0051 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 67-66-3 | CHLOROFORM | 0.0035 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 71-43-2 | BENZENE | 0.0022 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0032 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 74-83-9 | BROMOMETHANE | 0.0093 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 74-87-3 | CHLOROMETHANE | 0.0051 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 75-00-3 | CHLOROETHANE | 0.0061 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 75-01-4 | VINYL CHLORIDE | 0.0051 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 75-09-2 | METHYLENE CHLORIDE | 0.0045 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 75-15-0 | CARBON DISULFIDE | 0.0054 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 75-25-2 | BROMOFORM | 0.0042 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 75-27-4 | BROMODICHLOROMETHANE | 0.0035 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 75-34-3 | 1,1-DICHLOROETHANE | 0.0045 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 75-35-4 | 1,1-DICHLOROETHENE | 0.0045 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0032 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0038 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0054 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 78-87-5 | 1,2-DICHLOROPROPANE | 0.0032 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 0.014 | UJ | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0029 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.013 | J | mg/kg | | | TRUE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 79-20-9 | METHYL ACETATE | 0.0073 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0031 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0021 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0025 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0057 | U | mg/kg | | | FALSE |
| SD-WD-20 | SD-WD-20 | 11/24/03 | | | SE | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0019 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 100-41-4 | ETHYLBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 100-42-5 | STYRENE | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0024 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0018 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0018 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0026 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 107-06-2 | 1,2-DICHLOROETHANE | 0.002 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0046 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 108-87-2 | METHYLCYCLOHEXANE | 0.0022 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 108-88-3 | TOLUENE | 0.0026 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 108-90-7 | CHLOROBENZENE | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 110-82-7 | CYCLOHEXANE | 0.0022 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.0024 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0026 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0033 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.0026 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.0024 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0024 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 179601-23-1 | Xylenes, -m, -p | 0.0028 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0014 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 56-23-5 | CARBON TETRACHLORIDE | 0.0024 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 591-78-6 | 2-HEXANONE | 0.0056 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 67-64-1 | ACETONE | 0.0035 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 67-66-3 | CHLOROFORM | 0.0024 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 71-43-2 | BENZENE | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0022 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 74-83-9 | BROMOMETHANE | 0.0063 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 74-87-3 | CHLOROMETHANE | 0.0035 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 75-00-3 | CHLOROETHANE | 0.0041 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 75-01-4 | VINYL CHLORIDE | 0.0035 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 75-09-2 | METHYLENE CHLORIDE | 0.003 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 75-15-0 | CARBON DISULFIDE | 0.0037 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 75-25-2 | BROMOFORM | 0.0028 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 75-27-4 | BROMODICHLOROMETHANE | 0.0024 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 75-34-3 | 1,1-DICHLOROETHANE | 0.003 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 75-35-4 | 1,1-DICHLOROETHENE | 0.003 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0022 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0026 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0037 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 78-87-5 | 1,2-DICHLOROPROPANE | 0.0022 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 0.0098 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.002 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 79-20-9 | METHYL ACETATE | 0.005 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.0021 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0014 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0039 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21 | 11/24/03 | | | SE | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0013 | U | mg/kg | | | FALSE |
| SD-WD-21 | SD-WD-21D | 11/24/03 | | | SE | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0085 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 100-41-4 | ETHYLBENZENE | 0.0019 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 100-52-7 | BENZALDEHYDE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.0014 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 0.12 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 105-67-9 | 2,4-DIMETHYLPHENOL | 0.25 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 106-46-7 | 1,4-DICHLOROBENZENE | 0.0021 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 106-47-8 | 4-CHLOROANILINE | 0.12 | UJ | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 107-06-2 | 1,2-DICHLOROETHANE | 0.002 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 0.13 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 108-87-2 | METHYLCYCLOHEXANE | 0.0061 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 108-90-7 | CHLOROBENZENE | 0.0022 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 108-95-2 | PHENOL | 0.12 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 110-82-7 | CYCLOHEXANE | 0.0059 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 117-84-0 | DI-N-OCTYLPHTHALATE | 0.2 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 118-74-1 | HEXACHLOROBENZENE | 0.097 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 120-12-7 | ANTHRACENE | 0.13 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 121-14-2 | 2,4-DINITROTOLUENE | 0.26 | UJ | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 129-00-0 | PYRENE | 0.22 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 132-64-9 | DIBENZOFURAN | 0.19 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 179601-23-1 | Xylenes, -m, -p | 0.0045 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 1912-24-9 | ATRAZINE | 0.12 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 205-99-2 | BENZO(B)FLUORANTHENE | 0.23 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 206-44-0 | FLUORANTHENE | 0.22 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 207-08-9 | BENZO(K)FLUORANTHENE | 0.19 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 218-01-9 | CHRYSENE | 0.2 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 51-28-5 | 2,4-DINITROPHENOL | 0.24 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 0.2 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 0.12 | UJ | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 56-23-5 | CARBON TETRACHLORIDE | 0.0021 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 0.2 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 0.13 | U | mg/kg | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 67-66-3 | CHLOROFORM | 0.0019 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 71-43-2 | BENZENE | 0.002 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.0018 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 7439-89-6 | Iron, total | 29000 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 7439-96-5 | Manganese, total | 230 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 7440-02-0 | Nickel, total | 29 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 7440-38-2 | Arsenic, total | 7.9 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 7440-39-3 | Barium, total | 76 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 7440-47-3 | Chromium, total | 17 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 7440-48-4 | Cobalt, total | 11 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 7440-62-2 | Vanadium, total | 34 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 7440-66-6 | Zinc, total | 12000 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 7440-70-2 | Calcium, total | 2400 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 74-83-9 | BROMOMETHANE | 0.0027 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 75-09-2 | METHYLENE CHLORIDE | 0.002 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 75-15-0 | CARBON DISULFIDE | 0.0027 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 75-25-2 | BROMOFORM | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 75-27-4 | BROMODICHLOROMETHANE | 0.0019 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 75-34-3 | 1,1-DICHLOROETHANE | 0.0019 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.0025 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 0.12 | UJ | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 78-59-1 | ISOPHORONE | 0.12 | UJ | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.0016 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 79-20-9 | METHYL ACETATE | 0.0063 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 84-66-2 | DIETHYL PHTHALATE | 0.19 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 85-01-8 | PHENANTHRENE | 0.13 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 86-73-7 | FLUORENE | 0.19 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 86-74-8 | CARBAZOLE | 0.3 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 87-86-5 | PENTACHLOROPHENOL | 0.2 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 0.12 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 88-74-4 | 2-NITROANILINE | 0.25 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 91-58-7 | 2-CHLORONAPHTHALENE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 0.25 | UJ | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.0027 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 95-50-1 | 1,2-DICHLOROBENZENE | 0.0022 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9 | 7/9/02 | | | SE | 99-09-2 | 3-NITROANILINE | 0.097 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 100-01-6 | 4-NITROANILINE | 0.46 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 100-02-7 | 4-NITROPHENOL | 0.45 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 100-42-5 | STYRENE | 0.0018 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.0016 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 105-60-2 | CAPROLACTAM | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.0017 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.0016 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 108-88-3 | TOLUENE | 0.0022 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.025 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.025 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.025 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.025 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.002 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 120-83-2 | 2,4-DICHLOROPHENOL | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 124-48-1 | DIBROMOCHLOROMETHANE | 0.0018 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.025 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.025 | UJ | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.0025 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 131-11-3 | DIMETHYL PHTHALATE | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.086 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.02 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.0021 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 191-24-2 | BENZO(G,H,I)PERYLENE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 208-96-8 | ACENAPHTHYLENE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 50-32-8 | BENZO(A)PYRENE | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.025 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 541-73-1 | 1,3-DICHLOROBENZENE | 0.0016 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 56-55-3 | BENZO(A)ANTHRACENE | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 591-78-6 | 2-HEXANONE | 0.0025 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 606-20-2 | 2,6-DINITROTOLUENE | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 67-64-1 | ACETONE | 0.049 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 67-72-1 | HEXACHLOROETHANE | 0.16 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7429-90-5 | Aluminum, total | 7600 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7439-92-1 | Lead, total | 240 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7439-95-4 | Magnesium, total | 1000 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7439-97-6 | Mercury, total | 1.7 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7440-09-7 | Potassium, total | 730 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7440-22-4 | Silver, total | 0.38 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7440-23-5 | Sodium, total | 26 | UJ | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7440-28-0 | Thallium, total | 0.75 | UJ | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7440-36-0 | Antimony, total | 2.1 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7440-41-7 | Beryllium, total | 0.67 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7440-43-9 | Cadmium, total | 550 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7440-50-8 | Copper, total | 65 | = | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 74-87-3 | CHLOROMETHANE | 0.0018 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 75-00-3 | CHLOROETHANE | 0.0019 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 75-01-4 | VINYL CHLORIDE | 0.013 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 75-35-4 | 1,1-DICHLOROETHENE | 0.0023 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.0016 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.0023 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 7782-49-2 | Selenium, total | 1.1 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 78-87-5 | 1,2-DICHLOROPROPANE | 0.0015 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 0.02 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.0045 | J | mg/kg | | | TRUE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.002 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 83-32-9 | ACENAPHTHENE | 0.16 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 84-74-2 | DI-N-BUTYL PHTHALATE | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 85-68-7 | BENZYL BUTYL PHTHALATE | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 86-30-6 | N-NITROSODIPHENYLAMINE | 0.16 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 87-68-3 | HEXACHLOROBUTADIENE | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 88-75-5 | 2-NITROPHENOL | 0.14 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 91-20-3 | NAPHTHALENE | 0.16 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 91-57-6 | 2-METHYLNAPHTHALENE | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 92-52-4 | BIPHENYL (DIPHENYL) | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 95-57-8 | 2-CHLOROPHENOL | 0.15 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.0023 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.0018 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 98-86-2 | ACETOPHENONE | 0.17 | U | mg/kg | | | FALSE |
| SD-WD-9 | SD-WD-9D | 7/9/02 | | | SE | 98-95-3 | NITROBENZENE | 0.16 | U | mg/kg | | | FALSE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7429-90-5 | Aluminum, total | 6000 | = | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7439-89-6 | Iron, total | 5100 | = | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7439-92-1 | Lead, total | 14 | = | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7439-95-4 | Magnesium, total | 740 | J | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7439-96-5 | Manganese, total | 130 | = | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7439-97-6 | Mercury, total | 0.013 | J | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-02-0 | Nickel, total | 5 | = | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-09-7 | Potassium, total | 720 | J | mg/kg | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-22-4 | Silver, total | 0.074 | U | mg/kg | | | FALSE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-23-5 | Sodium, total | 69 | UJ | mg/kg | | | FALSE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-28-0 | Thallium, total | 0.51 | UJ | mg/kg | | | FALSE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-36-0 | Antimony, total | 0.42 | = | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-38-2 | Arsenic, total | 2.1 | J | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-39-3 | Barium, total | 68 | J | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-41-7 | Beryllium, total | 0.42 | J | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-43-9 | Cadmium, total | 0.91 | = | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-47-3 | Chromium, total | 11 | J | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-48-4 | Cobalt, total | 1.8 | = | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-50-8 | Copper, total | 7.5 | = | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-62-2 | Vanadium, total | 14 | J | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-66-6 | Zinc, total | 460 | J | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7440-70-2 | Calcium, total | 1900 | = | mg/kg | | | TRUE |
| SD-ED-11 | SD-ED-11 | 7/9/02 | | | SE | 7782-49-2 | Selenium, total | 0.49 | UJ | mg/kg | | | FALSE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7429-90-5 | Aluminum, total | 2800 | = | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7439-89-6 | Iron, total | 11000 | = | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7439-92-1 | Lead, total | 28 | = | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7439-95-4 | Magnesium, total | 2100 | J | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7439-96-5 | Manganese, total | 480 | = | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7439-97-6 | Mercury, total | 0.0093 | = | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-02-0 | Nickel, total | 6.5 | = | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-09-7 | Potassium, total | 320 | J | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-22-4 | Silver, total | 0.1 | U | mg/kg | | | FALSE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-23-5 | Sodium, total | 150 | U | mg/kg | | | FALSE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-28-0 | Thallium, total | 0.66 | UJ | mg/kg | | | FALSE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-36-0 | Antimony, total | 0.58 | = | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-38-2 | Arsenic, total | 5.4 | J | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-39-3 | Barium, total | 65 | J | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-41-7 | Beryllium, total | 0.45 | J | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-43-9 | Cadmium, total | 0.48 | = | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-47-3 | Chromium, total | 7.3 | J | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-48-4 | Cobalt, total | 3.5 | = | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-50-8 | Copper, total | 9.6 | = | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-62-2 | Vanadium, total | 11 | J | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-66-6 | Zinc, total | 310 | J | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7440-70-2 | Calcium, total | 18000 | = | mg/kg | | | TRUE |
| SD-WD-5 | SD-WD-5 | 7/8/02 | | | SE | 7782-49-2 | Selenium, total | 0.64 | UJ | mg/kg | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 100-01-6 | 4-NITROANILINE | 1.8 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 100-02-7 | 4-NITROPHENOL | 1.8 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 100-41-4 | ETHYLBENZENE | 0.53 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 100-42-5 | STYRENE | 0.62 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 100-52-7 | BENZALDEHYDE | 8.2 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.57 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.64 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 3.6 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 105-60-2 | CAPROLACTAM | 1.3 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 105-67-9 | 2,4-DIMETHYLPHENOL | 2.9 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 2 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 106-46-7 | 1,4-DICHLOROBENZENE | 0.63 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 106-47-8 | 4-CHLOROANILINE | 4.2 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 107-06-2 | 1,2-DICHLOROETHANE | 0.55 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.91 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 3.6 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 108-87-2 | METHYLCYCLOHEXANE | 0.73 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 108-88-3 | TOLUENE | 0.84 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 108-90-7 | CHLOROBENZENE | 0.58 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 108-95-2 | PHENOL | 1 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 110-82-7 | CYCLOHEXANE | 1.2 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.96 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.96 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.96 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.96 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.87 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 4.5 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 1.4 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 117-84-0 | DI-N-OCTYLPHTHALATE | 1.3 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 118-74-1 | HEXACHLOROBENZENE | 1.4 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 120-12-7 | ANTHRACENE | 2.8 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.57 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 120-83-2 | 2,4-DICHLOROPHENOL | 3.7 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 121-14-2 | 2,4-DINITROTOLUENE | 1.7 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 124-48-1 | DIBROMOCHLOROMETHANE | 0.84 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.96 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.96 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.63 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 129-00-0 | PYRENE | 1.8 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 131-11-3 | DIMETHYL PHTHALATE | 3.5 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 132-64-9 | DIBENZOFURAN | 4.7 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 14808-79-8 | SULFATE (AS SO4) | 21000 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.81 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.8 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.87 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 179601-23-1 | Xylenes, -m, -p | 1.1 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 1912-24-9 | ATRAZINE | 2.2 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 191-24-2 | BENZO(G,H,I)PERYLENE | 2.1 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 1.6 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 205-99-2 | BENZO(B)FLUORANTHENE | 2.2 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 206-44-0 | FLUORANTHENE | 1.6 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 207-08-9 | BENZO(K)FLUORANTHENE | 2.4 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 208-96-8 | ACENAPHTHYLENE | 4.7 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 218-01-9 | CHRYSENE | 1.8 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 50-32-8 | BENZO(A)PYRENE | 1.5 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 51-28-5 | 2,4-DINITROPHENOL | 3 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 1.7 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.96 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 2.4 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 541-73-1 | 1,3-DICHLOROBENZENE | 0.58 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 56-23-5 | CARBON TETRACHLORIDE | 0.47 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 56-55-3 | BENZO(A)ANTHRACENE | 1.7 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 591-78-6 | 2-HEXANONE | 1.2 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 4.1 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 606-20-2 | 2,6-DINITROTOLUENE | 3.7 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 4.3 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 67-66-3 | CHLOROFORM | 0.45 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 67-72-1 | HEXACHLOROETHANE | 2.3 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 4.7 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 71-43-2 | BENZENE | 0.25 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.65 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7429-90-5 | Aluminum, total | 170 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7439-89-6 | Iron, total | 280 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7439-92-1 | Lead, total | 1.3 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7439-95-4 | Magnesium, total | 12000 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7439-96-5 | Manganese, total | 110 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7439-97-6 | Mercury, total | 0.028 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-02-0 | Nickel, total | 2.5 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-09-7 | Potassium, total | 5700 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-22-4 | Silver, total | 1.1 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-23-5 | Sodium, total | 29000 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-28-0 | Thallium, total | 4.3 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-36-0 | Antimony, total | 2.5 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-38-2 | Arsenic, total | 8.1 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-39-3 | Barium, total | 140 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-41-7 | Beryllium, total | 0.61 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-43-9 | Cadmium, total | 0.53 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-47-3 | Chromium, total | 1 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-48-4 | Cobalt, total | 0.9 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-50-8 | Copper, total | 4.4 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-62-2 | Vanadium, total | 1.5 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-66-6 | Zinc, total | 1400 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7440-70-2 | Calcium, total | 88000 | = | ug/L | | | TRUE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 74-83-9 | BROMOMETHANE | 0.87 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 74-87-3 | CHLOROMETHANE | 0.27 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 75-00-3 | CHLOROETHANE | 0.84 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 75-01-4 | VINYL CHLORIDE | 0.11 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 75-15-0 | CARBON DISULFIDE | 0.5 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 75-25-2 | BROMOFORM | 0.45 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 75-27-4 | BROMODICHLOROMETHANE | 0.23 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 75-34-3 | 1,1-DICHLOROETHANE | 0.87 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 75-35-4 | 1,1-DICHLOROETHENE | 0.56 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.85 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.57 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 1.4 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 7782-49-2 | Selenium, total | 4.8 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 78-59-1 | ISOPHORONE | 4.5 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 78-87-5 | 1,2-DICHLOROPROPANE | 0.39 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.5 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.39 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.77 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 83-32-9 | ACENAPHTHENE | 4.6 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 84-66-2 | DIETHYL PHTHALATE | 2.7 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 84-74-2 | DI-N-BUTYL PHTHALATE | 1.4 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 85-01-8 | PHENANTHRENE | 2.1 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 85-68-7 | BENZYL BUTYL PHTHALATE | 1.8 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 86-30-6 | N-NITROSODIPHENYLAMINE | 2.2 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 86-73-7 | FLUORENE | 4.7 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 86-74-8 | CARBAZOLE | 1.4 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 87-68-3 | HEXACHLOROBUTADIENE | 2.9 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 87-86-5 | PENTACHLOROPHENOL | 0.78 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 4 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 88-74-4 | 2-NITROANILINE | 4.2 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 88-75-5 | 2-NITROPHENOL | 3.7 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 91-20-3 | NAPHTHALENE | 3.8 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 91-57-6 | 2-METHYLNAPHTHALENE | 3.9 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 91-58-7 | 2-CHLORONAPHTHALENE | 4.2 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 2.8 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.73 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 2.3 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 95-50-1 | 1,2-DICHLOROBENZENE | 0.71 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 95-57-8 | 2-CHLOROPHENOL | 1.1 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 4.6 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.88 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.66 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 98-86-2 | ACETOPHENONE | 4.5 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 98-95-3 | NITROBENZENE | 3.5 | U | ug/L | | | FALSE |
| SW-ED-11 | SW-ED-11 | 3/11/03 | | | WS | 99-09-2 | 3-NITROANILINE | 2.8 | U | ug/L | | | FALSE |
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 1130 | = | ug/L | | 15 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 1090 | = | ug/L | | 15 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 2.1 | J | ug/L | | 5 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 1.6 | J | ug/L | | 5 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 3210 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-16 | EZ-SD-ED-16-1 | 12/4/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 3050 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 18.9 | J+ | ug/L | | 10 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 506 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 494 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 13.6 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 5.2 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 5650 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1 | 12/2/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 5140 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-06 | EZ-SD-WD-06-1FD | 12/2/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 9.7 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 300 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 278 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 18.7 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 14.6 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 3.4 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 7080 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-07 | EZ-SD-WD-07-1 | 12/2/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 6660 | = | ug/L | | 60 | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.97 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.97 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.97 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.97 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.97 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.97 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 14808-79-8 | SULFATE (AS SO4) | 160000 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.97 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7429-90-5 | Aluminum, total | 130 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7439-89-6 | Iron, total | 230 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7439-92-1 | Lead, total | 1.3 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7439-95-4 | Magnesium, total | 14000 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7439-96-5 | Manganese, total | 100 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7439-97-6 | Mercury, total | 0.028 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-02-0 | Nickel, total | 1.8 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-09-7 | Potassium, total | 5200 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-22-4 | Silver, total | 1.1 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-23-5 | Sodium, total | 15000 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-28-0 | Thallium, total | 4.3 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-36-0 | Antimony, total | 2.5 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-38-2 | Arsenic, total | 8.1 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-39-3 | Barium, total | 50 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-41-7 | Beryllium, total | 0.61 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-43-9 | Cadmium, total | 0.53 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-47-3 | Chromium, total | 1.1 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-48-4 | Cobalt, total | 0.9 | U | ug/L | | | FALSE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-50-8 | Copper, total | 2 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-62-2 | Vanadium, total | 0.87 | = | ug/L | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-66-6 | Zinc, total | 840 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7440-70-2 | Calcium, total | 42000 | = | ug/L | | | TRUE |
| SW-ED-16 | SW-ED-16 | 3/11/03 | | | WS | 7782-49-2 | Selenium, total | 4.8 | U | ug/L | | | FALSE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7429-90-5 | Aluminum, total | 1100 | = | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7439-89-6 | Iron, total | 1400 | = | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7439-92-1 | Lead, total | 3.8 | = | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7439-95-4 | Magnesium, total | 11000 | = | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7439-96-5 | Manganese, total | 250 | = | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7439-97-6 | Mercury, total | 0.3 | U | ug/L | | | FALSE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-02-0 | Nickel, total | 2.9 | J | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-09-7 | Potassium, total | 5000 | = | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-22-4 | Silver, total | 0.08 | J | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-23-5 | Sodium, total | 17000 | = | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-28-0 | Thallium, total | 0.12 | U | ug/L | | | FALSE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-36-0 | Antimony, total | 0.3 | J | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-38-2 | Arsenic, total | 2.3 | J | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-39-3 | Barium, total | 87 | = | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-41-7 | Beryllium, total | 0.21 | J | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-43-9 | Cadmium, total | 0.19 | J | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-47-3 | Chromium, total | 1.6 | J | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-48-4 | Cobalt, total | 0.81 | J | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-50-8 | Copper, total | 3.7 | J | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-62-2 | Vanadium, total | 4.7 | = | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-66-6 | Zinc, total | 72 | U | ug/L | | | FALSE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7440-70-2 | Calcium, total | 38000 | = | ug/L | | | TRUE |
| SW-WD-11 | SW-WD-11 | 6/13/03 | | | WS | 7782-49-2 | Selenium, total | 1.3 | J | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7429-90-5 | Aluminum, total | 1400 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7439-89-6 | Iron, total | 1600 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7439-92-1 | Lead, total | 5.2 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7439-95-4 | Magnesium, total | 14000 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7439-96-5 | Manganese, total | 270 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7439-97-6 | Mercury, total | 0.02 | U | ug/L | | | FALSE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-02-0 | Nickel, total | 4.1 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-09-7 | Potassium, total | 5500 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-22-4 | Silver, total | 0.06 | J | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-23-5 | Sodium, total | 24000 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-28-0 | Thallium, total | 0.12 | U | ug/L | | | FALSE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-36-0 | Antimony, total | 0.32 | J | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-38-2 | Arsenic, total | 2.2 | J | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-39-3 | Barium, total | 89 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-41-7 | Beryllium, total | 0.18 | J | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-43-9 | Cadmium, total | 1.2 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-47-3 | Chromium, total | 1.8 | J | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-48-4 | Cobalt, total | 0.9 | J | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-50-8 | Copper, total | 4.1 | J | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-62-2 | Vanadium, total | 5.1 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-66-6 | Zinc, total | 710 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7440-70-2 | Calcium, total | 51000 | = | ug/L | | | TRUE |
| SW-WD-12 | SW-WD-12 | 6/13/03 | | | WS | 7782-49-2 | Selenium, total | 1.4 | J | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 14808-79-8 | SULFATE (AS SO4) | 330000 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7429-90-5 | Aluminum, total | 47 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7439-89-6 | Iron, total | 390 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7439-92-1 | Lead, total | 1.3 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7439-95-4 | Magnesium, total | 36000 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7439-96-5 | Manganese, total | 620 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7439-97-6 | Mercury, total | 0.028 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-02-0 | Nickel, total | 12 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-09-7 | Potassium, total | 7600 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-22-4 | Silver, total | 1.1 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-23-5 | Sodium, total | 52000 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-28-0 | Thallium, total | 4.3 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-36-0 | Antimony, total | 2.5 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-38-2 | Arsenic, total | 8.1 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-39-3 | Barium, total | 36 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-41-7 | Beryllium, total | 0.61 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-43-9 | Cadmium, total | 19 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-47-3 | Chromium, total | 0.93 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-48-4 | Cobalt, total | 1.6 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-50-8 | Copper, total | 1.6 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-62-2 | Vanadium, total | 0.84 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-66-6 | Zinc, total | 15000 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7440-70-2 | Calcium, total | 150000 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030310 | 3/11/03 | | | WS | 7782-49-2 | Selenium, total | 4.8 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7439-89-6 | Iron, total | 560 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7439-92-1 | Lead, total | 2.8 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7439-95-4 | Magnesium, total | 25000 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7439-96-5 | Manganese, total | 350 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7440-22-4 | Silver, total | 0.06 | J | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7440-23-5 | Sodium, total | 32000 | J | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7440-36-0 | Antimony, total | 0.3 | J | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7440-41-7 | Beryllium, total | 0.1 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7440-48-4 | Cobalt, total | 0.88 | J | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7440-50-8 | Copper, total | 3.3 | J | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7440-62-2 | Vanadium, total | 0.7 | J | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7440-66-6 | Zinc, total | 4000 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7440-70-2 | Calcium, total | 90000 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613 | 6/13/03 | | | WS | 7782-49-2 | Selenium, total | 2 | J | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613D | 6/13/03 | | | WS | 7429-90-5 | Aluminum, total | 55 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030613D | 6/13/03 | | | WS | 7439-97-6 | Mercury, total | 0.03 | J | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613D | 6/13/03 | | | WS | 7440-02-0 | Nickel, total | 7.4 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613D | 6/13/03 | | | WS | 7440-09-7 | Potassium, total | 6000 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613D | 6/13/03 | | | WS | 7440-28-0 | Thallium, total | 0.13 | U | ug/L | | | FALSE |
| SW-WD-6 | SW-WD-6-030613D | 6/13/03 | | | WS | 7440-38-2 | Arsenic, total | 1.2 | J | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613D | 6/13/03 | | | WS | 7440-39-3 | Barium, total | 50 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613D | 6/13/03 | | | WS | 7440-43-9 | Cadmium, total | 5.9 | = | ug/L | | | TRUE |
| SW-WD-6 | SW-WD-6-030613D | 6/13/03 | | | WS | 7440-47-3 | Chromium, total | 0.62 | J | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7 | 3/11/03 | | | WS | 7439-92-1 | Lead, total | 2.3 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7 | 3/11/03 | | | WS | 7440-02-0 | Nickel, total | 19 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7 | 3/11/03 | | | WS | 7440-50-8 | Copper, total | 4.9 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 100-01-6 | 4-NITROANILINE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 100-02-7 | 4-NITROPHENOL | 1.8 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 100-41-4 | ETHYLBENZENE | 0.53 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 100-42-5 | STYRENE | 0.62 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 100-52-7 | BENZALDEHYDE | 8.2 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.64 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 3.6 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 105-60-2 | CAPROLACTAM | 1.3 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 105-67-9 | 2,4-DIMETHYLPHENOL | 2.9 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 2 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 106-46-7 | 1,4-DICHLOROBENZENE | 0.63 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 106-47-8 | 4-CHLOROANILINE | 4.2 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 107-06-2 | 1,2-DICHLOROETHANE | 0.55 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.91 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 3.6 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 108-87-2 | METHYLCYCLOHEXANE | 0.73 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 108-88-3 | TOLUENE | 0.84 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 108-90-7 | CHLOROBENZENE | 0.58 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 108-95-2 | PHENOL | 1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 110-82-7 | CYCLOHEXANE | 1.2 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.87 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 4.5 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 117-84-0 | DI-N-OCTYLPHTHALATE | 1.3 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 118-74-1 | HEXACHLOROBENZENE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 120-12-7 | ANTHRACENE | 2.8 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 120-83-2 | 2,4-DICHLOROPHENOL | 3.7 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 121-14-2 | 2,4-DINITROTOLUENE | 1.7 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 124-48-1 | DIBROMOCHLOROMETHANE | 0.84 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.63 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 129-00-0 | PYRENE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 131-11-3 | DIMETHYL PHTHALATE | 3.5 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 132-64-9 | DIBENZOFURAN | 4.7 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 14808-79-8 | SULFATE (AS SO4) | 270000 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.81 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.8 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.87 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 179601-23-1 | Xylenes, -m, -p | 1.1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 1912-24-9 | ATRAZINE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 191-24-2 | BENZO(G,H,I)PERYLENE | 2.1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 1.6 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 205-99-2 | BENZO(B)FLUORANTHENE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 206-44-0 | FLUORANTHENE | 1.6 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 207-08-9 | BENZO(K)FLUORANTHENE | 2.4 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 208-96-8 | ACENAPHTHYLENE | 4.7 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 218-01-9 | CHRYSENE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 50-32-8 | BENZO(A)PYRENE | 1.5 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 51-28-5 | 2,4-DINITROPHENOL | 3 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 1.7 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 2.4 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 541-73-1 | 1,3-DICHLOROBENZENE | 0.58 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 56-23-5 | CARBON TETRACHLORIDE | 0.47 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 56-55-3 | BENZO(A)ANTHRACENE | 1.7 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 591-78-6 | 2-HEXANONE | 1.2 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 4.1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 606-20-2 | 2,6-DINITROTOLUENE | 3.7 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 4.3 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 67-66-3 | CHLOROFORM | 0.45 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 67-72-1 | HEXACHLOROETHANE | 2.3 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 4.7 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 71-43-2 | BENZENE | 0.25 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.65 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7429-90-5 | Aluminum, total | 27 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7439-89-6 | Iron, total | 460 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7439-95-4 | Magnesium, total | 31000 | = | ug/L | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7439-96-5 | Manganese, total | 78 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7439-97-6 | Mercury, total | 0.028 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-09-7 | Potassium, total | 9200 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-22-4 | Silver, total | 1.1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-23-5 | Sodium, total | 60000 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-28-0 | Thallium, total | 4.3 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-36-0 | Antimony, total | 2.5 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-38-2 | Arsenic, total | 8.1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-39-3 | Barium, total | 21 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-41-7 | Beryllium, total | 0.61 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-43-9 | Cadmium, total | 34 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-47-3 | Chromium, total | 0.93 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-48-4 | Cobalt, total | 0.9 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-62-2 | Vanadium, total | 0.84 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-66-6 | Zinc, total | 26000 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7440-70-2 | Calcium, total | 140000 | = | ug/L | | | TRUE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 74-83-9 | BROMOMETHANE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 74-87-3 | CHLOROMETHANE | 0.27 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 75-00-3 | CHLOROETHANE | 0.84 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 75-01-4 | VINYL CHLORIDE | 0.11 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 75-15-0 | CARBON DISULFIDE | 0.5 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 75-25-2 | BROMOFORM | 0.45 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 75-27-4 | BROMODICHLOROMETHANE | 0.23 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 75-34-3 | 1,1-DICHLOROETHANE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 75-35-4 | 1,1-DICHLOROETHENE | 0.56 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.85 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 7782-49-2 | Selenium, total | 4.8 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 78-59-1 | ISOPHORONE | 4.5 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 78-87-5 | 1,2-DICHLOROPROPANE | 0.39 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.5 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.39 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.77 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 83-32-9 | ACENAPHTHENE | 4.6 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 84-66-2 | DIETHYL PHTHALATE | 2.7 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 84-74-2 | DI-N-BUTYL PHTHALATE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 85-01-8 | PHENANTHRENE | 2.1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 85-68-7 | BENZYL BUTYL PHTHALATE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 86-30-6 | N-NITROSODIPHENYLAMINE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 86-73-7 | FLUORENE | 4.7 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 86-74-8 | CARBAZOLE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 87-68-3 | HEXACHLOROBUTADIENE | 2.9 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 87-86-5 | PENTACHLOROPHENOL | 0.78 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 4 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 88-74-4 | 2-NITROANILINE | 4.2 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 88-75-5 | 2-NITROPHENOL | 3.7 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 91-20-3 | NAPHTHALENE | 3.8 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 91-57-6 | 2-METHYLNAPHTHALENE | 3.9 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 91-58-7 | 2-CHLORONAPHTHALENE | 4.2 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 2.8 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.73 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 2.3 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 95-50-1 | 1,2-DICHLOROBENZENE | 0.71 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 95-57-8 | 2-CHLOROPHENOL | 1.1 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 4.6 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.88 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.66 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 98-86-2 | ACETOPHENONE | 4.5 | U | ug/L | | | FALSE |
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 98-95-3 | NITROBENZENE | 3.5 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-7 | SW-WD-7D | 3/11/03 | | | WS | 99-09-2 | 3-NITROANILINE | 2.8 | U | ug/L | | | FALSE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 1100 | = | ug/L | | 15 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 1090 | = | ug/L | | 15 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 2.7 | J | ug/L | | 5 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 2.5 | J | ug/L | | 5 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 4 | J | ug/L | | 25 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 3.6 | J | ug/L | | 25 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 4130 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-13 | EZ-SD-ED-13-1 | 12/1/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 4010 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 15 | U | ug/L | | 15 | FALSE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 15 | U | ug/L | | 15 | FALSE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 5 | U | ug/L | | 5 | FALSE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 5 | U | ug/L | | 5 | FALSE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 206 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-24 | EZ-SD-ED-24-1 | 12/3/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 159 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 15 | U | ug/L | | 15 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 15 | U | ug/L | | 15 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 5 | U | ug/L | | 5 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 5 | U | ug/L | | 5 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 179 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-25 | EZ-SD-ED-25-1 | 12/3/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 155 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1 | 12/4/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 26.3 | = | ug/L | | 10 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1 | 12/4/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1 | 12/4/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 15 | U | ug/L | | 15 | FALSE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1 | 12/4/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 15 | U | ug/L | | 15 | FALSE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1 | 12/4/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1 | 12/4/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1 | 12/4/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 8.2 | = | ug/L | | 5 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1 | 12/4/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1 | 12/4/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1FD | 12/4/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 7.6 | = | ug/L | | 5 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1FD | 12/4/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 4850 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-26 | EZ-SD-ED-26-1FD | 12/4/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 4600 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-1 | 12/5/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-27 | EZ-SD-ED-27-1 | 12/5/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-27 | EZ-SD-ED-27-1 | 12/5/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 7.6 | J | ug/L | | 15 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-1 | 12/5/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 5.7 | J | ug/L | | 15 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-1 | 12/5/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-27 | EZ-SD-ED-27-1 | 12/5/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-27 | EZ-SD-ED-27-1 | 12/5/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 1.3 | J | ug/L | | 5 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-1 | 12/5/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-27 | EZ-SD-ED-27-1 | 12/5/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-27 | EZ-SD-ED-27-1 | 12/5/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 1450 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-27 | EZ-SD-ED-27-1FD | 12/5/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 1.3 | J | ug/L | | 5 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-ED-27 | EZ-SD-ED-27-1FD | 12/5/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 1340 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 8 | J | ug/L | | 15 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 6.6 | J | ug/L | | 15 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 1.5 | J | ug/L | | 5 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 1.1 | J | ug/L | | 5 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 1480 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-28 | EZ-SD-ED-28-1 | 12/5/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 1380 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 10.4 | J | ug/L | | 15 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 9.1 | J | ug/L | | 15 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 5 | U | ug/L | | 5 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 5 | U | ug/L | | 5 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 350 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-29 | EZ-SD-ED-29-1 | 12/5/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 301 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7439-96-5 | Manganese, total | 16.6 | = | ug/L | | 15 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7439-96-5D | Manganese, dissolved | 16.3 | = | ug/L | | 15 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7440-43-9 | Cadmium, total | 5 | U | ug/L | | 5 | FALSE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7440-43-9D | Cadmium, dissolved | 5 | U | ug/L | | 5 | FALSE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7440-50-8 | Copper, total | 3.9 | J | ug/L | | 25 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7440-66-6 | Zinc, total | 404 | = | ug/L | | 60 | TRUE |
| EZ-SD-ED-30 | EZ-SD-ED-30-1 | 12/6/10 | | | WS | 7440-66-6D | Zinc, dissolved | 284 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 115 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 112 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 41.2 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 40.6 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 7300 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-08 | EZ-SD-WD-08-1 | 12/1/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 7250 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 100 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 92.3 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 34.6 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 25.8 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 7500 | = | ug/L | | 60 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-09 | EZ-SD-WD-09-1 | 12/2/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 7800 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 40.1 | = | ug/L | | 10 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 3.7 | J | ug/L | | 10 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 156 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 114 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 52.9 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 51.9 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 7.7 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 8660 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-10 | EZ-SD-WD-10-1 | 12/2/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 8140 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 4.1 | J | ug/L | | 10 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 271 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 260 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 18 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 11.4 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 3.9 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 3.1 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 3710 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-17 | EZ-SD-WD-17-1 | 12/4/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 3700 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7439-92-1 | Lead, total | 4.4 | J | ug/L | | 10 | TRUE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7439-96-5 | Manganese, total | 300 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7439-96-5D | Manganese, dissolved | 293 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7440-43-9 | Cadmium, total | 17.1 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7440-43-9D | Cadmium, dissolved | 9.9 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7440-50-8 | Copper, total | 4.3 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7440-66-6 | Zinc, total | 3650 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-18 | EZ-SD-WD-18-1 | 12/7/10 | | | WS | 7440-66-6D | Zinc, dissolved | 3610 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 300 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 285 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 17.4 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 9.7 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 3.5 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 3 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 3720 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-19 | EZ-SD-WD-19-1 | 12/7/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 3700 | J | ug/L | | 60 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7439-92-1 | Lead, total | 8.9 | J | ug/L | | 10 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7439-96-5 | Manganese, total | 307 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7439-96-5D | Manganese, dissolved | 292 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7440-43-9 | Cadmium, total | 18 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7440-43-9D | Cadmium, dissolved | 9.5 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7440-50-8 | Copper, total | 5.5 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7440-66-6 | Zinc, total | 3770 | = | ug/L | | 60 | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EZ-SD-WD-20 | EZ-SD-WD-20-1 | 12/7/10 | | | WS | 7440-66-6D | Zinc, dissolved | 3580 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 4.6 | J | ug/L | | 10 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 309 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 288 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 17.7 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 9.6 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 4 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 25 | U | ug/L | | 25 | FALSE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 3790 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-21 | EZ-SD-WD-21-1 | 12/7/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 3650 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 6.1 | J | ug/L | | 10 | TRUE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 5.1 | J | ug/L | | 10 | TRUE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 533 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 519 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 117 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 112 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 11.5 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 9.4 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 5520 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-22 | EZ-SD-WD-22-1 | 12/3/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 5370 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7439-92-1 | Lead, total | 27 | = | ug/L | | 10 | TRUE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7439-92-1D | Lead, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7439-96-5 | Manganese, total | 447 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7439-96-5D | Manganese, dissolved | 54.9 | = | ug/L | | 15 | TRUE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7440-38-2 | Arsenic, total | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7440-38-2D | Arsenic, dissolved | 10 | U | ug/L | | 10 | FALSE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7440-43-9 | Cadmium, total | 106 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7440-43-9D | Cadmium, dissolved | 53.7 | = | ug/L | | 5 | TRUE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7440-50-8 | Copper, total | 33 | = | ug/L | | 25 | TRUE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7440-50-8D | Copper, dissolved | 4.1 | J | ug/L | | 25 | TRUE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7440-66-6 | Zinc, total | 7640 | = | ug/L | | 60 | TRUE |
| EZ-SD-WD-23 | EZ-SD-WD-23-1 | 12/3/10 | 0 | 0.5 | WS | 7440-66-6D | Zinc, dissolved | 3290 | = | ug/L | | 60 | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 100-01-6 | 4-NITROANILINE | 1.8 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 100-02-7 | 4-NITROPHENOL | 1.8 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 100-41-4 | ETHYLBENZENE | 0.53 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 100-42-5 | STYRENE | 0.62 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 100-52-7 | BENZALDEHYDE | 8.2 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.57 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.64 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 3.6 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 105-60-2 | CAPROLACTAM | 1.3 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 105-67-9 | 2,4-DIMETHYLPHENOL | 2.9 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 2 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 106-46-7 | 1,4-DICHLOROBENZENE | 0.63 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 106-47-8 | 4-CHLOROANILINE | 4.2 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 107-06-2 | 1,2-DICHLOROETHANE | 0.55 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.91 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 3.6 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 108-87-2 | METHYLCYCLOHEXANE | 0.73 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 108-88-3 | TOLUENE | 0.84 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 108-90-7 | CHLOROBENZENE | 0.58 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 108-95-2 | PHENOL | 1 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 110-82-7 | CYCLOHEXANE | 1.2 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.98 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.98 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.98 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.98 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.87 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 4.5 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 1.4 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 117-84-0 | DI-N-OCTYLPHTHALATE | 1.3 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 118-74-1 | HEXACHLOROBENZENE | 1.4 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 120-12-7 | ANTHRACENE | 2.8 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.57 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 120-83-2 | 2,4-DICHLOROPHENOL | 3.7 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 121-14-2 | 2,4-DINITROTOLUENE | 1.7 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 124-48-1 | DIBROMOCHLOROMETHANE | 0.84 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.98 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.98 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.63 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 129-00-0 | PYRENE | 1.8 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 131-11-3 | DIMETHYL PHTHALATE | 3.5 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 132-64-9 | DIBENZOFURAN | 4.7 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 14808-79-8 | SULFATE (AS SO4) | 130000 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 0.81 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.8 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.87 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 179601-23-1 | Xylenes, -m, -p | 1.1 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 1912-24-9 | ATRAZINE | 2.2 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 191-24-2 | BENZO(G,H,I)PERYLENE | 2.1 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 1.6 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 205-99-2 | BENZO(B)FLUORANTHENE | 2.2 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 206-44-0 | FLUORANTHENE | 1.6 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 207-08-9 | BENZO(K)FLUORANTHENE | 2.4 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 208-96-8 | ACENAPHTHYLENE | 4.7 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 218-01-9 | CHRYSENE | 1.8 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 50-32-8 | BENZO(A)PYRENE | 1.5 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 51-28-5 | 2,4-DINITROPHENOL | 3 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 1.7 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.98 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 2.4 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 541-73-1 | 1,3-DICHLOROBENZENE | 0.58 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 56-23-5 | CARBON TETRACHLORIDE | 0.47 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 56-55-3 | BENZO(A)ANTHRACENE | 1.7 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 591-78-6 | 2-HEXANONE | 1.2 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 4.1 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 606-20-2 | 2,6-DINITROTOLUENE | 3.7 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 4.3 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 67-66-3 | CHLOROFORM | 0.45 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 67-72-1 | HEXACHLOROETHANE | 2.3 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 4.7 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 71-43-2 | BENZENE | 0.25 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.65 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7429-90-5 | Aluminum, total | 31 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7439-89-6 | Iron, total | 280 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7439-92-1 | Lead, total | 1.3 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7439-95-4 | Magnesium, total | 27000 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7439-96-5 | Manganese, total | 380 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7439-97-6 | Mercury, total | 0.028 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-02-0 | Nickel, total | 12 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-09-7 | Potassium, total | 3600 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-22-4 | Silver, total | 1.1 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-23-5 | Sodium, total | 41000 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-28-0 | Thallium, total | 4.3 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-36-0 | Antimony, total | 2.5 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-38-2 | Arsenic, total | 8.1 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-39-3 | Barium, total | 71 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-41-7 | Beryllium, total | 0.61 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-43-9 | Cadmium, total | 7.1 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-47-3 | Chromium, total | 0.93 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-48-4 | Cobalt, total | 0.9 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-50-8 | Copper, total | 4 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-62-2 | Vanadium, total | 0.84 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-66-6 | Zinc, total | 11000 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7440-70-2 | Calcium, total | 80000 | = | ug/L | | | TRUE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 74-83-9 | BROMOMETHANE | 0.87 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 74-87-3 | CHLOROMETHANE | 0.27 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 75-00-3 | CHLOROETHANE | 0.84 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 75-01-4 | VINYL CHLORIDE | 0.11 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 75-15-0 | CARBON DISULFIDE | 0.5 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 75-25-2 | BROMOFORM | 0.45 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 75-27-4 | BROMODICHLOROMETHANE | 0.23 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 75-34-3 | 1,1-DICHLOROETHANE | 0.87 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 75-35-4 | 1,1-DICHLOROETHENE | 0.56 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.85 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.57 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 1.4 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 7782-49-2 | Selenium, total | 4.8 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 78-59-1 | ISOPHORONE | 4.5 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 78-87-5 | 1,2-DICHLOROPROPANE | 0.39 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.5 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 79-01-6 | TRICHLOROETHYLENE (TCE) | 0.39 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.77 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 83-32-9 | ACENAPHTHENE | 4.6 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 84-66-2 | DIETHYL PHTHALATE | 2.7 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 84-74-2 | DI-N-BUTYL PHTHALATE | 1.4 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 85-01-8 | PHENANTHRENE | 2.1 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 85-68-7 | BENZYL BUTYL PHTHALATE | 1.8 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 86-30-6 | N-NITROSODIPHENYLAMINE | 2.2 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 86-73-7 | FLUORENE | 4.7 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 86-74-8 | CARBAZOLE | 1.4 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 87-68-3 | HEXACHLOROBUTADIENE | 2.9 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 87-86-5 | PENTACHLOROPHENOL | 0.78 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 4 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 88-74-4 | 2-NITROANILINE | 4.2 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 88-75-5 | 2-NITROPHENOL | 3.7 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 91-20-3 | NAPHTHALENE | 3.8 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 91-57-6 | 2-METHYLNAPHTHALENE | 3.9 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 91-58-7 | 2-CHLORONAPHTHALENE | 4.2 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 2.8 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.73 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 2.3 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 95-50-1 | 1,2-DICHLOROBENZENE | 0.71 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 95-57-8 | 2-CHLOROPHENOL | 1.1 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 4.6 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.88 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.66 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 98-86-2 | ACETOPHENONE | 4.5 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 98-95-3 | NITROBENZENE | 3.5 | U | ug/L | | | FALSE |
| SW-ED-13 | SW-ED-13 | 3/11/03 | | | WS | 99-09-2 | 3-NITROANILINE | 2.8 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 100-41-4 | ETHYLBENZENE | 0.54 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 100-42-5 | STYRENE | 0.86 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.19 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.19 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 106-46-7 | 1,4-DICHLOROBENZENE | 0.95 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.56 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 107-06-2 | 1,2-DICHLOROETHANE | 0.36 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 1.2 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 108-87-2 | METHYLCYCLOHEXANE | 1.9 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 108-88-3 | TOLUENE | 0.67 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 108-90-7 | CHLOROBENZENE | 0.41 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 110-82-7 | CYCLOHEXANE | 0.89 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.97 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 124-48-1 | DIBROMOCHLOROMETHANE | 0.81 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.45 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 1.1 | = | ug/L | | | TRUE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.89 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.61 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 179601-23-1 | Xylenes, -m, -p | 1.8 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 541-73-1 | 1,3-DICHLOROBENZENE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 56-23-5 | CARBON TETRACHLORIDE | 0.49 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 591-78-6 | 2-HEXANONE | 1.1 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 67-64-1 | ACETONE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 67-66-3 | CHLOROFORM | 0.37 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 71-43-2 | BENZENE | 0.41 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.9 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 74-83-9 | BROMOMETHANE | 0.91 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 74-87-3 | CHLOROMETHANE | 0.24 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 75-00-3 | CHLOROETHANE | 0.97 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 75-01-4 | VINYL CHLORIDE | 0.18 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 75-09-2 | METHYLENE CHLORIDE | 0.43 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 75-15-0 | CARBON DISULFIDE | 0.66 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 75-25-2 | BROMOFORM | 0.94 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 75-27-4 | BROMODICHLOROMETHANE | 0.56 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 75-34-3 | 1,1-DICHLOROETHANE | 0.75 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 75-35-4 | 1,1-DICHLOROETHENE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.79 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.99 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.54 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 78-87-5 | 1,2-DICHLOROPROPANE | 0.46 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 4.3 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.42 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 79-01-6 | TRICHLOROETHYLENE (TCE) | 2.9 | = | ug/L | | | TRUE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 79-20-9 | METHYL ACETATE | 2.1 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.2 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.83 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 95-50-1 | 1,2-DICHLOROBENZENE | 0.83 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-20 | SW-WD-20 | 11/24/03 | | | WS | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.59 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 100-41-4 | ETHYLBENZENE | 0.54 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 100-42-5 | STYRENE | 0.86 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.19 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.19 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 106-46-7 | 1,4-DICHLOROBENZENE | 0.95 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.56 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 107-06-2 | 1,2-DICHLOROETHANE | 0.36 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 1.2 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 108-87-2 | METHYLCYCLOHEXANE | 1.9 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 108-88-3 | TOLUENE | 0.67 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 108-90-7 | CHLOROBENZENE | 0.41 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 110-82-7 | CYCLOHEXANE | 0.89 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.97 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 124-48-1 | DIBROMOCHLOROMETHANE | 0.81 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.45 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 1.1 | = | ug/L | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.89 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.61 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 179601-23-1 | Xylenes, -m, -p | 1.8 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 541-73-1 | 1,3-DICHLOROBENZENE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 56-23-5 | CARBON TETRACHLORIDE | 0.49 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 591-78-6 | 2-HEXANONE | 1.1 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 67-64-1 | ACETONE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 67-66-3 | CHLOROFORM | 0.37 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 71-43-2 | BENZENE | 0.41 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.9 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 74-83-9 | BROMOMETHANE | 0.91 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 74-87-3 | CHLOROMETHANE | 0.24 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 75-00-3 | CHLOROETHANE | 0.97 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 75-01-4 | VINYL CHLORIDE | 0.18 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 75-09-2 | METHYLENE CHLORIDE | 0.43 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 75-15-0 | CARBON DISULFIDE | 0.66 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 75-25-2 | BROMOFORM | 0.94 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 75-27-4 | BROMODICHLOROMETHANE | 0.56 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 75-34-3 | 1,1-DICHLOROETHANE | 0.75 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 75-35-4 | 1,1-DICHLOROETHENE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.79 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.99 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.54 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 78-87-5 | 1,2-DICHLOROPROPANE | 0.46 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 4.3 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.42 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 79-01-6 | TRICHLOROETHYLENE (TCE) | 3.3 | = | ug/L | | | TRUE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 79-20-9 | METHYL ACETATE | 2.1 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.2 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.83 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 95-50-1 | 1,2-DICHLOROBENZENE | 0.83 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-21 | SW-WD-21 | 11/24/03 | | | WS | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.59 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 1 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 1 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 1 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 1 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 1 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 1 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 14808-79-8 | SULFATE (AS SO4) | 210000 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 1 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7429-90-5 | Aluminum, total | 27 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7439-89-6 | Iron, total | 3200 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7439-92-1 | Lead, total | 1.3 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7439-95-4 | Magnesium, total | 27000 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7439-96-5 | Manganese, total | 400 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7439-97-6 | Mercury, total | 0.028 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-02-0 | Nickel, total | 2.9 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-09-7 | Potassium, total | 5100 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-22-4 | Silver, total | 1.1 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-23-5 | Sodium, total | 41000 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-28-0 | Thallium, total | 4.3 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-36-0 | Antimony, total | 2.5 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-38-2 | Arsenic, total | 8.1 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-39-3 | Barium, total | 41 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-41-7 | Beryllium, total | 0.61 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-43-9 | Cadmium, total | 2.3 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-47-3 | Chromium, total | 0.93 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-48-4 | Cobalt, total | 0.92 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-50-8 | Copper, total | 1.1 | = | ug/L | | | TRUE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-62-2 | Vanadium, total | 0.84 | U | ug/L | | | FALSE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-66-6 | Zinc, total | 1200 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7440-70-2 | Calcium, total | 130000 | = | ug/L | | | TRUE |
| SW-WD-8 | SW-WD-8 | 3/11/03 | | | WS | 7782-49-2 | Selenium, total | 4.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 100-41-4 | ETHYLBENZENE | 0.54 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 100-42-5 | STYRENE | 0.86 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.19 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.19 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 1.2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 108-87-2 | METHYLCYCLOHEXANE | 1.9 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 108-88-3 | TOLUENE | 0.67 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 108-90-7 | CHLOROBENZENE | 0.41 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 110-82-7 | CYCLOHEXANE | 0.89 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 124-48-1 | DIBROMOCHLOROMETHANE | 0.81 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.45 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 1.2 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.89 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.61 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 179601-23-1 | Xylenes, -m, -p | 1.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 56-23-5 | CARBON TETRACHLORIDE | 0.49 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 67-66-3 | CHLOROFORM | 0.37 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 74-87-3 | CHLOROMETHANE | 0.24 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 75-00-3 | CHLOROETHANE | 0.97 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 75-01-4 | VINYL CHLORIDE | 0.18 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 75-09-2 | METHYLENE CHLORIDE | 0.43 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 75-15-0 | CARBON DISULFIDE | 0.66 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 75-25-2 | BROMOFORM | 0.94 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.79 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.99 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 4.3 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 79-20-9 | METHYL ACETATE | 2.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.83 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124 | 11/24/03 | | | WS | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.59 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 106-46-7 | 1,4-DICHLOROBENZENE | 0.95 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.56 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 107-06-2 | 1,2-DICHLOROETHANE | 0.36 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.97 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 541-73-1 | 1,3-DICHLOROBENZENE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 591-78-6 | 2-HEXANONE | 1.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 67-64-1 | ACETONE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 71-43-2 | BENZENE | 0.41 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.9 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 74-83-9 | BROMOMETHANE | 0.91 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 75-27-4 | BROMODICHLOROMETHANE | 0.56 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 75-34-3 | 1,1-DICHLOROETHANE | 0.75 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 75-35-4 | 1,1-DICHLOROETHENE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.54 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 78-87-5 | 1,2-DICHLOROPROPANE | 0.46 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.42 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 79-01-6 | TRICHLOROETHYLENE (TCE) | 2.5 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 95-50-1 | 1,2-DICHLOROBENZENE | 0.83 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-09-031124D | 11/24/03 | | | WS | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 100-01-6 | 4-NITROANILINE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 100-02-7 | 4-NITROPHENOL | 1.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 100-41-4 | ETHYLBENZENE | 0.53 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 100-42-5 | STYRENE | 0.62 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 100-52-7 | BENZALDEHYDE | 8.2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.64 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 3.6 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 105-60-2 | CAPROLACTAM | 1.3 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 105-67-9 | 2,4-DIMETHYLPHENOL | 2.9 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 106-46-7 | 1,4-DICHLOROBENZENE | 0.63 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 106-47-8 | 4-CHLOROANILINE | 4.2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 107-06-2 | 1,2-DICHLOROETHANE | 0.55 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.91 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 3.6 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 108-87-2 | METHYLCYCLOHEXANE | 0.73 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 108-88-3 | TOLUENE | 0.84 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 108-90-7 | CHLOROBENZENE | 0.58 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 108-95-2 | PHENOL | 1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 110-82-7 | CYCLOHEXANE | 1.2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.87 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 4.5 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 117-84-0 | DI-N-OCTYLPHTHALATE | 1.3 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 118-74-1 | HEXACHLOROBENZENE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 120-12-7 | ANTHRACENE | 2.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 120-83-2 | 2,4-DICHLOROPHENOL | 3.7 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 121-14-2 | 2,4-DINITROTOLUENE | 1.7 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 124-48-1 | DIBROMOCHLOROMETHANE | 0.84 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.63 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 129-00-0 | PYRENE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 131-11-3 | DIMETHYL PHTHALATE | 3.5 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 132-64-9 | DIBENZOFURAN | 4.7 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 14808-79-8 | SULFATE (AS SO4) | 420000 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 2 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.87 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 179601-23-1 | Xylenes, -m, -p | 1.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 1912-24-9 | ATRAZINE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 191-24-2 | BENZO(G,H,I)PERYLENE | 2.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 1.6 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 205-99-2 | BENZO(B)FLUORANTHENE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 206-44-0 | FLUORANTHENE | 1.6 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 207-08-9 | BENZO(K)FLUORANTHENE | 2.4 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 208-96-8 | ACENAPHTHYLENE | 4.7 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 218-01-9 | CHRYSENE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 50-32-8 | BENZO(A)PYRENE | 1.5 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 51-28-5 | 2,4-DINITROPHENOL | 3 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 1.7 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 1.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 2.4 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 541-73-1 | 1,3-DICHLOROBENZENE | 0.58 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 56-23-5 | CARBON TETRACHLORIDE | 0.47 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 56-55-3 | BENZO(A)ANTHRACENE | 1.7 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 591-78-6 | 2-HEXANONE | 1.2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 4.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 606-20-2 | 2,6-DINITROTOLUENE | 3.7 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 4.3 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 67-66-3 | CHLOROFORM | 0.45 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 67-72-1 | HEXACHLOROETHANE | 2.3 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 4.7 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 71-43-2 | BENZENE | 0.25 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.65 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7429-90-5 | Aluminum, total | 27 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7439-89-6 | Iron, total | 56 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7439-92-1 | Lead, total | 1.3 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7439-95-4 | Magnesium, total | 38000 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7439-96-5 | Manganese, total | 10 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7439-97-6 | Mercury, total | 0.028 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-02-0 | Nickel, total | 36 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-09-7 | Potassium, total | 17000 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-22-4 | Silver, total | 1.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-23-5 | Sodium, total | 57000 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-28-0 | Thallium, total | 4.3 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-36-0 | Antimony, total | 2.5 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-38-2 | Arsenic, total | 8.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-39-3 | Barium, total | 24 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-41-7 | Beryllium, total | 0.61 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-43-9 | Cadmium, total | 230 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-47-3 | Chromium, total | 0.93 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-48-4 | Cobalt, total | 0.9 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-50-8 | Copper, total | 2.6 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-62-2 | Vanadium, total | 0.84 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-66-6 | Zinc, total | 26000 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7440-70-2 | Calcium, total | 120000 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 74-83-9 | BROMOMETHANE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 74-87-3 | CHLOROMETHANE | 0.27 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 75-00-3 | CHLOROETHANE | 0.84 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 75-01-4 | VINYL CHLORIDE | 0.11 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 75-15-0 | CARBON DISULFIDE | 0.5 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 75-25-2 | BROMOFORM | 0.45 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 75-27-4 | BROMODICHLOROMETHANE | 0.23 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 75-34-3 | 1,1-DICHLOROETHANE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 75-35-4 | 1,1-DICHLOROETHENE | 0.56 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.85 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 7782-49-2 | Selenium, total | 4.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 78-59-1 | ISOPHORONE | 4.5 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 78-87-5 | 1,2-DICHLOROPROPANE | 0.39 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.5 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 79-01-6 | TRICHLOROETHYLENE (TCE) | 6.3 | = | ug/L | | | TRUE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.77 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 83-32-9 | ACENAPHTHENE | 4.6 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 84-66-2 | DIETHYL PHTHALATE | 2.7 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 84-74-2 | DI-N-BUTYL PHTHALATE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 85-01-8 | PHENANTHRENE | 2.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 85-68-7 | BENZYL BUTYL PHTHALATE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 86-30-6 | N-NITROSODIPHENYLAMINE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 86-73-7 | FLUORENE | 4.7 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 86-74-8 | CARBAZOLE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 87-68-3 | HEXACHLOROBUTADIENE | 2.9 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 87-86-5 | PENTACHLOROPHENOL | 0.78 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 4 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 88-74-4 | 2-NITROANILINE | 4.2 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 88-75-5 | 2-NITROPHENOL | 3.7 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 91-20-3 | NAPHTHALENE | 3.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 91-57-6 | 2-METHYLNAPHTHALENE | 3.9 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 91-58-7 | 2-CHLORONAPHTHALENE | 4.2 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 2.8 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.73 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 2.3 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 95-50-1 | 1,2-DICHLOROBENZENE | 0.71 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 95-57-8 | 2-CHLOROPHENOL | 1.1 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 4.6 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.88 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.66 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 98-86-2 | ACETOPHENONE | 4.5 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 98-95-3 | NITROBENZENE | 3.5 | U | ug/L | | | FALSE |
| SW-WD-9 | SW-WD-9 | 3/11/03 | | | WS | 99-09-2 | 3-NITROANILINE | 2.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 100-01-6 | 4-NITROANILINE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 100-02-7 | 4-NITROPHENOL | 1.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 100-41-4 | ETHYLBENZENE | 0.53 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 100-42-5 | STYRENE | 0.62 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 100-52-7 | BENZALDEHYDE | 8.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.64 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 101-55-3 | 4-BROMOPHENYL PHENYL ETHER | 3.6 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 105-60-2 | CAPROLACTAM | 1.3 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 105-67-9 | 2,4-DIMETHYLPHENOL | 2.9 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 106-44-5 | 4-METHYLPHENOL (P-CRESOL) | 2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 106-46-7 | 1,4-DICHLOROBENZENE | 0.63 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 106-47-8 | 4-CHLOROANILINE | 4.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 107-06-2 | 1,2-DICHLOROETHANE | 0.55 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 0.91 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 108-60-1 | BIS(2-CHLOROISOPROPYL) ETHER | 3.6 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 108-87-2 | METHYLCYCLOHEXANE | 0.73 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 108-88-3 | TOLUENE | 0.84 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 108-90-7 | CHLOROBENZENE | 0.58 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 108-95-2 | PHENOL | 1 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 110-82-7 | CYCLOHEXANE | 1.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.96 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.96 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.96 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.96 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 111-44-4 | BIS(2-CHLOROETHYL) ETHER (2-CHLOROETH | 0.87 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 111-91-1 | BIS(2-CHLOROETHOXY) METHANE | 4.5 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 117-81-7 | BIS(2-ETHYLHEXYL) PHTHALATE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 117-84-0 | DI-N-OCTYLPHTHALATE | 1.3 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 118-74-1 | HEXACHLOROBENZENE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 120-12-7 | ANTHRACENE | 2.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 120-83-2 | 2,4-DICHLOROPHENOL | 3.7 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 121-14-2 | 2,4-DINITROTOLUENE | 1.7 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 124-48-1 | DIBROMOCHLOROMETHANE | 0.84 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.96 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.96 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.63 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 129-00-0 | PYRENE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 131-11-3 | DIMETHYL PHTHALATE | 3.5 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 132-64-9 | DIBENZOFURAN | 4.7 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 14808-79-8 | SULFATE (AS SO4) | 450000 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 2.2 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.87 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 179601-23-1 | Xylenes, -m, -p | 1.1 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 1912-24-9 | ATRAZINE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 191-24-2 | BENZO(G,H,I)PERYLENE | 2.1 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 193-39-5 | INDENO(1,2,3-C,D)PYRENE | 1.6 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 205-99-2 | BENZO(B)FLUORANTHENE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 206-44-0 | FLUORANTHENE | 1.6 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 207-08-9 | BENZO(K)FLUORANTHENE | 2.4 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 208-96-8 | ACENAPHTHYLENE | 4.7 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 218-01-9 | CHRYSENE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 50-32-8 | BENZO(A)PYRENE | 1.5 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 51-28-5 | 2,4-DINITROPHENOL | 3 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 534-52-1 | 4,6-DINITRO-2-METHYLPHENOL | 1.7 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.96 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 53-70-3 | DIBENZ(A,H)ANTHRACENE | 2.4 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 541-73-1 | 1,3-DICHLOROBENZENE | 0.58 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 56-23-5 | CARBON TETRACHLORIDE | 0.47 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 56-55-3 | BENZO(A)ANTHRACENE | 1.7 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 591-78-6 | 2-HEXANONE | 1.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 59-50-7 | 4-CHLORO-3-METHYLPHENOL | 4.1 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 606-20-2 | 2,6-DINITROTOLUENE | 3.7 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 621-64-7 | N-NITROSODI-N-PROPYLAMINE | 4.3 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 67-66-3 | CHLOROFORM | 0.45 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 67-72-1 | HEXACHLOROETHANE | 2.3 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7005-72-3 | 4-CHLOROPHENYL PHENYL ETHER | 4.7 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 71-43-2 | BENZENE | 0.25 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.65 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7429-90-5 | Aluminum, total | 37 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7439-89-6 | Iron, total | 170 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7439-92-1 | Lead, total | 3.2 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7439-95-4 | Magnesium, total | 38000 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7439-96-5 | Manganese, total | 300 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7439-97-6 | Mercury, total | 0.028 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-02-0 | Nickel, total | 29 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-09-7 | Potassium, total | 14000 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-22-4 | Silver, total | 1.1 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-23-5 | Sodium, total | 46000 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-28-0 | Thallium, total | 4.3 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-36-0 | Antimony, total | 2.5 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-38-2 | Arsenic, total | 8.1 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-39-3 | Barium, total | 41 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-41-7 | Beryllium, total | 0.61 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-43-9 | Cadmium, total | 87 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-47-3 | Chromium, total | 0.93 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-48-4 | Cobalt, total | 2.4 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-50-8 | Copper, total | 2.3 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-62-2 | Vanadium, total | 0.84 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-66-6 | Zinc, total | 16000 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7440-70-2 | Calcium, total | 120000 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 74-83-9 | BROMOMETHANE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 74-87-3 | CHLOROMETHANE | 0.27 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 75-00-3 | CHLOROETHANE | 0.84 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 75-01-4 | VINYL CHLORIDE | 0.11 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 75-15-0 | CARBON DISULFIDE | 0.5 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 75-25-2 | BROMOFORM | 0.45 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 75-27-4 | BROMODICHLOROMETHANE | 0.23 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 75-34-3 | 1,1-DICHLOROETHANE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 75-35-4 | 1,1-DICHLOROETHENE | 0.56 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.85 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 77-47-4 | HEXACHLOROCYCLOPENTADIENE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 7782-49-2 | Selenium, total | 4.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 78-59-1 | ISOPHORONE | 4.5 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 78-87-5 | 1,2-DICHLOROPROPANE | 0.39 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.5 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 79-01-6 | TRICHLOROETHYLENE (TCE) | 1.4 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.77 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 83-32-9 | ACENAPHTHENE | 4.6 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 84-66-2 | DIETHYL PHTHALATE | 2.7 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 84-74-2 | DI-N-BUTYL PHTHALATE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 85-01-8 | PHENANTHRENE | 2.1 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 85-68-7 | BENZYL BUTYL PHTHALATE | 1.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 86-30-6 | N-NITROSODIPHENYLAMINE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 86-73-7 | FLUORENE | 4.7 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 86-74-8 | CARBAZOLE | 1.4 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 87-68-3 | HEXACHLOROBUTADIENE | 2.9 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 87-86-5 | PENTACHLOROPHENOL | 0.78 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 88-06-2 | 2,4,6-TRICHLOROPHENOL | 4 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 88-74-4 | 2-NITROANILINE | 4.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 88-75-5 | 2-NITROPHENOL | 3.7 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 91-20-3 | NAPHTHALENE | 3.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 91-57-6 | 2-METHYLNAPHTHALENE | 3.9 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 91-58-7 | 2-CHLORONAPHTHALENE | 4.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 91-94-1 | 3,3'-DICHLOROBENZIDINE | 2.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.73 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 95-48-7 | 2-METHYLPHENOL (O-CRESOL) | 2.3 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 95-50-1 | 1,2-DICHLOROBENZENE | 0.71 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 95-57-8 | 2-CHLOROPHENOL | 1.1 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 95-95-4 | 2,4,5-TRICHLOROPHENOL | 4.6 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.88 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.66 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 98-86-2 | ACETOPHENONE | 4.5 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 98-95-3 | NITROBENZENE | 3.5 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN | 3/11/03 | | | WS | 99-09-2 | 3-NITROANILINE | 2.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 100-41-4 | ETHYLBENZENE | 0.54 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 100-42-5 | STYRENE | 0.86 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 10061-01-5 | CIS-1,3-DICHLOROPROPENE | 0.19 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 10061-02-6 | TRANS-1,3-DICHLOROPROPENE | 0.19 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 106-46-7 | 1,4-DICHLOROBENZENE | 0.95 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 106-93-4 | 1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE | 0.56 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 107-06-2 | 1,2-DICHLOROETHANE | 0.36 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 108-10-1 | METHYL ISOBUTYL KETONE (4-METHYL-2-PEN | 1.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 108-87-2 | METHYLCYCLOHEXANE | 1.9 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 108-88-3 | TOLUENE | 0.67 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 108-90-7 | CHLOROBENZENE | 0.41 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 110-82-7 | CYCLOHEXANE | 0.89 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 120-82-1 | 1,2,4-TRICHLOROBENZENE | 0.97 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 124-48-1 | DIBROMOCHLOROMETHANE | 0.81 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 127-18-4 | TETRACHLOROETHYLENE(PCE) | 0.45 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 156-59-2 | CIS-1,2-DICHLOROETHYLENE | 1.4 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 156-60-5 | TRANS-1,2-DICHLOROETHENE | 0.89 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 1634-04-4 | TERT-BUTYL METHYL ETHER | 0.61 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 179601-23-1 | Xylenes, -m, -p | 1.8 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 541-73-1 | 1,3-DICHLOROBENZENE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 56-23-5 | CARBON TETRACHLORIDE | 0.49 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 591-78-6 | 2-HEXANONE | 1.1 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 67-64-1 | ACETONE | 2.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 67-66-3 | CHLOROFORM | 0.37 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 71-43-2 | BENZENE | 0.41 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 71-55-6 | 1,1,1-TRICHLOROETHANE | 0.9 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 74-83-9 | BROMOMETHANE | 0.91 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 74-87-3 | CHLOROMETHANE | 0.24 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 75-00-3 | CHLOROETHANE | 0.97 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 75-01-4 | VINYL CHLORIDE | 0.18 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 75-09-2 | METHYLENE CHLORIDE | 0.43 | U | ug/L | | | FALSE |

**Attachment D**
**Analytical Data to be Used in the HHRA**
*Eagle Zinc*
*Hillsboro, Illinois*

| Station ID | Sample ID | Date Collected | Upper Depth | Lower Depth | Matrix | CAS Number | Chemical Name | Result | Qualifier | Units | Detection Limit | Reporting Limit | Detected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 75-15-0 | CARBON DISULFIDE | 0.66 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 75-25-2 | BROMOFORM | 0.94 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 75-27-4 | BROMODICHLOROMETHANE | 0.56 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 75-34-3 | 1,1-DICHLOROETHANE | 0.75 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 75-35-4 | 1,1-DICHLOROETHENE | 0.57 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 75-69-4 | TRICHLOROFLUOROMETHANE | 0.79 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 75-71-8 | DICHLORODIFLUOROMETHANE | 0.99 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 76-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | 0.54 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 78-87-5 | 1,2-DICHLOROPROPANE | 0.46 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 78-93-3 | METHYL ETHYL KETONE (2-BUTANONE) | 4.3 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 79-00-5 | 1,1,2-TRICHLOROETHANE | 0.42 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 79-01-6 | TRICHLOROETHYLENE (TCE) | 2.6 | = | ug/L | | | TRUE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 79-20-9 | METHYL ACETATE | 2.1 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 79-34-5 | 1,1,2,2-TETRACHLOROETHANE | 0.2 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 95-47-6 | O-XYLENE (1,2-DIMETHYLBENZENE) | 0.83 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 95-50-1 | 1,2-DICHLOROBENZENE | 0.83 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 96-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | 0.87 | U | ug/L | | | FALSE |
| SW-WD-PN | SW-WD-PN-031124 | 11/24/03 | | | WS | 98-82-8 | ISOPROPYLBENZENE (CUMENE) | 0.59 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 11096-82-5 | PCB-1260 (AROCHLOR 1260) | 0.97 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 11097-69-1 | PCB-1254 (AROCHLOR 1254) | 0.97 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 11104-28-2 | PCB-1221 (AROCHLOR 1221) | 0.97 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 11141-16-5 | PCB-1232 (AROCHLOR 1232) | 0.97 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 12672-29-6 | PCB-1248 (AROCHLOR 1248) | 0.97 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 12674-11-2 | PCB-1016 (AROCHLOR 1016) | 0.97 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 14808-79-8 | SULFATE (AS SO4) | 430000 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 53469-21-9 | PCB-1242 (AROCHLOR 1242) | 0.97 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7429-90-5 | Aluminum, total | 27 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7439-89-6 | Iron, total | 150 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7439-92-1 | Lead, total | 2.2 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7439-95-4 | Magnesium, total | 33000 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7439-96-5 | Manganese, total | 270 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7439-97-6 | Mercury, total | 0.028 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-02-0 | Nickel, total | 26 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-09-7 | Potassium, total | 13000 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-22-4 | Silver, total | 1.1 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-23-5 | Sodium, total | 41000 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-28-0 | Thallium, total | 4.3 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-36-0 | Antimony, total | 2.5 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-38-2 | Arsenic, total | 8.1 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-39-3 | Barium, total | 40 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-41-7 | Beryllium, total | 0.61 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-43-9 | Cadmium, total | 69 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-47-3 | Chromium, total | 0.93 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-48-4 | Cobalt, total | 1.9 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-50-8 | Copper, total | 1.7 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-62-2 | Vanadium, total | 0.84 | U | ug/L | | | FALSE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-66-6 | Zinc, total | 14000 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7440-70-2 | Calcium, total | 110000 | = | ug/L | | | TRUE |
| SW-WD-PS | SW-WD-PS | 3/11/03 | | | WS | 7782-49-2 | Selenium, total | 4.8 | U | ug/L | | | FALSE |

**Note:**
SO = Soil
SE = Sediment
SO/SE = Sediment sample assigned to surface soil grouping
WS = Surface Water
WG = Groundwater

# Attachment E
# ProUCL Output

APPENDIX E

**Offsite Sediment ProUCL Output**

*Eagle Zinc Site*

*Hillsboro, Illinois*

## General UCL Statistics for Data Sets with Non-Detects

**User Selected Options**

| | |
|---|---|
| From File | macro.wst |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Aluminum, total (mg/kg)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 10 | Number of Distinct Observations | 10 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 2300 | Minimum of Log Data | 7.741 |
| Maximum | 19000 | Maximum of Log Data | 9.852 |
| Mean | 6830 | Mean of log Data | 8.64 |
| Median | 6300 | SD of log Data | 0.638 |
| SD | 4863 | | |
| Std. Error of Mean | 1538 | | |
| Coefficient of Variation | 0.712 | | |
| Skewness | 1.934 | | |

**Relevant UCL Statistics**

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.803 | Shapiro Wilk Test Statistic | 0.955 |
| Shapiro Wilk Critical Value | 0.842 | Shapiro Wilk Critical Value | 0.842 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 9649 | 95% H-UCL | 11609 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 12878 |
| 95% Adjusted-CLT UCL (Chen-1995) | 10364 | 97.5% Chebyshev (MVUE) UCL | 15522 |
| 95% Modified-t UCL (Johnson-1978) | 9806 | 99% Chebyshev (MVUE) UCL | 20715 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 2.024 | Data appear Gamma Distributed at 5% Significance Level |
| Theta Star | 3375 | |
| MLE of Mean | 6830 | |
| MLE of Standard Deviation | 4801 | |
| nu star | 40.48 | |
| Approximate Chi Square Value (.05) | 26.9 | **Nonparametric Statistics** |
| Adjusted Level of Significance | 0.0267 | 95% CLT UCL 9359 |
| Adjusted Chi Square Value | 24.99 | 95% Jackknife UCL 9649 |
| | | 95% Standard Bootstrap UCL 9271 |

APPENDIX E

Offsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Anderson-Darling Test Statistic | 0.326 | 95% Bootstrap-t UCL | 11610 |
| Anderson-Darling 5% Critical Value | 0.733 | 95% Hall's Bootstrap UCL | 21790 |
| Kolmogorov-Smirnov Test Statistic | 0.143 | 95% Percentile Bootstrap UCL | 9390 |
| Kolmogorov-Smirnov 5% Critical Value | 0.269 | 95% BCA Bootstrap UCL | 10170 |
| Data appear Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL | 13533 |
| | | 97.5% Chebyshev(Mean, Sd) UCL | 16433 |
| Assuming Gamma Distribution | | 99% Chebyshev(Mean, Sd) UCL | 22130 |
| 95% Approximate Gamma UCL | 10278 | | |
| 95% Adjusted Gamma UCL | 11063 | | |
| Potential UCL to Use | | Use 95% Approximate Gamma UCL | 10278 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Antimony, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 10 | Number of Detected Data | 9 |
| Number of Distinct Detected Data | 9 | Number of Non-Detect Data | 1 |
| | | Percent Non-Detects | 10.00% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.48 | Minimum Detected | -0.734 |
| Maximum Detected | 12 | Maximum Detected | 2.485 |
| Mean of Detected | 2.541 | Mean of Detected | 0.392 |
| SD of Detected | 3.629 | SD of Detected | 0.995 |
| Minimum Non-Detect | 0.45 | Minimum Non-Detect | -0.799 |
| Maximum Non-Detect | 0.45 | Maximum Non-Detect | -0.799 |

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.581 | Shapiro Wilk Test Statistic | 0.905 |
| 5% Shapiro Wilk Critical Value | 0.829 | 5% Shapiro Wilk Critical Value | 0.829 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

APPENDIX E

Offsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Assuming Normal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 2.31 |
| SD | 3.499 |
| 95% DL/2 (t) UCL | 4.338 |
| | |
| Maximum Likelihood Estimate(MLE) Method | |
| Mean | 2.101 |
| SD | 3.554 |
| 95% MLE (t) UCL | 4.161 |
| 95% MLE (Tiku) UCL | 4.028 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 0.203 |
| SD | 1.111 |
| 95% H-Stat (DL/2) UCL | 7.821 |
| | |
| Log ROS Method | |
| Mean in Log Scale | 0.153 |
| SD in Log Scale | 1.204 |
| Mean in Original Scale | 2.301 |
| SD in Original Scale | 3.505 |
| 95% t UCL | 4.332 |
| 95% Percentile Bootstrap UCL | 4.381 |
| 95% BCA Bootstrap UCL | 4.876 |
| 95% H UCL | 9.948 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.781 |
| Theta Star | 3.254 |
| nu star | 14.06 |
| | |
| A-D Test Statistic | 0.748 |
| 5% A-D Critical Value | 0.742 |
| K-S Test Statistic | 0.742 |
| 5% K-S Critical Value | 0.287 |

Data follow Appr. Gamma Distribution at 5% Significance Level

**Data Distribution Test with Detected Values Only**

Data Follow Appr. Gamma Distribution at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 12 |
| Mean | 2.287 |
| Median | 1.27 |
| SD | 3.515 |
| k star | 0.319 |
| Theta star | 7.168 |
| Nu star | 6.381 |
| AppChi2 | 1.837 |
| 95% Gamma Approximate UCL | 7.942 |
| 95% Adjusted Gamma UCL | 10.09 |

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 2.335 |
| SD | 3.304 |
| SE of Mean | 1.108 |
| 95% KM (t) UCL | 4.367 |
| 95% KM (z) UCL | 4.158 |
| 95% KM (jackknife) UCL | 4.351 |
| 95% KM (bootstrap t) UCL | 9.772 |
| 95% KM (BCA) UCL | 4.471 |
| 95% KM (Percentile Bootstrap) UCL | 4.382 |
| 95% KM (Chebyshev) UCL | 7.166 |
| 97.5% KM (Chebyshev) UCL | 9.256 |
| 99% KM (Chebyshev) UCL | 13.36 |
| | |
| Potential UCLs to Use | |
| 95% KM (Chebyshev) UCL | 7.166 |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

APPENDIX E

**Offsite Sediment ProUCL Output**

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Arsenic, total (mg/kg)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 13 | Number of Distinct Observations | 12 |

| **Raw Statistics** | | **Log-transformed Statistics** | |
|---|---|---|---|
| Minimum | 2.5 | Minimum of Log Data | 0.916 |
| Maximum | 25 | Maximum of Log Data | 3.219 |
| Mean | 6.892 | Mean of log Data | 1.721 |
| Median | 5.8 | SD of log Data | 0.617 |
| SD | 5.869 | | |
| Std. Error of Mean | 1.628 | | |
| Coefficient of Variation | 0.851 | | |
| Skewness | 2.766 | | |

**Relevant UCL Statistics**

| **Normal Distribution Test** | | **Lognormal Distribution Test** | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.655 | Shapiro Wilk Test Statistic | 0.909 |
| Shapiro Wilk Critical Value | 0.866 | Shapiro Wilk Critical Value | 0.866 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
|---|---|---|---|
| 95% Student's-t UCL | 9.793 | 95% H-UCL | 10.11 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 11.8 |
| 95% Adjusted-CLT UCL (Chen-1995) | 10.9 | 97.5% Chebyshev (MVUE) UCL | 14.03 |
| 95% Modified-t UCL (Johnson-1978) | 10 | 99% Chebyshev (MVUE) UCL | 18.41 |

| **Gamma Distribution Test** | | **Data Distribution** |
|---|---|---|
| k star (bias corrected) | 2.006 | Data appear Gamma Distributed at 5% Significance Level |
| Theta Star | 3.435 | |
| MLE of Mean | 6.892 | |
| MLE of Standard Deviation | 4.866 | |
| nu star | 52.17 | |
| Approximate Chi Square Value (.05) | 36.58 | |
| Adjusted Level of Significance | 0.0301 | |
| Adjusted Chi Square Value | 34.72 | |
| Anderson-Darling Test Statistic | 0.72 | |
| Anderson-Darling 5% Critical Value | 0.741 | |
| Kolmogorov-Smirnov Test Statistic | 0.179 | |
| Kolmogorov-Smirnov 5% Critical Value | 0.239 | |
| Data appear Gamma Distributed at 5% Significance Level | | |

| **Nonparametric Statistics** | |
|---|---|
| 95% CLT UCL | 9.57 |
| 95% Jackknife UCL | 9.793 |
| 95% Standard Bootstrap UCL | 9.469 |
| 95% Bootstrap-t UCL | 13.16 |
| 95% Hall's Bootstrap UCL | 20.61 |
| 95% Percentile Bootstrap UCL | 9.854 |
| 95% BCA Bootstrap UCL | 11.1 |
| 95% Chebyshev(Mean, Sd) UCL | 13.99 |
| 97.5% Chebyshev(Mean, Sd) UCL | 17.06 |
| 99% Chebyshev(Mean, Sd) UCL | 23.09 |

| **Assuming Gamma Distribution** | |
|---|---|
| 95% Approximate Gamma UCL | 9.83 |

APPENDIX E

Offsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

95% Adjusted Gamma UCL 10.35

Potential UCL to Use

Use 95% Approximate Gamma UCL 9.83

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Cadmium, total (mg/kg)

General Statistics

Number of Valid Observations 13

Number of Distinct Observations 13

Raw Statistics

| | |
|---|---|
| Minimum | 0.65 |
| Maximum | 96 |
| Mean | 14.65 |
| Median | 3.7 |
| SD | 26.15 |
| Std. Error of Mean | 7.254 |
| Coefficient of Variation | 1.785 |
| Skewness | 2.891 |

Log-transformed Statistics

| | |
|---|---|
| Minimum of Log Data | -0.431 |
| Maximum of Log Data | 4.564 |
| Mean of log Data | 1.532 |
| SD of log Data | 1.582 |

Relevant UCL Statistics

Normal Distribution Test

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.587 |
| Shapiro Wilk Critical Value | 0.866 |

Data not Normal at 5% Significance Level

Lognormal Distribution Test

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.939 |
| Shapiro Wilk Critical Value | 0.866 |

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

| | |
|---|---|
| 95% Student's-t UCL | 27.58 |

95% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 32.79 |
| 95% Modified-t UCL (Johnson-1978) | 28.55 |

Assuming Lognormal Distribution

| | |
|---|---|
| 95% H-UCL | 97.49 |
| 95% Chebyshev (MVUE) UCL | 42.43 |
| 97.5% Chebyshev (MVUE) UCL | 54.93 |
| 99% Chebyshev (MVUE) UCL | 79.47 |

Gamma Distribution Test

| | |
|---|---|
| k star (bias corrected) | 0.47 |
| Theta Star | 31.18 |
| MLE of Mean | 14.65 |
| MLE of Standard Deviation | 21.37 |
| nu star | 12.22 |
| Approximate Chi Square Value (.05) | 5.371 |
| Adjusted Level of Significance | 0.0301 |
| Adjusted Chi Square Value | 4.739 |

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

| | |
|---|---|
| 95% CLT UCL | 26.58 |
| 95% Jackknife UCL | 27.58 |
| 95% Standard Bootstrap UCL | 26.39 |

APPENDIX E

Offsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Anderson-Darling Test Statistic | 0.649 | 95% Bootstrap-t UCL | 49.9 |
| Anderson-Darling 5% Critical Value | 0.786 | 95% Hall's Bootstrap UCL | 66.72 |
| Kolmogorov-Smirnov Test Statistic | 0.175 | 95% Percentile Bootstrap UCL | 26.81 |
| Kolmogorov-Smirnov 5% Critical Value | 0.249 | 95% BCA Bootstrap UCL | 35.14 |
| Data appear Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL | 46.27 |
| | | 97.5% Chebyshev(Mean, Sd) UCL | 59.95 |
| Assuming Gamma Distribution | | 99% Chebyshev(Mean, Sd) UCL | 86.82 |
| 95% Approximate Gamma UCL | 33.33 | | |
| 95% Adjusted Gamma UCL | 37.76 | | |
| Potential UCL to Use | | Use 95% Approximate Gamma UCL | 33.33 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Cobalt, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 10 | Number of Distinct Observations | 10 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 1.9 | Minimum of Log Data | 0.642 |
| Maximum | 14 | Maximum of Log Data | 2.639 |
| Mean | 6.09 | Mean of log Data | 1.63 |
| Median | 5.05 | SD of log Data | 0.622 |
| SD | 3.968 | | |
| Std. Error of Mean | 1.255 | | |
| Coefficient of Variation | 0.652 | | |
| Skewness | 1.236 | | |

Relevant UCL Statistics

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.852 | Shapiro Wilk Test Statistic | 0.966 |
| Shapiro Wilk Critical Value | 0.842 | Shapiro Wilk Critical Value | 0.842 |
| Data appear Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |
| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
| 95% Student's-t UCL | 8.39 | 95% H-UCL | 10.2 |
| 95% UCLs (Adjusted for Skewness) | | 95% Chebyshev (MVUE) UCL | 11.39 |
| 95% Adjusted-CLT UCL (Chen-1995) | 8.678 | 97.5% Chebyshev (MVUE) UCL | 13.7 |
| 95% Modified-t UCL (Johnson-1978) | 8.472 | 99% Chebyshev (MVUE) UCL | 18.23 |
| Gamma Distribution Test | | Data Distribution | |
| k star (bias corrected) | 2.161 | Data appear Normal at 5% Significance Level | |

APPENDIX E

Offsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| Theta Star | 2.818 |
| MLE of Mean | 6.09 |
| MLE of Standard Deviation | 4.142 |
| nu star | 43.23 |
| Approximate Chi Square Value (.05) | 29.15 |
| Adjusted Level of Significance | 0.0267 |
| Adjusted Chi Square Value | 27.16 |
| Anderson-Darling Test Statistic | 0.335 |
| Anderson-Darling 5% Critical Value | 0.732 |
| Kolmogorov-Smirnov Test Statistic | 0.171 |
| Kolmogorov-Smirnov 5% Critical Value | 0.268 |

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

| | |
|---|---|
| 95% Approximate Gamma UCL | 9.03 |
| 95% Adjusted Gamma UCL | 9.694 |

Nonparametric Statistics

| | |
|---|---|
| 95% CLT UCL | 8.154 |
| 95% Jackknife UCL | 8.39 |
| 95% Standard Bootstrap UCL | 8.023 |
| 95% Bootstrap-t UCL | 10.32 |
| 95% Hall's Bootstrap UCL | 21.21 |
| 95% Percentile Bootstrap UCL | 8.23 |
| 95% BCA Bootstrap UCL | 8.47 |
| 95% Chebyshev(Mean, Sd) UCL | 11.56 |
| 97.5% Chebyshev(Mean, Sd) UCL | 13.93 |
| 99% Chebyshev(Mean, Sd) UCL | 18.58 |

Potential UCL to Use

Use 95% Student's-t UCL 8.39

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Copper, total (mg/kg)

General Statistics

| | |
|---|---|
| Number of Valid Observations | 13 |
| Number of Distinct Observations | 13 |

Raw Statistics

| | |
|---|---|
| Minimum | 4.8 |
| Maximum | 320 |
| Mean | 53.56 |
| Median | 18.1 |
| SD | 84.84 |
| Std. Error of Mean | 23.53 |
| Coefficient of Variation | 1.584 |
| Skewness | 2.973 |

Log-transformed Statistics

| | |
|---|---|
| Minimum of Log Data | 1.569 |
| Maximum of Log Data | 5.768 |
| Mean of log Data | 3.234 |
| SD of log Data | 1.215 |

Relevant UCL Statistics

Normal Distribution Test

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.588 |
| Shapiro Wilk Critical Value | 0.866 |

Data not Normal at 5% Significance Level

Lognormal Distribution Test

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.961 |
| Shapiro Wilk Critical Value | 0.866 |

Data appear Lognormal at 5% Significance Level

APPENDIX E

Offsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 95.5 |
| **95% UCLs (Adjusted for Skewness)** | |
| 95% Adjusted-CLT UCL (Chen-1995) | 113 |
| 95% Modified-t UCL (Johnson-1978) | 98.73 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 165.1 |
| 95% Chebyshev (MVUE) UCL | 127.1 |
| 97.5% Chebyshev (MVUE) UCL | 161.1 |
| 99% Chebyshev (MVUE) UCL | 227.8 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 0.663 |
| Theta Star | 80.79 |
| MLE of Mean | 53.56 |
| MLE of Standard Deviation | 65.78 |
| nu star | 17.24 |
| Approximate Chi Square Value (.05) | 8.842 |
| Adjusted Level of Significance | 0.0301 |
| Adjusted Chi Square Value | 7.999 |
| Anderson-Darling Test Statistic | 0.602 |
| Anderson-Darling 5% Critical Value | 0.768 |
| Kolmogorov-Smirnov Test Statistic | 0.202 |
| Kolmogorov-Smirnov 5% Critical Value | 0.245 |

Data appear Gamma Distributed at 5% Significance Level

**Data Distribution**

Data appear Gamma Distributed at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 92.27 |
| 95% Jackknife UCL | 95.5 |
| 95% Standard Bootstrap UCL | 91.31 |
| 95% Bootstrap-t UCL | 177.2 |
| 95% Hall's Bootstrap UCL | 235.7 |
| 95% Percentile Bootstrap UCL | 97.95 |
| 95% BCA Bootstrap UCL | 116.9 |
| 95% Chebyshev(Mean, Sd) UCL | 156.1 |
| 97.5% Chebyshev(Mean, Sd) UCL | 200.5 |
| 99% Chebyshev(Mean, Sd) UCL | 287.7 |

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 104.4 |
| 95% Adjusted Gamma UCL | 115.4 |

**Potential UCL to Use**

Use 95% Approximate Gamma UCL 104.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

**Iron, total (mg/kg)**

**General Statistics**

| | |
|---|---|
| Number of Valid Observations | 10 |
| Number of Distinct Observations | 8 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 6900 |
| Maximum | 45000 |
| Mean | 15440 |
| Median | 10400 |
| SD | 11737 |
| Std. Error of Mean | 3712 |
| Coefficient of Variation | 0.76 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 8.839 |
| Maximum of Log Data | 10.71 |
| Mean of log Data | 9.449 |
| SD of log Data | 0.621 |

Skewness 2.034

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.737 |
| Shapiro Wilk Critical Value | 0.842 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.876 |
| Shapiro Wilk Critical Value | 0.842 |

Data appear Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 22244 |

**95% UCLs (Adjusted for Skewness)**

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 24096 |
| 95% Modified-t UCL (Johnson-1978) | 22642 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 25328 |
| 95% Chebyshev (MVUE) UCL | 28304 |
| 97.5% Chebyshev (MVUE) UCL | 34032 |
| 99% Chebyshev (MVUE) UCL | 45284 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 1.965 |
| Theta Star | 7858 |
| MLE of Mean | 15440 |
| MLE of Standard Deviation | 11015 |
| nu star | 39.3 |
| Approximate Chi Square Value (.05) | 25.94 |
| Adjusted Level of Significance | 0.0267 |
| Adjusted Chi Square Value | 24.06 |
| Anderson-Darling Test Statistic | 0.665 |
| Anderson-Darling 5% Critical Value | 0.733 |
| Kolmogorov-Smirnov Test Statistic | 0.225 |
| Kolmogorov-Smirnov 5% Critical Value | 0.269 |

Data appear Gamma Distributed at 5% Significance Level

**Data Distribution**

Data appear Gamma Distributed at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 21545 |
| 95% Jackknife UCL | 22244 |
| 95% Standard Bootstrap UCL | 21170 |
| 95% Bootstrap-t UCL | 27291 |
| 95% Hall's Bootstrap UCL | 42711 |
| 95% Percentile Bootstrap UCL | 21690 |
| 95% BCA Bootstrap UCL | 23960 |
| 95% Chebyshev(Mean, Sd) UCL | 31619 |
| 97.5% Chebyshev(Mean, Sd) UCL | 38619 |
| 99% Chebyshev(Mean, Sd) UCL | 52370 |

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 23393 |
| 95% Adjusted Gamma UCL | 25213 |

**Potential UCL to Use**

Use 95% Approximate Gamma UCL 23393

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

**Lead, total (mg/kg)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 13 | Number of Distinct Observations | 13 |

APPENDIX E

**Offsite Sediment ProUCL Output**

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Raw Statistics**

| | |
|---|---|
| Minimum | 20 |
| Maximum | 2700 |
| Mean | 320.9 |
| Median | 65.1 |
| SD | 728.5 |
| Std. Error of Mean | 202.1 |
| Coefficient of Variation | 2.27 |
| Skewness | 3.381 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 2.996 |
| Maximum of Log Data | 7.901 |
| Mean of log Data | 4.494 |
| SD of log Data | 1.475 |

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.456 |
| Shapiro Wilk Critical Value | 0.866 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.882 |
| Shapiro Wilk Critical Value | 0.866 |

Data appear Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 681 |

**95% UCLs (Adjusted for Skewness)**

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 855.7 |
| 95% Modified-t UCL (Johnson-1978) | 712.6 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 1300 |
| 95% Chebyshev (MVUE) UCL | 683.7 |
| 97.5% Chebyshev (MVUE) UCL | 880.4 |
| 99% Chebyshev (MVUE) UCL | 1267 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 0.434 |
| Theta Star | 739.2 |
| MLE of Mean | 320.9 |
| MLE of Standard Deviation | 487 |
| nu star | 11.29 |
| Approximate Chi Square Value (.05) | 4.76 |
| Adjusted Level of Significance | 0.0301 |
| Adjusted Chi Square Value | 4.173 |

| | |
|---|---|
| Anderson-Darling Test Statistic | 1.29 |
| Anderson-Darling 5% Critical Value | 0.79 |
| Kolmogorov-Smirnov Test Statistic | 0.294 |
| Kolmogorov-Smirnov 5% Critical Value | 0.25 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 760.7 |
| 95% Adjusted Gamma UCL | 867.8 |

**Data Distribution**

Data appear Lognormal at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 653.2 |
| 95% Jackknife UCL | 681 |
| 95% Standard Bootstrap UCL | 635.9 |
| 95% Bootstrap-t UCL | 2007 |
| 95% Hall's Bootstrap UCL | 1842 |
| 95% Percentile Bootstrap UCL | 713.5 |
| 95% BCA Bootstrap UCL | 902.4 |
| 95% Chebyshev(Mean, Sd) UCL | 1202 |
| 97.5% Chebyshev(Mean, Sd) UCL | 1583 |
| 99% Chebyshev(Mean, Sd) UCL | 2331 |

**Potential UCL to Use**

Use 95% Chebyshev (Mean, Sd) UCL 1202

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

APPENDIX E

Offsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Manganese, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 13 | Number of Distinct Observations | 13 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 91.2 | Minimum of Log Data | 4.513 |
| Maximum | 750 | Maximum of Log Data | 6.62 |
| Mean | 367 | Mean of log Data | 5.74 |
| Median | 360 | SD of log Data | 0.637 |
| SD | 205.2 | | |
| Std. Error of Mean | 56.91 | | |
| Coefficient of Variation | 0.559 | | |
| Skewness | 0.725 | | |

Relevant UCL Statistics

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.921 | Shapiro Wilk Test Statistic | 0.938 |
| Shapiro Wilk Critical Value | 0.866 | Shapiro Wilk Critical Value | 0.866 |
| Data appear Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 468.4 | 95% H-UCL | 579.8 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 673.8 |
| 95% Adjusted-CLT UCL (Chen-1995) | 472.8 | 97.5% Chebyshev (MVUE) UCL | 803.4 |
| 95% Modified-t UCL (Johnson-1978) | 470.4 | 99% Chebyshev (MVUE) UCL | 1058 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 2.494 | Data appear Normal at 5% Significance Level |
| Theta Star | 147.1 | |
| MLE of Mean | 367 | |
| MLE of Standard Deviation | 232.4 | |
| nu star | 64.85 | |
| Approximate Chi Square Value (.05) | 47.32 | **Nonparametric Statistics** |
| Adjusted Level of Significance | 0.0301 | 95% CLT UCL 460.6 |
| Adjusted Chi Square Value | 45.19 | 95% Jackknife UCL 468.4 |
| | | 95% Standard Bootstrap UCL 459.5 |
| Anderson-Darling Test Statistic | 0.264 | 95% Bootstrap-t UCL 491 |
| Anderson-Darling 5% Critical Value | 0.739 | 95% Hall's Bootstrap UCL 523.4 |
| Kolmogorov-Smirnov Test Statistic | 0.117 | 95% Percentile Bootstrap UCL 457.9 |
| Kolmogorov-Smirnov 5% Critical Value | 0.238 | 95% BCA Bootstrap UCL 466.9 |
| Data appear Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL 615.1 |

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Offsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| 97.5% Chebyshev(Mean, Sd) UCL | 722.4 |
| 99% Chebyshev(Mean, Sd) UCL | 933.3 |

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 503 |
| 95% Adjusted Gamma UCL | 526.6 |

**Potential UCL to Use** — Use 95% Student's-t UCL 468.4

**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**

**Zinc, total (mg/kg)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 13 | Number of Distinct Observations | 13 |

| **Raw Statistics** | | **Log-transformed Statistics** | |
|---|---|---|---|
| Minimum | 400 | Minimum of Log Data | 5.991 |
| Maximum | 23000 | Maximum of Log Data | 10.04 |
| Mean | 5420 | Mean of log Data | 7.785 |
| Median | 4480 | SD of log Data | 1.473 |
| SD | 6392 | | |
| Std. Error of Mean | 1773 | | |
| Coefficient of Variation | 1.179 | | |
| Skewness | 1.854 | | |

**Relevant UCL Statistics**

| **Normal Distribution Test** | | **Lognormal Distribution Test** | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.773 | Shapiro Wilk Test Statistic | 0.86 |
| Shapiro Wilk Critical Value | 0.866 | Shapiro Wilk Critical Value | 0.866 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| **Assuming Normal Distribution** | | **Assuming Lognormal Distribution** | |
|---|---|---|---|
| 95% Student's-t UCL | 8579 | 95% H-UCL | 34745 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 18326 |
| 95% Adjusted-CLT UCL (Chen-1995) | 9310 | 97.5% Chebyshev (MVUE) UCL | 23593 |
| 95% Modified-t UCL (Johnson-1978) | 8731 | 99% Chebyshev (MVUE) UCL | 33939 |

| **Gamma Distribution Test** | | **Data Distribution** |
|---|---|---|
| k star (bias corrected) | 0.619 | Data appear Gamma Distributed at 5% Significance Level |
| Theta Star | 8755 | |
| MLE of Mean | 5420 | |
| MLE of Standard Deviation | 6888 | |
| nu star | 16.1 | |
| Approximate Chi Square Value (.05) | 8.03 | **Nonparametric Statistics** |

APPENDIX E

Offsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Adjusted Level of Significance | 0.0301 | 95% CLT UCL | 8336 |
| Adjusted Chi Square Value | 7.231 | 95% Jackknife UCL | 8579 |
| | | 95% Standard Bootstrap UCL | 8147 |
| Anderson-Darling Test Statistic | 0.71 | 95% Bootstrap-t UCL | 10491 |
| Anderson-Darling 5% Critical Value | 0.771 | 95% Hall's Bootstrap UCL | 19991 |
| Kolmogorov-Smirnov Test Statistic | 0.233 | 95% Percentile Bootstrap UCL | 8502 |
| Kolmogorov-Smirnov 5% Critical Value | 0.246 | 95% BCA Bootstrap UCL | 9026 |
| Data appear Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL | 13147 |
| | | 97.5% Chebyshev(Mean, Sd) UCL | 16491 |
| Assuming Gamma Distribution | | 99% Chebyshev(Mean, Sd) UCL | 23058 |
| 95% Approximate Gamma UCL | 10864 | | |
| 95% Adjusted Gamma UCL | 12064 | | |
| Potential UCL to Use | | Use 95% Approximate Gamma UCL | 10864 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

APPENDIX E

Offsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

## General UCL Statistics for Data Sets with Non-Detects

**User Selected Options**

| | |
|---|---|
| From File | macro.wst |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Arsenic, total (ug/L)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 9 | Number of Detected Data | 3 |
| Number of Distinct Detected Data | 3 | Number of Non-Detect Data | 6 |
| | | Percent Non-Detects | 66.67% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 1.2 | Minimum Detected | 0.182 |
| Maximum Detected | 2.3 | Maximum Detected | 0.833 |
| Mean of Detected | 1.9 | Mean of Detected | 0.601 |
| SD of Detected | 0.608 | SD of Detected | 0.363 |
| Minimum Non-Detect | 8.1 | Minimum Non-Detect | 2.092 |
| Maximum Non-Detect | 10 | Maximum Non-Detect | 2.303 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 9 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 0 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 100.00% |

Warning: There are only 3 Distinct Detected Values in this data set

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.

Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

**UCL Statistics**

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.818 | Shapiro Wilk Test Statistic | 0.801 |
| 5% Shapiro Wilk Critical Value | 0.767 | 5% Shapiro Wilk Critical Value | 0.767 |
| Data appear Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 3.65 | Mean | 1.203 |
| SD | 1.409 | SD | 0.495 |

APPENDIX E

Offsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| 95% DL/2 (t) UCL | 4.523 | 95% H-Stat (DL/2) UCL | 5.556 |
| | | | |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| MLE method failed to converge properly | | Mean in Log Scale | 0.601 |
| | | SD in Log Scale | 0.293 |
| | | Mean in Original Scale | 1.893 |
| | | SD in Original Scale | 0.526 |
| | | 95% t UCL | 2.219 |
| | | 95% Percentile Bootstrap UCL | 2.16 |
| | | 95% BCA Bootstrap UCL | 2.174 |
| | | 95% H-UCL | 2.344 |
| | | | |
| Gamma Distribution Test with Detected Values Only | | Data Distribution Test with Detected Values Only | |
| k star (bias corrected) | N/A | Data appear Normal at 5% Significance Level | |
| Theta Star | N/A | | |
| nu star | N/A | | |
| | | | |
| A-D Test Statistic | N/A | Nonparametric Statistics | |
| 5% A-D Critical Value | N/A | Kaplan-Meier (KM) Method | |
| K-S Test Statistic | N/A | Mean | 1.9 |
| 5% K-S Critical Value | N/A | SD | 0.497 |
| Data not Gamma Distributed at 5% Significance Level | | SE of Mean | 0.351 |
| | | 95% KM (t) UCL | 2.553 |
| Assuming Gamma Distribution | | 95% KM (z) UCL | 2.478 |
| Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | 2.654 |
| Minimum | N/A | 95% KM (bootstrap t) UCL | 2.454 |
| Maximum | N/A | 95% KM (BCA) UCL | N/A |
| Mean | N/A | 95% KM (Percentile Bootstrap) UCL | 2.3 |
| Median | N/A | 95% KM (Chebyshev) UCL | 3.431 |
| SD | N/A | 97.5% KM (Chebyshev) UCL | 4.093 |
| k star | N/A | 99% KM (Chebyshev) UCL | 5.394 |
| Theta star | N/A | | |
| Nu star | N/A | Potential UCLs to Use | |
| AppChi2 | N/A | 95% KM (t) UCL | 2.553 |
| 95% Gamma Approximate UCL | N/A | 95% KM (Percentile Bootstrap) UCL | 2.3 |
| 95% Adjusted Gamma UCL | N/A | | |

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

APPENDIX E

Offsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Cadmium, total (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 9 | Number of Detected Data | 8 |
| Number of Distinct Detected Data | 8 | Number of Non-Detect Data | 1 |
| | | Percent Non-Detects | 11.11% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.19 | Minimum Detected | -1.661 |
| Maximum Detected | 34 | Maximum Detected | 3.526 |
| Mean of Detected | 11.84 | Mean of Detected | 1.631 |
| SD of Detected | 11.78 | SD of Detected | 1.761 |
| Minimum Non-Detect | 0.53 | Minimum Non-Detect | -0.635 |
| Maximum Non-Detect | 0.53 | Maximum Non-Detect | -0.635 |

Warning: There are only 8 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.891 | Shapiro Wilk Test Statistic | 0.909 |
| 5% Shapiro Wilk Critical Value | 0.818 | 5% Shapiro Wilk Critical Value | 0.818 |
| Data appear Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 10.55 | Mean | 1.302 |
| SD | 11.68 | SD | 1.92 |
| 95% DL/2 (t) UCL | 17.79 | 95% H-Stat (DL/2) UCL | 971.7 |
| Maximum Likelihood Estimate(MLE) Method | | Log ROS Method | |
| Mean | 8.813 | Mean in Log Scale | 1.306 |
| SD | 13.32 | SD in Log Scale | 1.914 |
| 95% MLE (t) UCL | 17.07 | Mean in Original Scale | 10.55 |
| 95% MLE (Tiku) UCL | 17.25 | SD in Original Scale | 11.67 |
| | | 95% t UCL | 17.79 |
| | | 95% Percentile Bootstrap UCL | 17.02 |
| | | 95% BCA Bootstrap UCL | 17.95 |
| | | 95% H UCL | 945.4 |

APPENDIX E

Offsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.531 |
| Theta Star | 22.27 |
| nu star | 8.503 |
| | |
| A-D Test Statistic | 0.274 |
| 5% A-D Critical Value | 0.747 |
| K-S Test Statistic | 0.747 |
| 5% K-S Critical Value | 0.305 |

Data appear Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 34 |
| Mean | 10.52 |
| Median | 5.9 |
| SD | 11.71 |
| k star | 0.264 |
| Theta star | 39.83 |
| Nu star | 4.755 |
| AppChi2 | 1.041 |
| 95% Gamma Approximate UCL | 48.07 |
| 95% Adjusted Gamma UCL | 68.98 |

Note: DL/2 is not a recommended method.

**Data Distribution Test with Detected Values Only**

Data appear Normal at 5% Significance Level

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 10.54 |
| SD | 11.02 |
| SE of Mean | 3.925 |
| 95% KM (t) UCL | 17.84 |
| 95% KM (z) UCL | 17 |
| 95% KM (jackknife) UCL | 17.74 |
| 95% KM (bootstrap t) UCL | 19.7 |
| 95% KM (BCA) UCL | 17.76 |
| 95% KM (Percentile Bootstrap) UCL | 17.03 |
| 95% KM (Chebyshev) UCL | 27.65 |
| 97.5% KM (Chebyshev) UCL | 35.06 |
| 99% KM (Chebyshev) UCL | 49.6 |

**Potential UCLs to Use**

| | |
|---|---|
| 95% KM (t) UCL | 17.84 |
| 95% KM (Percentile Bootstrap) UCL | 17.03 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Cobalt, total (ug/L)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 6 | Number of Detected Data | 4 |
| Number of Distinct Detected Data | 4 | Number of Non-Detect Data | 2 |
| | | Percent Non-Detects | 33.33% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.81 | Minimum Detected | -0.211 |
| Maximum Detected | 1.6 | Maximum Detected | 0.47 |
| Mean of Detected | 1.048 | Mean of Detected | 0.00652 |
| SD of Detected | 0.37 | SD of Detected | 0.312 |
| Minimum Non-Detect | 0.9 | Minimum Non-Detect | -0.105 |
| Maximum Non-Detect | 0.9 | Maximum Non-Detect | -0.105 |

APPENDIX E

Offsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Warning: There are only 4 Distinct Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

| Normal Distribution Test with Detected Values Only | |
|---|---|
| Shapiro Wilk Test Statistic | 0.725 |
| 5% Shapiro Wilk Critical Value | 0.748 |
| Data not Normal at 5% Significance Level | |

| Lognormal Distribution Test with Detected Values Only | |
|---|---|
| Shapiro Wilk Test Statistic | 0.76 |
| 5% Shapiro Wilk Critical Value | 0.748 |
| Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 0.848 |
| SD | 0.421 |
| 95% DL/2 (t) UCL | 1.195 |
| Maximum Likelihood Estimate(MLE) Method | N/A |
| MLE method failed to converge properly | |

| Assuming Lognormal Distribution | |
|---|---|
| DL/2 Substitution Method | |
| Mean | -0.262 |
| SD | 0.481 |
| 95% H-Stat (DL/2) UCL | 1.509 |
| Log ROS Method | |
| Mean in Log Scale | -0.0606 |
| SD in Log Scale | 0.269 |
| Mean in Original Scale | 0.974 |
| SD in Original Scale | 0.312 |
| 95% t UCL | 1.23 |
| 95% Percentile Bootstrap UCL | 1.21 |
| 95% BCA Bootstrap UCL | 1.243 |
| 95% H-UCL | 1.268 |

| Gamma Distribution Test with Detected Values Only | |
|---|---|
| k star (bias corrected) | 3.342 |
| Theta Star | 0.313 |
| nu star | 26.73 |
| A-D Test Statistic | 0.697 |
| 5% A-D Critical Value | 0.657 |
| K-S Test Statistic | 0.657 |
| 5% K-S Critical Value | 0.395 |
| Data not Gamma Distributed at 5% Significance Level | |

| Data Distribution Test with Detected Values Only |
|---|
| Data appear Lognormal at 5% Significance Level |

| Assuming Gamma Distribution | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.723 |
| Maximum | 1.6 |
| Mean | 0.978 |
| Median | 0.89 |

| Nonparametric Statistics | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 0.98 |
| SD | 0.279 |
| SE of Mean | 0.132 |
| 95% KM (t) UCL | 1.247 |
| 95% KM (z) UCL | 1.198 |
| 95% KM (jackknife) UCL | 1.236 |
| 95% KM (bootstrap t) UCL | 3.508 |
| 95% KM (BCA) UCL | 1.25 |
| 95% KM (Percentile Bootstrap) UCL | 1.235 |
| 95% KM (Chebyshev) UCL | 1.557 |

APPENDIX E

Offsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| SD | 0.315 | 97.5% KM (Chebyshev) UCL | 1.807 |
| k star | 7.305 | 99% KM (Chebyshev) UCL | 2.298 |
| Theta star | 0.134 | | |
| Nu star | 87.65 | Potential UCLs to Use | |
| AppChi2 | 67.07 | 95% KM (BCA) UCL | 1.25 |
| 95% Gamma Approximate UCL | 1.278 | | |
| 95% Adjusted Gamma UCL | N/A | | |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Lead, total (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 9 | Number of Detected Data | 5 |
| Number of Distinct Detected Data | 5 | Number of Non-Detect Data | 4 |
| | | Percent Non-Detects | 44.44% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 2.3 | Minimum Detected | 0.833 |
| Maximum Detected | 18.9 | Maximum Detected | 2.939 |
| Mean of Detected | 6.6 | Mean of Detected | 1.557 |
| SD of Detected | 6.965 | SD of Detected | 0.832 |
| Minimum Non-Detect | 1.3 | Minimum Non-Detect | 0.262 |
| Maximum Non-Detect | 10 | Maximum Non-Detect | 2.303 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 8 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 1 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 88.89% |

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.695 | Shapiro Wilk Test Statistic | 0.866 |
| 5% Shapiro Wilk Critical Value | 0.762 | 5% Shapiro Wilk Critical Value | 0.762 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

APPENDIX E

Offsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Assuming Normal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 4.922 |
| SD | 5.53 |
| 95% DL/2 (t) UCL | 8.35 |
| | |
| Maximum Likelihood Estimate(MLE) Method | N/A |

**MLE method failed to converge properly**

**Assuming Lognormal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 1.127 |
| SD | 1.061 |
| 95% H-Stat (DL/2) UCL | 19.26 |
| | |
| Log ROS Method | |
| Mean in Log Scale | 0.966 |
| SD in Log Scale | 1.026 |
| Mean in Original Scale | 4.364 |
| SD in Original Scale | 5.646 |
| 95% t UCL | 7.864 |
| 95% Percentile Bootstrap UCL | 7.776 |
| 95% BCA Bootstrap UCL | 8.785 |
| 95% H-UCL | 14.69 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.798 |
| Theta Star | 8.268 |
| nu star | 7.982 |
| | |
| A-D Test Statistic | 0.589 |
| 5% A-D Critical Value | 0.686 |
| K-S Test Statistic | 0.686 |
| 5% K-S Critical Value | 0.361 |

Data appear Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 18.9 |
| Mean | 4.149 |
| Median | 2.8 |
| SD | 5.871 |
| k star | 0.176 |
| Theta star | 23.54 |
| Nu star | 3.172 |
| AppChi2 | 0.425 |
| 95% Gamma Approximate UCL | 30.95 |
| 95% Adjusted Gamma UCL | 48.72 |

**Data Distribution Test with Detected Values Only**

Data appear Gamma Distributed at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 4.87 |
| SD | 5.062 |
| SE of Mean | 1.899 |
| 95% KM (t) UCL | 8.402 |
| 95% KM (z) UCL | 7.994 |
| 95% KM (jackknife) UCL | 8.144 |
| 95% KM (bootstrap t) UCL | 18.76 |
| 95% KM (BCA) UCL | 8.807 |
| 95% KM (Percentile Bootstrap) UCL | 8.333 |
| 95% KM (Chebyshev) UCL | 13.15 |
| 97.5% KM (Chebyshev) UCL | 16.73 |
| 99% KM (Chebyshev) UCL | 23.77 |
| | |
| Potential UCLs to Use | |
| 95% KM (BCA) UCL | 8.807 |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

APPENDIX E

Offsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Manganese, total (ug/L)

General Statistics

Number of Valid Observations 9

Number of Distinct Observations 9

Raw Statistics

| | |
|---|---|
| Minimum | 78 |
| Maximum | 1130 |
| Mean | 400.4 |
| Median | 300 |
| SD | 323.7 |
| Std. Error of Mean | 107.9 |
| Coefficient of Variation | 0.808 |
| Skewness | 1.577 |

Log-transformed Statistics

| | |
|---|---|
| Minimum of Log Data | 4.357 |
| Maximum of Log Data | 7.03 |
| Mean of log Data | 5.703 |
| SD of log Data | 0.84 |

Warning: There are only 9 Values in this data

Note: It should be noted that even though bootstrap methods may be performed on this data set, the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.854 |
| Shapiro Wilk Critical Value | 0.829 |

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.961 |
| Shapiro Wilk Critical Value | 0.829 |

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL 601.1

95% UCLs (Adjusted for Skewness)

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 638.5 |
| 95% Modified-t UCL (Johnson-1978) | 610.5 |

Assuming Lognormal Distribution

| | |
|---|---|
| 95% H-UCL | 1009 |
| 95% Chebyshev (MVUE) UCL | 918.2 |
| 97.5% Chebyshev (MVUE) UCL | 1140 |
| 99% Chebyshev (MVUE) UCL | 1574 |

Gamma Distribution Test

| | |
|---|---|
| k star (bias corrected) | 1.326 |
| Theta Star | 302 |
| MLE of Mean | 400.4 |
| MLE of Standard Deviation | 347.7 |
| nu star | 23.87 |
| Approximate Chi Square Value (.05) | 13.75 |
| Adjusted Level of Significance | 0.0231 |
| Adjusted Chi Square Value | 12.16 |

| | |
|---|---|
| Anderson-Darling Test Statistic | 0.23 |
| Anderson-Darling 5% Critical Value | 0.731 |
| Kolmogorov-Smirnov Test Statistic | 0.143 |

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

| | |
|---|---|
| 95% CLT UCL | 577.9 |
| 95% Jackknife UCL | 601.1 |
| 95% Standard Bootstrap UCL | 562.2 |
| 95% Bootstrap-t UCL | 727.1 |
| 95% Hall's Bootstrap UCL | 1495 |
| 95% Percentile Bootstrap UCL | 588.2 |

APPENDIX E

Offsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Kolmogorov-Smirnov 5% Critical Value 0.283

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL 695.2

95% Adjusted Gamma UCL 786.1

95% BCA Bootstrap UCL 631.8

95% Chebyshev(Mean, Sd) UCL 870.7

97.5% Chebyshev(Mean, Sd) UCL 1074

99% Chebyshev(Mean, Sd) UCL 1474

Potential UCL to Use

Use 95% Student's-t UCL 601.1

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Zinc, total (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 9 | Number of Detected Data | 8 |
| Number of Distinct Detected Data | 8 | Number of Non-Detect Data | 1 |
| | | Percent Non-Detects | 11.11% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 710 | Minimum Detected | 6.565 |
| Maximum Detected | 26000 | Maximum Detected | 10.17 |
| Mean of Detected | 7811 | Mean of Detected | 8.369 |
| SD of Detected | 8639 | SD of Detected | 1.261 |
| Minimum Non-Detect | 72 | Minimum Non-Detect | 4.277 |
| Maximum Non-Detect | 72 | Maximum Non-Detect | 4.277 |

Warning: There are only 8 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.809 | Shapiro Wilk Test Statistic | 0.949 |
| 5% Shapiro Wilk Critical Value | 0.818 | 5% Shapiro Wilk Critical Value | 0.818 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 6947 | Mean | 7.837 |
| SD | 8487 | SD | 1.984 |

APPENDIX E

Offsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| 95% DL/2 (t) UCL | 12208 |

| | |
|---|---|
| 95% H-Stat (DL/2) UCL | 964773 |

| | |
|---|---|
| Maximum Likelihood Estimate(MLE) Method | |
| Mean | 6383 |
| SD | 8738 |
| 95% MLE (t) UCL | 11800 |
| 95% MLE (Tiku) UCL | 11615 |

| | |
|---|---|
| Log ROS Method | |
| Mean in Log Scale | 8.024 |
| SD in Log Scale | 1.57 |
| Mean in Original Scale | 6965 |
| SD in Original Scale | 8471 |
| 95% t UCL | 12215 |
| 95% Percentile Bootstrap UCL | 11839 |
| 95% BCA Bootstrap UCL | 12642 |
| 95% H UCL | 135737 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.692 |
| Theta Star | 11283 |
| nu star | 11.08 |
| | |
| A-D Test Statistic | 0.237 |
| 5% A-D Critical Value | 0.736 |
| K-S Test Statistic | 0.736 |
| 5% K-S Critical Value | 0.302 |

Data appear Gamma Distributed at 5% Significance Level

**Data Distribution Test with Detected Values Only**

Data appear Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 26000 |
| Mean | 6943 |
| Median | 4000 |
| SD | 8490 |
| k star | 0.236 |
| Theta star | 29441 |
| Nu star | 4.245 |
| AppChi2 | 0.821 |
| 95% Gamma Approximate UCL | 35908 |
| 95% Adjusted Gamma UCL | 53019 |

Note: DL/2 is not a recommended method.

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 7022 |
| SD | 7939 |
| SE of Mean | 2829 |
| 95% KM (t) UCL | 12283 |
| 95% KM (z) UCL | 11676 |
| 95% KM (jackknife) UCL | 12235 |
| 95% KM (bootstrap t) UCL | 21612 |
| 95% KM (BCA) UCL | 12226 |
| 95% KM (Percentile Bootstrap) UCL | 11683 |
| 95% KM (Chebyshev) UCL | 19354 |
| 97.5% KM (Chebyshev) UCL | 24690 |
| 99% KM (Chebyshev) UCL | 35171 |

Potential UCLs to Use

| | |
|---|---|
| 95% KM (Chebyshev) UCL | 19354 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

## General UCL Statistics for Data Sets with Non-Detects

**User Selected Options**

| | |
|---|---|
| From File | C:\Documents and Settings\hawata\My Documents_Project\Eagle Zinc\ProUCL\EZ_GW1.xls.wst |
| Full Precision | ON |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Aluminum, total (ug/L)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 12 | Number of Distinct Observations | 11 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 82 |
| Maximum | 110000 |
| Mean | 19901 |
| Median | 935 |
| SD | 36835.292 |
| Std. Error of Mean | 10633.433 |
| Coefficient of Variation | 1.8509267 |
| Skewness | 1.7957913 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 4.4067192 |
| Maximum of Log Data | 11.608236 |
| Mean of log Data | 7.5047924 |
| SD of log Data | 2.3993605 |

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.6136356 |
| Shapiro Wilk Critical Value | 0.859 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.8655951 |
| Shapiro Wilk Critical Value | 0.859 |

Data appear Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 38997.421 |

**95% UCLs (Adjusted for Skewness)**

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 43281.493 |
| 95% Modified-t UCL (Johnson-1978) | 39916.15 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 2212192.2 |
| 95% Chebyshev (MVUE) UCL | 72714.891 |
| 97.5% Chebyshev (MVUE) UCL | 96622.945 |
| 99% Chebyshev (MVUE) UCL | 143585.69 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 0.2728417 |
| Theta Star | 72939.743 |
| MLE of Mean | 19901 |
| MLE of Standard Deviation | 38099.525 |
| nu star | 6.5481997 |
| Approximate Chi Square Value (.05) | 1.9261292 |
| Adjusted Level of Significance | 0.02896 |
| Adjusted Chi Square Value | 1.5683965 |

**Data Distribution**

Data appear Lognormal at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 37391.441 |
| 95% Jackknife UCL | 38997.421 |
| 95% Standard Bootstrap UCL | 36632.599 |

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Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Anderson-Darling Test Statistic | 1.3991158 | 95% Bootstrap-t UCL | 56094.975 |
| Anderson-Darling 5% Critical Value | 0.8281569 | 95% Hall's Bootstrap UCL | 37185.612 |
| Kolmogorov-Smirnov Test Statistic | 0.3777003 | 95% Percentile Bootstrap UCL | 37989.333 |
| Kolmogorov-Smirnov 5% Critical Value | 0.2659252 | 95% BCA Bootstrap UCL | 43416 |
| Data not Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL | 66251.059 |
| | | 97.5% Chebyshev(Mean, Sd) UCL | 86306.767 |
| Assuming Gamma Distribution | | 99% Chebyshev(Mean, Sd) UCL | 125702.32 |
| 95% Approximate Gamma UCL | 67656.79 | | |
| 95% Adjusted Gamma UCL | 83088.508 | | |

Potential UCL to Use — Use 99% Chebyshev (Mean, Sd) UCL 125702.32

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Antimony, dissolved (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 12 | Number of Detected Data | 1 |
| Number of Distinct Detected Data | 1 | Number of Non-Detect Data | 11 |
| | | Percent Non-Detects | 91.67% |

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Antimony, dissolved (ug/L) was not processed!

Antimony, total (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 12 | Number of Detected Data | 4 |
| Number of Distinct Detected Data | 4 | Number of Non-Detect Data | 8 |
| | | Percent Non-Detects | 66.67% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 2.5 | Minimum Detected | 0.9162907 |
| Maximum Detected | 5.6 | Maximum Detected | 1.7227666 |
| Mean of Detected | 3.85 | Mean of Detected | 1.2931885 |
| SD of Detected | 1.4617341 | SD of Detected | 0.3832023 |
| Minimum Non-Detect | 1.25 | Minimum Non-Detect | 0.2231436 |
| Maximum Non-Detect | 1.25 | Maximum Non-Detect | 0.2231436 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Warning: There are only 4 Distinct Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

## UCL Statistics

### Normal Distribution Test with Detected Values Only

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.9101725 |
| 5% Shapiro Wilk Critical Value | 0.748 |

Data appear Normal at 5% Significance Level

### Assuming Normal Distribution

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 1.7 |
| SD | 1.761843 |
| 95% DL/2 (t) UCL | 2.6133875 |
| Maximum Likelihood Estimate(MLE) Method | N/A |

MLE yields a negative mean

### Lognormal Distribution Test with Detected Values Only

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.9117907 |
| 5% Shapiro Wilk Critical Value | 0.748 |

Data appear Lognormal at 5% Significance Level

### Assuming Lognormal Distribution

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 0.1177271 |
| SD | 0.890903 |
| 95% H-Stat (DL/2) UCL | 3.4757732 |
| Log ROS Method | |
| Mean in Log Scale | 0.2978597 |
| SD in Log Scale | 0.8828455 |
| Mean in Original Scale | 1.9024938 |
| SD in Original Scale | 1.6704378 |
| 95% t UCL | 2.7684944 |
| 95% Percentile Bootstrap UCL | 2.7538637 |
| 95% BCA Bootstrap UCL | 2.895598 |
| 95% H-UCL | 4.089783 |

### Gamma Distribution Test with Detected Values Only

| | |
|---|---|
| k star (bias corrected) | 2.4850566 |
| Theta Star | 1.5492605 |
| nu star | 19.880453 |
| A-D Test Statistic | 0.3547327 |
| 5% A-D Critical Value | 0.6573804 |
| K-S Test Statistic | 0.6573804 |
| 5% K-S Critical Value | 0.3950695 |

Data appear Gamma Distributed at 5% Significance Level

### Assuming Gamma Distribution

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 5.6 |

### Data Distribution Test with Detected Values Only

Data appear Normal at 5% Significance Level

### Nonparametric Statistics

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 2.95 |
| SD | 0.9691061 |
| SE of Mean | 0.3230354 |
| 95% KM (t) UCL | 3.5301343 |
| 95% KM (z) UCL | 3.4813459 |
| 95% KM (jackknife) UCL | 3.4261272 |
| 95% KM (bootstrap t) UCL | 3.446734 |
| 95% KM (BCA) UCL | 4.9583333 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Mean | 1.283334 | 95% KM (Percentile Bootstrap) UCL | 4.5916667 |
| Median | 0.000001 | 95% KM (Chebyshev) UCL | 4.3580785 |
| SD | 2.0435407 | 97.5% KM (Chebyshev) UCL | 4.9673553 |
| k star | 0.1238063 | 99% KM (Chebyshev) UCL | 6.1641614 |
| Theta star | 10.365662 | | |
| Nu star | 2.9713506 | Potential UCLs to Use | |
| AppChi2 | 0.3639818 | 95% KM (t) UCL | 3.5301343 |
| 95% Gamma Approximate UCL | 10.476445 | 95% KM (Percentile Bootstrap) UCL | 4.5916667 |
| 95% Adjusted Gamma UCL | N/A | | |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Arsenic, dissolved (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 33 | Number of Detected Data | 2 |
| Number of Distinct Detected Data | 2 | Number of Non-Detect Data | 31 |
| | | Percent Non-Detects | 93.94% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 5.1 | Minimum Detected | 1.6292405 |
| Maximum Detected | 11.4 | Maximum Detected | 2.4336134 |
| Mean of Detected | 8.25 | Mean of Detected | 2.0314269 |
| SD of Detected | 4.4547727 | SD of Detected | 0.5687775 |
| Minimum Non-Detect | 4.05 | Minimum Non-Detect | 1.3987169 |
| Maximum Non-Detect | 5 | Maximum Non-Detect | 1.6094379 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 31 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 2 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 93.94% |

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.

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Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

**Normal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | N/A |
| 5% Shapiro Wilk Critical Value | N/A |

Data not Normal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 2.6757576 |
| SD | 1.6550879 |
| 95% DL/2 (t) UCL | 3.1637903 |
| Maximum Likelihood Estimate(MLE) Method | N/A |

MLE method failed to converge properly

**Lognormal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | N/A |
| 5% Shapiro Wilk Critical Value | N/A |

Data not Lognormal at 5% Significance Level

**Assuming Lognormal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 0.9072489 |
| SD | 0.3231054 |
| 95% H-Stat (DL/2) UCL | 2.8946913 |
| Log ROS Method | |
| Mean in Log Scale | N/A |
| SD in Log Scale | N/A |
| Mean in Original Scale | N/A |
| SD in Original Scale | N/A |
| 95% t UCL | N/A |
| 95% Percentile Bootstrap UCL | N/A |
| 95% BCA Bootstrap UCL | N/A |
| 95% H-UCL | N/A |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | N/A |
| Theta Star | N/A |
| nu star | N/A |
| A-D Test Statistic | N/A |
| 5% A-D Critical Value | N/A |
| K-S Test Statistic | N/A |
| 5% K-S Critical Value | N/A |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | N/A |
| Maximum | N/A |
| Mean | N/A |
| Median | N/A |
| SD | N/A |
| k star | N/A |
| Theta star | N/A |

**Data Distribution Test with Detected Values Only**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 5.2909091 |
| SD | 1.0799449 |
| SE of Mean | 0.2658641 |
| 95% KM (t) UCL | 5.7412532 |
| 95% KM (z) UCL | 5.7282165 |
| 95% KM (jackknife) UCL | 9.4127781 |
| 95% KM (bootstrap t) UCL | 5.2909091 |
| 95% KM (BCA) UCL | 11.4 |
| 95% KM (Percentile Bootstrap) UCL | N/A |
| 95% KM (Chebyshev) UCL | 6.4497836 |
| 97.5% KM (Chebyshev) UCL | 6.9512296 |
| 99% KM (Chebyshev) UCL | 7.9362231 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Nu star | N/A | Potential UCLs to Use | |
| AppChi2 | N/A | 95% KM (t) UCL | 5.7412532 |
| 95% Gamma Approximate UCL | N/A | 95% KM (% Bootstrap) UCL | N/A |
| 95% Adjusted Gamma UCL | N/A | | |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Arsenic, total (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 33 | Number of Detected Data | 7 |
| Number of Distinct Detected Data | 7 | Number of Non-Detect Data | 26 |
| | | Percent Non-Detects | 78.79% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 3.5 | Minimum Detected | 1.252763 |
| Maximum Detected | 75 | Maximum Detected | 4.3174881 |
| Mean of Detected | 23.942857 | Mean of Detected | 2.5128529 |
| SD of Detected | 29.600217 | SD of Detected | 1.2141176 |
| Minimum Non-Detect | 4.05 | Minimum Non-Detect | 1.3987169 |
| Maximum Non-Detect | 5 | Maximum Non-Detect | 1.6094379 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 28 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 5 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 84.85% |

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.7177399 | Shapiro Wilk Test Statistic | 0.8642852 |
| 5% Shapiro Wilk Critical Value | 0.803 | 5% Shapiro Wilk Critical Value | 0.803 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 6.9189394 | Mean | 1.1974861 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| SD | 15.645735 |
| 95% DL/2 (t) UCL | 11.532369 |

| | |
|---|---|
| Maximum Likelihood Estimate(MLE) Method | N/A |

**MLE yields a negative mean**

| | |
|---|---|
| SD | 0.8746045 |
| 95% H-Stat (DL/2) UCL | 6.9235288 |

| | |
|---|---|
| Log ROS Method | |
| Mean in Log Scale | 0.986585 |
| SD in Log Scale | 1.2589897 |
| Mean in Original Scale | 7.0831274 |
| SD in Original Scale | 15.70316 |
| 95% t UCL | 11.71349 |
| 95% Percentile Bootstrap UCL | 11.826139 |
| 95% BCA Bootstrap UCL | 13.735455 |
| 95% H-UCL | 10.977226 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.6003734 |
| Theta Star | 39.879946 |
| nu star | 8.4052271 |

| | |
|---|---|
| A-D Test Statistic | 0.7172995 |
| 5% A-D Critical Value | 0.7315094 |
| K-S Test Statistic | 0.7315094 |
| 5% K-S Critical Value | 0.32102 |

Data follow Appr. Gamma Distribution at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 75 |
| Mean | 7.3983412 |
| Median | 0.000001 |
| SD | 16.271395 |
| k star | 0.107259 |
| Theta star | 68.976435 |
| Nu star | 7.0790919 |
| AppChi2 | 2.2140537 |
| 95% Gamma Approximate UCL | 23.655044 |
| 95% Adjusted Gamma UCL | 25.220243 |

Note: DL/2 is not a recommended method.

**Data Distribution Test with Detected Values Only**

Data Follow Appr. Gamma Distribution at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 7.8831956 |
| SD | 15.125682 |
| SE of Mean | 2.8446852 |
| 95% KM (t) UCL | 12.701776 |
| 95% KM (z) UCL | 12.562286 |
| 95% KM (jackknife) UCL | 11.909258 |
| 95% KM (bootstrap t) UCL | 39.950831 |
| 95% KM (BCA) UCL | 16.530303 |
| 95% KM (Percentile Bootstrap) UCL | 14.127273 |
| 95% KM (Chebyshev) UCL | 20.282891 |
| 97.5% KM (Chebyshev) UCL | 25.648249 |
| 99% KM (Chebyshev) UCL | 36.187456 |

Potential UCLs to Use

| | |
|---|---|
| 95% KM (t) UCL | 12.701776 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

**Barium, total (ug/L)**

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

### General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 12 | Number of Detected Data | 11 |
| Number of Distinct Detected Data | 11 | Number of Non-Detect Data | 1 |
| | | Percent Non-Detects | 8.33% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 19 | Minimum Detected | 2.944439 |
| Maximum Detected | 1200 | Maximum Detected | 7.0900768 |
| Mean of Detected | 215.81818 | Mean of Detected | 4.5241259 |
| SD of Detected | 350.04223 | SD of Detected | 1.2904041 |
| Minimum Non-Detect | 19 | Minimum Non-Detect | 2.944439 |
| Maximum Non-Detect | 19 | Maximum Non-Detect | 2.944439 |

### UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.6038289 | Shapiro Wilk Test Statistic | 0.9266324 |
| 5% Shapiro Wilk Critical Value | 0.85 | 5% Shapiro Wilk Critical Value | 0.85 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 198.625 | Mean | 4.334723 |
| SD | 339.02475 | SD | 1.3943627 |
| 95% DL/2 (t) UCL | 374.38468 | 95% H-Stat (DL/2) UCL | 946.74406 |
| | | | |
| Maximum Likelihood Estimate(MLE) Method | | Log ROS Method | |
| Mean | 180.81445 | Mean in Log Scale | 4.2625514 |
| SD | 343.91843 | SD in Log Scale | 1.528012 |
| 95% MLE (t) UCL | 359.11115 | Mean in Original Scale | 198.16631 |
| 95% MLE (Tiku) UCL | 346.2039 | SD in Original Scale | 339.30749 |
| | | 95% t UCL | 374.07258 |
| | | 95% Percentile Bootstrap UCL | 362.66631 |
| | | 95% BCA Bootstrap UCL | 456.08298 |
| | | 95% H UCL | 1410.3836 |

| Gamma Distribution Test with Detected Values Only | | Data Distribution Test with Detected Values Only |
|---|---|---|
| k star (bias corrected) | 0.576543 | Data appear Lognormal at 5% Significance Level |
| Theta Star | 374.33147 | |
| nu star | 12.683945 | |
| | | |
| A-D Test Statistic | 0.7905525 | Nonparametric Statistics |
| 5% A-D Critical Value | 0.7655348 | Kaplan-Meier (KM) Method |
| K-S Test Statistic | 0.7655348 | Mean 199.41667 |
| 5% K-S Critical Value | 0.2656089 | SD 324.14052 |
| Data not Gamma Distributed at 5% Significance Level | | SE of Mean 98.138416 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 1200 |
| Mean | 197.83333 |
| Median | 68.5 |
| SD | 339.51726 |
| k star | 0.281142 |
| Theta star | 703.67755 |
| Nu star | 6.7474087 |
| AppChi2 | 2.0330057 |
| 95% Gamma Approximate UCL | 656.59549 |
| 95% Adjusted Gamma UCL | 802.89605 |

Note: DL/2 is not a recommended method.

| | |
|---|---|
| 95% KM (t) UCL | 375.66196 |
| 95% KM (z) UCL | 360.84 |
| 95% KM (jackknife) UCL | 374.70028 |
| 95% KM (bootstrap t) UCL | 645.04084 |
| 95% KM (BCA) UCL | 371.75 |
| 95% KM (Percentile Bootstrap) UCL | 371.25 |
| 95% KM (Chebyshev) UCL | 627.1921 |
| 97.5% KM (Chebyshev) UCL | 812.29088 |
| 99% KM (Chebyshev) UCL | 1175.8816 |

**Potential UCLs to Use**

| | |
|---|---|
| 97.5% KM (Chebyshev) UCL | 812.29088 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

**Beryllium, total (ug/L)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 12 | Number of Detected Data | 5 |
| Number of Distinct Detected Data | 5 | Number of Non-Detect Data | 7 |
| | | Percent Non-Detects | 58.33% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.93 | Minimum Detected | -0.072571 |
| Maximum Detected | 8 | Maximum Detected | 2.0794415 |
| Mean of Detected | 4.046 | Mean of Detected | 1.0540369 |
| SD of Detected | 3.1915639 | SD of Detected | 0.9981586 |
| Minimum Non-Detect | 0.305 | Minimum Non-Detect | -1.187444 |
| Maximum Non-Detect | 0.5 | Maximum Non-Detect | -0.693147 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 7 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 5 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 58.33% |

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

UCL Statistics

Normal Distribution Test with Detected Values Only

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.891195 |
| 5% Shapiro Wilk Critical Value | 0.762 |

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 1.8152083 |
| SD | 2.7536105 |
| 95% DL/2 (t) UCL | 3.2427552 |
| Maximum Likelihood Estimate(MLE) Method | N/A |

MLE yields a negative mean

Lognormal Distribution Test with Detected Values Only

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.870503 |
| 5% Shapiro Wilk Critical Value | 0.762 |

Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | -0.445998 |
| SD | 1.4599446 |
| 95% H-Stat (DL/2) UCL | 9.9539112 |
| Log ROS Method | |
| Mean in Log Scale | -0.773382 |
| SD in Log Scale | 1.743085 |
| Mean in Original Scale | 1.7630277 |
| SD in Original Scale | 2.7868559 |
| 95% t UCL | 3.2078099 |
| 95% Percentile Bootstrap UCL | 3.099949 |
| 95% BCA Bootstrap UCL | 3.4446969 |
| 95% H-UCL | 21.371024 |

Gamma Distribution Test with Detected Values Only

| | |
|---|---|
| k star (bias corrected) | 0.7737866 |
| Theta Star | 5.2288315 |
| nu star | 7.7378664 |
| A-D Test Statistic | 0.3974573 |
| 5% A-D Critical Value | 0.6859976 |
| K-S Test Statistic | 0.6859976 |
| 5% K-S Critical Value | 0.3614273 |

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 8 |
| Mean | 1.6858339 |
| Median | 0.000001 |
| SD | 2.8362983 |
| k star | 0.1303841 |
| Theta star | 12.929754 |
| Nu star | 3.1292176 |
| AppChi2 | 0.4117058 |
| 95% Gamma Approximate UCL | 12.813375 |

Data Distribution Test with Detected Values Only

Data appear Normal at 5% Significance Level

Nonparametric Statistics

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 2.2283333 |
| SD | 2.3990201 |
| SE of Mean | 0.7742804 |
| 95% KM (t) UCL | 3.6188517 |
| 95% KM (z) UCL | 3.5019112 |
| 95% KM (jackknife) UCL | 3.46882 |
| 95% KM (bootstrap t) UCL | 4.1976511 |
| 95% KM (BCA) UCL | 6.6 |
| 95% KM (Percentile Bootstrap) UCL | 4.5833333 |
| 95% KM (Chebyshev) UCL | 5.6033433 |
| 97.5% KM (Chebyshev) UCL | 7.0637128 |
| 99% KM (Chebyshev) UCL | 9.932326 |

Potential UCLs to Use

| | |
|---|---|
| 95% KM (t) UCL | 3.6188517 |
| 95% KM (Percentile Bootstrap) UCL | 4.5833333 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| 95% Adjusted Gamma UCL | 17.77356 |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Cadmium, dissolved (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 33 | Number of Detected Data | 5 |
| Number of Distinct Detected Data | 5 | Number of Non-Detect Data | 28 |
| | | Percent Non-Detects | 84.85% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.68 | Minimum Detected | -0.385662 |
| Maximum Detected | 35 | Maximum Detected | 3.5553481 |
| Mean of Detected | 11.43 | Mean of Detected | 1.508064 |
| SD of Detected | 14.407887 | SD of Detected | 1.7053143 |
| Minimum Non-Detect | 0.265 | Minimum Non-Detect | -1.328025 |
| Maximum Non-Detect | 2.5 | Maximum Non-Detect | 0.9162907 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 30 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 3 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 90.91% |

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.8278655 | Shapiro Wilk Test Statistic | 0.9257693 |
| 5% Shapiro Wilk Critical Value | 0.762 | 5% Shapiro Wilk Critical Value | 0.762 |
| Data appear Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 2.4537879 | Mean | -0.262267 |
| SD | 6.4059991 | SD | 1.3973352 |
| 95% DL/2 (t) UCL | 4.3427131 | 95% H-Stat (DL/2) UCL | 4.2421469 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| Maximum Likelihood Estimate(MLE) Method | |
|---|---|
| Mean | 22.473571 |
| SD | 12.320985 |
| 95% MLE (t) UCL | 26.106638 |
| 95% MLE (Tiku) UCL | 34.249573 |

| Log ROS Method | |
|---|---|
| Mean in Log Scale | -3.71375 |
| SD in Log Scale | 3.381648 |
| Mean in Original Scale | 1.8239812 |
| SD in Original Scale | 6.5574983 |
| 95% t UCL | 3.7575787 |
| 95% Percentile Bootstrap UCL | 3.7308314 |
| 95% BCA Bootstrap UCL | 5.0578486 |
| 95% H UCL | 280.62258 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.3961217 |
| Theta Star | 28.85477 |
| nu star | 3.9612168 |
| A-D Test Statistic | 0.2843234 |
| 5% A-D Critical Value | 0.7029796 |
| K-S Test Statistic | 0.7029796 |
| 5% K-S Critical Value | 0.368512 |

Data appear Gamma Distributed at 5% Significance Level

**Data Distribution Test with Detected Values Only**

Data appear Normal at 5% Significance Level

**Assuming Gamma Distribution**

| Gamma ROS Statistics using Extrapolated Data | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 35 |
| Mean | 1.8381337 |
| Median | 0.000001 |
| SD | 6.577385 |
| k star | 0.0860448 |
| Theta star | 21.362523 |
| Nu star | 5.678956 |
| AppChi2 | 1.4780602 |
| 95% Gamma Approximate UCL | 7.0624193 |
| 95% Adjusted Gamma UCL | 7.6108879 |

Note: DL/2 is not a recommended method.

**Nonparametric Statistics**

| Kaplan-Meier (KM) Method | |
|---|---|
| Mean | 2.3219697 |
| SD | 6.3229196 |
| SE of Mean | 1.2307314 |
| 95% KM (t) UCL | 4.4066917 |
| 95% KM (z) UCL | 4.3463427 |
| 95% KM (jackknife) UCL | 4.0420891 |
| 95% KM (bootstrap t) UCL | 8.5980442 |
| 95% KM (BCA) UCL | 16.909091 |
| 95% KM (Percentile Bootstrap) UCL | 7.4878788 |
| 95% KM (Chebyshev) UCL | 7.6866034 |
| 97.5% KM (Chebyshev) UCL | 10.007885 |
| 99% KM (Chebyshev) UCL | 14.567592 |

**Potential UCLs to Use**

| | |
|---|---|
| 95% KM (t) UCL | 4.4066917 |
| 95% KM (Percentile Bootstrap) UCL | 7.4878788 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Cadmium, total (ug/L)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 33 | Number of Detected Data | 8 |
| Number of Distinct Detected Data | 8 | Number of Non-Detect Data | 25 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| Percent Non-Detects | 75.76% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.71 | Minimum Detected | -0.34249 |
| Maximum Detected | 80.1 | Maximum Detected | 4.3832759 |
| Mean of Detected | 20.54375 | Mean of Detected | 1.5089312 |
| SD of Detected | 31.633609 | SD of Detected | 2.0047575 |
| Minimum Non-Detect | 0.265 | Minimum Non-Detect | -1.328025 |
| Maximum Non-Detect | 2.5 | Maximum Non-Detect | 0.9162907 |

Note: Data have multiple DLs - Use of KM Method is recommended

For all methods (except KM, DL/2, and ROS Methods),

Observations < Largest ND are treated as NDs

| | |
|---|---|
| Number treated as Non-Detect | 29 |
| Number treated as Detected | 4 |
| Single DL Non-Detect Percentage | 87.88% |

Warning: There are only 8 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.6946137 | Shapiro Wilk Test Statistic | 0.8362417 |
| 5% Shapiro Wilk Critical Value | 0.818 | 5% Shapiro Wilk Critical Value | 0.818 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 5.5886364 | Mean | -0.145246 |
| SD | 17.1155 | SD | 1.6512349 |
| 95% DL/2 (t) UCL | 10.635452 | 95% H-Stat (DL/2) UCL | 8.9180605 |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| MLE yields a negative mean | | Mean in Log Scale | -2.588849 |
| | | SD in Log Scale | 3.3229597 |
| | | Mean in Original Scale | 5.1236502 |
| | | SD in Original Scale | 17.248765 |
| | | 95% t UCL | 10.209762 |
| | | 95% Percentile Bootstrap UCL | 10.460574 |
| | | 95% BCA Bootstrap UCL | 12.967813 |
| | | 95% H-UCL | 629.64011 |

| Gamma Distribution Test with Detected Values Only | | Data Distribution Test with Detected Values Only |
|---|---|---|
| k star (bias corrected) | 0.3519374 | Data appear Gamma Distributed at 5% Significance Level |
| Theta Star | 58.373315 | |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| nu star | 5.6309976 |

| | |
|---|---|
| A-D Test Statistic | 0.7139537 |
| 5% A-D Critical Value | 0.7746222 |
| K-S Test Statistic | 0.7746222 |
| 5% K-S Critical Value | 0.3117853 |

Data appear Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 80.1 |
| Mean | 5.4184456 |
| Median | 0.000001 |
| SD | 17.303043 |
| k star | 0.0903097 |
| Theta star | 59.998464 |
| Nu star | 5.9604427 |
| AppChi2 | 1.6196842 |
| 95% Gamma Approximate UCL | 19.939896 |
| 95% Adjusted Gamma UCL | 21.434582 |

Note: DL/2 is not a recommended method.

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 5.5347403 |
| SD | 16.862916 |
| SE of Mean | 3.1381884 |
| 95% KM (t) UCL | 10.850482 |
| 95% KM (z) UCL | 10.696601 |
| 95% KM (jackknife) UCL | 10.566491 |
| 95% KM (bootstrap t) UCL | 35.330243 |
| 95% KM (BCA) UCL | 13.027273 |
| 95% KM (Percentile Bootstrap) UCL | 11.00634 |
| 95% KM (Chebyshev) UCL | 19.213786 |
| 97.5% KM (Chebyshev) UCL | 25.13272 |
| 99% KM (Chebyshev) UCL | 36.75932 |

**Potential UCLs to Use**

| | |
|---|---|
| 95% KM (t) UCL | 10.850482 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Cobalt, dissolved (ug/L)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 11 | Number of Detected Data | 2 |
| Number of Distinct Detected Data | 2 | Number of Non-Detect Data | 9 |
| | | Percent Non-Detects | 81.82% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 1.5 | Minimum Detected | 0.4054651 |
| Maximum Detected | 2.5 | Maximum Detected | 0.9162907 |
| Mean of Detected | 2 | Mean of Detected | 0.6608779 |
| SD of Detected | 0.7071068 | SD of Detected | 0.3612083 |
| Minimum Non-Detect | 0.46 | Minimum Non-Detect | -0.776529 |
| Maximum Non-Detect | 0.46 | Maximum Non-Detect | -0.776529 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Warning: Data set has only 2 Distinct Detected Values.

This may not be adequate enough to compute meaningful and reliable test statistics and estimates.

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.

Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

| Normal Distribution Test with Detected Values Only | |
|---|---|
| Shapiro Wilk Test Statistic | N/A |
| 5% Shapiro Wilk Critical Value | N/A |
| Data not Normal at 5% Significance Level | |

| Lognormal Distribution Test with Detected Values Only | |
|---|---|
| Shapiro Wilk Test Statistic | N/A |
| 5% Shapiro Wilk Critical Value | N/A |
| Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 0.5518182 |
| SD | 0.7501042 |
| 95% DL/2 (t) UCL | 0.9617333 |
| Maximum Likelihood Estimate(MLE) Method | N/A |
| MLE method failed to converge properly | |

| Assuming Lognormal Distribution | |
|---|---|
| DL/2 Substitution Method | |
| Mean | -1.082303 |
| SD | 0.8693878 |
| 95% H-Stat (DL/2) UCL | 1.0542421 |
| Log ROS Method | |
| Mean in Log Scale | N/A |
| SD in Log Scale | N/A |
| Mean in Original Scale | N/A |
| SD in Original Scale | N/A |
| 95% t UCL | N/A |
| 95% Percentile Bootstrap UCL | N/A |
| 95% BCA Bootstrap UCL | N/A |
| 95% H-UCL | N/A |

| Gamma Distribution Test with Detected Values Only | |
|---|---|
| k star (bias corrected) | N/A |
| Theta Star | N/A |
| nu star | N/A |
| A-D Test Statistic | N/A |
| 5% A-D Critical Value | N/A |
| K-S Test Statistic | N/A |
| 5% K-S Critical Value | N/A |
| Data not Gamma Distributed at 5% Significance Level | |

| Data Distribution Test with Detected Values Only |
|---|
| Data do not follow a Discernable Distribution (0.05) |

| Nonparametric Statistics | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 1.5909091 |
| SD | 0.2874798 |
| SE of Mean | 0.1225818 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| | | 95% KM (t) UCL | 1.8130838 |
| **Assuming Gamma Distribution** | | 95% KM (z) UCL | 1.7925382 |
| Gamma ROS Statistics using Extrapolated Data | | 95% KM (jackknife) UCL | N/A |
| Minimum | N/A | 95% KM (bootstrap t) UCL | N/A |
| Maximum | N/A | 95% KM (BCA) UCL | N/A |
| Mean | N/A | 95% KM (Percentile Bootstrap) UCL | N/A |
| Median | N/A | 95% KM (Chebyshev) UCL | 2.1252307 |
| SD | N/A | 97.5% KM (Chebyshev) UCL | 2.3564321 |
| k star | N/A | 99% KM (Chebyshev) UCL | 2.8105825 |
| Theta star | N/A | | |
| Nu star | N/A | **Potential UCLs to Use** | |
| AppChi2 | N/A | 95% KM (t) UCL | 1.8130838 |
| 95% Gamma Approximate UCL | N/A | 95% KM (% Bootstrap) UCL | N/A |
| 95% Adjusted Gamma UCL | N/A | | |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Iron, dissolved (ug/L)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 12 | Number of Detected Data | 3 |
| Number of Distinct Detected Data | 3 | Number of Non-Detect Data | 9 |
| | | Percent Non-Detects | 75.00% |

| **Raw Statistics** | | **Log-transformed Statistics** | |
|---|---|---|---|
| Minimum Detected | 29 | Minimum Detected | 3.3672958 |
| Maximum Detected | 9500 | Maximum Detected | 9.1590471 |
| Mean of Detected | 3269.6667 | Mean of Detected | 6.0537108 |
| SD of Detected | 5397.0863 | SD of Detected | 2.9185128 |
| Minimum Non-Detect | 9.5 | Minimum Non-Detect | 2.2512918 |
| Maximum Non-Detect | 9.5 | Maximum Non-Detect | 2.2512918 |

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

UCL Statistics

**Normal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.7698474 |
| 5% Shapiro Wilk Critical Value | 0.767 |

Data appear Normal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 820.97917 |
| SD | 2734.3166 |
| 95% DL/2 (t) UCL | 2238.5235 |
| | |
| Maximum Likelihood Estimate(MLE) Method | N/A |

**MLE yields a negative mean**

**Lognormal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.9845285 |
| 5% Shapiro Wilk Critical Value | 0.767 |

Data appear Lognormal at 5% Significance Level

**Assuming Lognormal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 2.6820362 |
| SD | 2.3838127 |
| 95% H-Stat (DL/2) UCL | 16272.975 |
| | |
| Log ROS Method | |
| Mean in Log Scale | -4.518469 |
| SD in Log Scale | 8.0428288 |
| Mean in Original Scale | 817.47422 |
| SD in Original Scale | 2735.4586 |
| 95% t UCL | 2235.6106 |
| 95% Percentile Bootstrap UCL | 2379.8442 |
| 95% BCA Bootstrap UCL | 3213.3428 |
| 95% H-UCL | 7.828E+31 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | N/A |
| Theta Star | N/A |
| nu star | N/A |
| | |
| A-D Test Statistic | N/A |
| 5% A-D Critical Value | N/A |
| K-S Test Statistic | N/A |
| 5% K-S Critical Value | N/A |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | N/A |
| Maximum | N/A |
| Mean | N/A |
| Median | N/A |
| SD | N/A |
| k star | N/A |
| Theta star | N/A |
| Nu star | N/A |
| AppChi2 | N/A |
| 95% Gamma Approximate UCL | N/A |
| 95% Adjusted Gamma UCL | N/A |

**Data Distribution Test with Detected Values Only**

Data appear Normal at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 839.16667 |
| SD | 2612.2532 |
| SE of Mean | 923.57098 |
| 95% KM (t) UCL | 2497.7938 |
| 95% KM (z) UCL | 2358.3057 |
| 95% KM (jackknife) UCL | 2135.6686 |
| 95% KM (bootstrap t) UCL | 25168.472 |
| 95% KM (BCA) UCL | 9500 |
| 95% KM (Percentile Bootstrap) UCL | 9500 |
| 95% KM (Chebyshev) UCL | 4864.9192 |
| 97.5% KM (Chebyshev) UCL | 6606.8656 |
| 99% KM (Chebyshev) UCL | 10028.582 |

**Potential UCLs to Use**

| | |
|---|---|
| 95% KM (t) UCL | 2497.7938 |
| 95% KM (Percentile Bootstrap) UCL | 9500 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Iron, total (ug/L)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 12 | Number of Distinct Observations | 10 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 280 | Minimum of Log Data | 5.6347896 |
| Maximum | 210000 | Maximum of Log Data | 12.254863 |
| Mean | 39105.833 | Mean of log Data | 8.2049123 |
| Median | 1600 | SD of log Data | 2.4254276 |
| SD | 70634.849 | | |
| Std. Error of Mean | 20390.524 | | |
| Coefficient of Variation | 1.8062484 | | |
| Skewness | 1.7440333 | | |

**Relevant UCL Statistics**

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.6262411 | Shapiro Wilk Test Statistic | 0.8489123 |
| Shapiro Wilk Critical Value | 0.859 | Shapiro Wilk Critical Value | 0.859 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 75724.867 | 95% H-UCL | 5183310.3 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 153883.57 |
| 95% Adjusted-CLT UCL (Chen-1995) | 83614.411 | 97.5% Chebyshev (MVUE) UCL | 204576.83 |
| 95% Modified-t UCL (Johnson-1978) | 77435.832 | 99% Chebyshev (MVUE) UCL | 304153.92 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 0.2747817 | Data do not follow a Discernable Distribution (0.05) |
| Theta Star | 142316.03 | |
| MLE of Mean | 39105.833 | |
| MLE of Standard Deviation | 74601.521 | |
| nu star | 6.5947596 | |
| Approximate Chi Square Value (.05) | 1.9509791 | **Nonparametric Statistics** |
| Adjusted Level of Significance | 0.02896 | 95% CLT UCL 72645.261 |
| Adjusted Chi Square Value | 1.5902618 | 95% Jackknife UCL 75724.867 |
| | | 95% Standard Bootstrap UCL 70846.818 |
| Anderson-Darling Test Statistic | 1.2911339 | 95% Bootstrap-t UCL 102525.91 |
| Anderson-Darling 5% Critical Value | 0.8270788 | 95% Hall's Bootstrap UCL 67515.227 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Kolmogorov-Smirnov Test Statistic | 0.3374409 | 95% Percentile Bootstrap UCL | 73325 |
| Kolmogorov-Smirnov 5% Critical Value | 0.265778 | 95% BCA Bootstrap UCL | 84505 |
| Data not Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL | 127986.07 |
| | | 97.5% Chebyshev(Mean, Sd) UCL | 166444.62 |
| Assuming Gamma Distribution | | 99% Chebyshev(Mean, Sd) UCL | 241988.99 |
| 95% Approximate Gamma UCL | 132186.74 | | |
| 95% Adjusted Gamma UCL | 162170.51 | | |

Potential UCL to Use — Use 99% Chebyshev (Mean, Sd) UCL 241988.99

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Manganese, dissolved (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 33 | Number of Detected Data | 26 |
| Number of Distinct Detected Data | 26 | Number of Non-Detect Data | 7 |
| | | Percent Non-Detects | 21.21% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.94 | Minimum Detected | -0.061875 |
| Maximum Detected | 2250 | Maximum Detected | 7.7186855 |
| Mean of Detected | 376.27846 | Mean of Detected | 4.3126951 |
| SD of Detected | 636.5315 | SD of Detected | 2.1832146 |
| Minimum Non-Detect | 7.5 | Minimum Non-Detect | 2.014903 |
| Maximum Non-Detect | 7.5 | Maximum Non-Detect | 2.014903 |

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.6272549 | Shapiro Wilk Test Statistic | 0.9650338 |
| 5% Shapiro Wilk Critical Value | 0.92 | 5% Shapiro Wilk Critical Value | 0.92 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |
| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 297.25727 | Mean | 3.6782534 |
| SD | 583.48863 | SD | 2.2946789 |
| 95% DL/2 (t) UCL | 469.3095 | 95% H-Stat (DL/2) UCL | 3164.1399 |
| Maximum Likelihood Estimate(MLE) Method | | Log ROS Method | |
| Mean | 133.91905 | Mean in Log Scale | 3.5029452 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| SD | 735.75667 |
| 95% MLE (t) UCL | 350.87028 |
| 95% MLE (Tiku) UCL | 360.2309 |

| | |
|---|---|
| SD in Log Scale | 2.5423169 |
| Mean in Original Scale | 296.98859 |
| SD in Original Scale | 583.62892 |
| 95% t UCL | 469.08218 |
| 95% Percentile Bootstrap UCL | 465.35236 |
| 95% BCA Bootstrap UCL | 536.20701 |
| 95% H UCL | 6970.8992 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.3846548 |
| Theta Star | 978.22368 |
| nu star | 20.002051 |

| | |
|---|---|
| A-D Test Statistic | 0.5086054 |
| 5% A-D Critical Value | 0.828807 |
| K-S Test Statistic | 0.828807 |
| 5% K-S Critical Value | 0.1833733 |

Data appear Gamma Distributed at 5% Significance Level

**Data Distribution Test with Detected Values Only**

Data appear Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 2250 |
| Mean | 296.46182 |
| Median | 27.6 |
| SD | 583.9032 |
| k star | 0.1542667 |
| Theta star | 1921.7489 |
| Nu star | 10.181601 |
| AppChi2 | 4.0555825 |
| 95% Gamma Approximate UCL | 744.27185 |
| 95% Adjusted Gamma UCL | 782.44726 |

Note: DL/2 is not a recommended method.

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 296.80404 |
| SD | 574.8121 |
| SE of Mean | 102.04361 |
| 95% KM (t) UCL | 469.65455 |
| 95% KM (z) UCL | 464.65084 |
| 95% KM (jackknife) UCL | 468.92597 |
| 95% KM (bootstrap t) UCL | 604.98004 |
| 95% KM (BCA) UCL | 483.31939 |
| 95% KM (Percentile Bootstrap) UCL | 472.00121 |
| 95% KM (Chebyshev) UCL | 741.60181 |
| 97.5% KM (Chebyshev) UCL | 934.06616 |
| 99% KM (Chebyshev) UCL | 1312.1251 |

Potential UCLs to Use

| | |
|---|---|
| 95% KM (Chebyshev) UCL | 741.60181 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Manganese, total (ug/L)

**General Statistics**

| | |
|---|---|
| Number of Valid Data | 33 |
| Number of Distinct Detected Data | 27 |

| | |
|---|---|
| Number of Detected Data | 28 |
| Number of Non-Detect Data | 5 |
| Percent Non-Detects | 15.15% |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Raw Statistics**

| | |
|---|---|
| Minimum Detected | 16 |
| Maximum Detected | 8100 |
| Mean of Detected | 835.09643 |
| SD of Detected | 1645.9895 |
| Minimum Non-Detect | 7.5 |
| Maximum Non-Detect | 7.5 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum Detected | 2.7725887 |
| Maximum Detected | 8.9996193 |
| Mean of Detected | 5.3930077 |
| SD of Detected | 1.6826884 |
| Minimum Non-Detect | 2.014903 |
| Maximum Non-Detect | 2.014903 |

**UCL Statistics**

**Normal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.5364661 |
| 5% Shapiro Wilk Critical Value | 0.924 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.9596281 |
| 5% Shapiro Wilk Critical Value | 0.924 |

Data appear Lognormal at 5% Significance Level

**Assuming Normal Distribution**

DL/2 Substitution Method

| | |
|---|---|
| Mean | 709.13485 |
| SD | 1541.9417 |
| 95% DL/2 (t) UCL | 1163.8044 |

Maximum Likelihood Estimate(MLE) Method

| | |
|---|---|
| Mean | 531.43236 |
| SD | 1692.2862 |
| 95% MLE (t) UCL | 1030.4337 |
| 95% MLE (Tiku) UCL | 1006.4009 |

**Assuming Lognormal Distribution**

DL/2 Substitution Method

| | |
|---|---|
| Mean | 4.7761513 |
| SD | 2.1416076 |
| 95% H-Stat (DL/2) UCL | 5488.2595 |

Log ROS Method

| | |
|---|---|
| Mean in Log Scale | 4.7982695 |
| SD in Log Scale | 2.1203725 |
| Mean in Original Scale | 709.35431 |
| SD in Original Scale | 1541.8387 |
| 95% t UCL | 1163.9935 |
| 95% Percentile Bootstrap UCL | 1170.9047 |
| 95% BCA Bootstrap UCL | 1419.8797 |
| 95% H UCL | 5216.3283 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.4516029 |
| Theta Star | 1849.1831 |
| nu star | 25.289762 |

| | |
|---|---|
| A-D Test Statistic | 1.2990913 |
| 5% A-D Critical Value | 0.8148607 |
| K-S Test Statistic | 0.8148607 |
| 5% K-S Critical Value | 0.1754169 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 8100 |

**Data Distribution Test with Detected Values Only**

Data appear Lognormal at 5% Significance Level

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 710.99091 |
| SD | 1517.5431 |
| SE of Mean | 269.01791 |
| 95% KM (t) UCL | 1166.6773 |
| 95% KM (z) UCL | 1153.486 |
| 95% KM (jackknife) UCL | 1164.8823 |
| 95% KM (bootstrap t) UCL | 1705.1213 |
| 95% KM (BCA) UCL | 1212.4061 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Mean | 708.56667 | 95% KM (Percentile Bootstrap) UCL | 1181.6303 |
| Median | 150 | 95% KM (Chebyshev) UCL | 1883.6128 |
| SD | 1542.2103 | 97.5% KM (Chebyshev) UCL | 2391.0072 |
| k star | 0.1864382 | 99% KM (Chebyshev) UCL | 3387.6853 |
| Theta star | 3800.5445 | | |
| Nu star | 12.304921 | Potential UCLs to Use | |
| AppChi2 | 5.4285239 | 99% KM (Chebyshev) UCL | 3387.6853 |
| 95% Gamma Approximate UCL | 1606.1193 | | |
| 95% Adjusted Gamma UCL | 1678.6503 | | |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Nickel, total (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 12 | Number of Distinct Observations | 12 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 1.3 | Minimum of Log Data | 0.2623643 |
| Maximum | 230 | Maximum of Log Data | 5.4380793 |
| Mean | 40.691667 | Mean of log Data | 2.1363467 |
| Median | 4.7 | SD of log Data | 1.8237884 |
| SD | 73.109339 | | |
| Std. Error of Mean | 21.104848 | | |
| Coefficient of Variation | 1.7966661 | | |
| Skewness | 2.0573303 | | |

Relevant UCL Statistics

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.6219496 | Shapiro Wilk Test Statistic | 0.858738 |
| Shapiro Wilk Critical Value | 0.859 | Shapiro Wilk Critical Value | 0.859 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 78.593543 | 95% H-UCL | 554.41754 |
| 95% UCLs (Adjusted for Skewness) | | 95% Chebyshev (MVUE) UCL | 118.23113 |
| 95% Adjusted-CLT UCL (Chen-1995) | 88.798997 | 97.5% Chebyshev (MVUE) UCL | 154.79526 |
| 95% Modified-t UCL (Johnson-1978) | 80.682572 | 99% Chebyshev (MVUE) UCL | 226.61841 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 0.367933 | Data do not follow a Discernable Distribution (0.05) |
| Theta Star | 110.59531 | |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| MLE of Mean | 40.691667 |
| MLE of Standard Deviation | 67.084331 |
| nu star | 8.8303927 |
| Approximate Chi Square Value (.05) | 3.2248364 |
| Adjusted Level of Significance | 0.02896 |
| Adjusted Chi Square Value | 2.7293678 |
| Anderson-Darling Test Statistic | 1.2108959 |
| Anderson-Darling 5% Critical Value | 0.8011926 |
| Kolmogorov-Smirnov Test Statistic | 0.3318818 |
| Kolmogorov-Smirnov 5% Critical Value | 0.2614604 |

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

| | |
|---|---|
| 95% Approximate Gamma UCL | 111.42376 |
| 95% Adjusted Gamma UCL | 131.65078 |

Nonparametric Statistics

| | |
|---|---|
| 95% CLT UCL | 75.406053 |
| 95% Jackknife UCL | 78.593543 |
| 95% Standard Bootstrap UCL | 73.766574 |
| 95% Bootstrap-t UCL | 147.9443 |
| 95% Hall's Bootstrap UCL | 110.83734 |
| 95% Percentile Bootstrap UCL | 77.383333 |
| 95% BCA Bootstrap UCL | 89.8 |
| 95% Chebyshev(Mean, Sd) UCL | 132.68557 |
| 97.5% Chebyshev(Mean, Sd) UCL | 172.4914 |
| 99% Chebyshev(Mean, Sd) UCL | 250.68225 |

Potential UCL to Use — Use 99% Chebyshev (Mean, Sd) UCL 250.68225

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Thallium, total (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 12 | Number of Detected Data | 1 |
| Number of Distinct Detected Data | 1 | Number of Non-Detect Data | 11 |
| | | Percent Non-Detects | 91.67% |

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Thallium, total (ug/L) was not processed!

Vanadium, total (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 12 | Number of Detected Data | 10 |
| Number of Distinct Detected Data | 9 | Number of Non-Detect Data | 2 |
| | | Percent Non-Detects | 16.67% |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Raw Statistics**

| | |
|---|---|
| Minimum Detected | 0.86 |
| Maximum Detected | 200 |
| Mean of Detected | 51.456 |
| SD of Detected | 82.83835 |
| Minimum Non-Detect | 0.42 |
| Maximum Non-Detect | 0.42 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum Detected | -0.150823 |
| Maximum Detected | 5.2983174 |
| Mean of Detected | 1.9524923 |
| SD of Detected | 2.2104356 |
| Minimum Non-Detect | -0.867501 |
| Maximum Non-Detect | -0.867501 |

**UCL Statistics**

**Normal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.6471857 |
| 5% Shapiro Wilk Critical Value | 0.842 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.7760772 |
| 5% Shapiro Wilk Critical Value | 0.842 |

Data not Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 42.915 |
| SD | 77.539814 |
| 95% DL/2 (t) UCL | 83.113756 |
| | |
| Maximum Likelihood Estimate(MLE) Method | |
| Mean | 33.537705 |
| SD | 84.204817 |
| 95% MLE (t) UCL | 77.19178 |
| 95% MLE (Tiku) UCL | 75.72537 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 1.366969 |
| SD | 2.4223295 |
| 95% H-Stat (DL/2) UCL | 5458.5453 |
| | |
| Log ROS Method | |
| Mean in Log Scale | 1.1193435 |
| SD in Log Scale | 2.8000664 |
| Mean in Original Scale | 42.889185 |
| SD in Original Scale | 77.555347 |
| 95% t UCL | 83.095994 |
| 95% Percentile Bootstrap UCL | 81.473834 |
| 95% BCA Bootstrap UCL | 90.206703 |
| 95% H UCL | 45668.748 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.3045521 |
| Theta Star | 168.95632 |
| nu star | 6.0910416 |
| | |
| A-D Test Statistic | 1.3679112 |
| 5% A-D Critical Value | 0.806324 |
| K-S Test Statistic | 0.806324 |
| 5% K-S Critical Value | 0.2864477 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 200 |

**Data Distribution Test with Detected Values Only**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 43.023333 |
| SD | 74.176772 |
| SE of Mean | 22.571273 |
| 95% KM (t) UCL | 83.55874 |
| 95% KM (z) UCL | 80.149774 |
| 95% KM (jackknife) UCL | 83.160919 |
| 95% KM (bootstrap t) UCL | 122.75711 |
| 95% KM (BCA) UCL | 81.981667 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Mean | 42.88 | 95% KM (Percentile Bootstrap) UCL | 81.863333 |
| Median | 2.35 | 95% KM (Chebyshev) UCL | 141.40923 |
| SD | 77.560883 | 97.5% KM (Chebyshev) UCL | 183.98089 |
| k star | 0.1831611 | 99% KM (Chebyshev) UCL | 267.60466 |
| Theta star | 234.11081 | | |
| Nu star | 4.395867 | Potential UCLs to Use | |
| AppChi2 | 0.8840419 | 99% KM (Chebyshev) UCL | 267.60466 |
| 95% Gamma Approximate UCL | 213.21928 | | |
| 95% Adjusted Gamma UCL | 279.77419 | | |

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Zinc, dissolved (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 33 | Number of Detected Data | 20 |
| Number of Distinct Detected Data | 20 | Number of Non-Detect Data | 13 |
| | | Percent Non-Detects | 39.39% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 1.6 | Minimum Detected | 0.4700036 |
| Maximum Detected | 17000 | Maximum Detected | 9.7409686 |
| Mean of Detected | 1919.435 | Mean of Detected | 4.5659785 |
| SD of Detected | 4254.8081 | SD of Detected | 2.9999233 |
| Minimum Non-Detect | 2.5 | Minimum Non-Detect | 0.9162907 |
| Maximum Non-Detect | 55 | Maximum Non-Detect | 4.0073332 |

| | | | |
|---|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 23 |
| For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 10 |
| Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 69.70% |

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.5270881 | Shapiro Wilk Test Statistic | 0.9065007 |
| 5% Shapiro Wilk Critical Value | 0.905 | 5% Shapiro Wilk Critical Value | 0.905 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 1167.0894 | Mean | 3.4855069 |
| SD | 3412.7602 | SD | 2.7620075 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| 95% DL/2 (t) UCL | 2173.4037 |
| 95% H-Stat (DL/2) UCL | 17510.548 |

| | |
|---|---|
| Maximum Likelihood Estimate(MLE) Method | N/A |

**MLE yields a negative mean**

| | |
|---|---|
| Log ROS Method | |
| Mean in Log Scale | 2.9140154 |
| SD in Log Scale | 3.26378 |
| Mean in Original Scale | 1165.1008 |
| SD in Original Scale | 3413.4562 |
| 95% t UCL | 2171.6204 |
| 95% Percentile Bootstrap UCL | 2218.9395 |
| 95% BCA Bootstrap UCL | 2583.1849 |
| 95% H-UCL | 112895.73 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.2364662 |
| Theta Star | 8117.166 |
| nu star | 9.4586461 |
| A-D Test Statistic | 1.1352653 |
| 5% A-D Critical Value | 0.8711379 |
| K-S Test Statistic | 0.8711379 |
| 5% K-S Critical Value | 0.2127783 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 17000 |
| Mean | 1163.2939 |
| Median | 4.5 |
| SD | 3414.0871 |
| k star | 0.0975518 |
| Theta star | 11924.887 |
| Nu star | 6.4384172 |
| AppChi2 | 1.8678574 |
| 95% Gamma Approximate UCL | 4009.8198 |
| 95% Adjusted Gamma UCL | 4293.9659 |

Note: DL/2 is not a recommended method.

**Data Distribution Test with Detected Values Only**

Data appear Lognormal at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 1164.8553 |
| SD | 3361.4215 |
| SE of Mean | 600.34972 |
| 95% KM (t) UCL | 2181.7809 |
| 95% KM (z) UCL | 2152.3427 |
| 95% KM (jackknife) UCL | 2171.0698 |
| 95% KM (bootstrap t) UCL | 4028.1454 |
| 95% KM (BCA) UCL | 2172.0741 |
| 95% KM (Percentile Bootstrap) UCL | 2280.3408 |
| 95% KM (Chebyshev) UCL | 3781.719 |
| 97.5% KM (Chebyshev) UCL | 4914.0381 |
| 99% KM (Chebyshev) UCL | 7138.2595 |

**Potential UCLs to Use**

| | |
|---|---|
| 99% KM (Chebyshev) UCL | 7138.2595 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Zinc, total (ug/L)

**General Statistics**

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Number of Valid Data | 33 | Number of Detected Data | 24 |
| Number of Distinct Detected Data | 24 | Number of Non-Detect Data | 9 |
| | | Percent Non-Detects | 27.27% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 2.5 | Minimum Detected | 0.9162907 |
| Maximum Detected | 19000 | Maximum Detected | 9.8521943 |
| Mean of Detected | 1855.05 | Mean of Detected | 4.946853 |
| SD of Detected | 4360.8748 | SD of Detected | 2.6271502 |
| Minimum Non-Detect | 0.6 | Minimum Non-Detect | -0.510826 |
| Maximum Non-Detect | 750 | Maximum Non-Detect | 6.6200732 |

| | | | |
|---|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 27 |
| For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 6 |
| Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 81.82% |

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.4906273 | Shapiro Wilk Test Statistic | 0.9529771 |
| 5% Shapiro Wilk Critical Value | 0.916 | 5% Shapiro Wilk Critical Value | 0.916 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 1362.9583 | Mean | 4.1824211 |
| SD | 3786.5903 | SD | 2.761028 |
| 95% DL/2 (t) UCL | 2479.5033 | 95% H-Stat (DL/2) UCL | 35000.417 |
| | | | |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| MLE yields a negative mean | | Mean in Log Scale | 3.8473591 |
| | | SD in Log Scale | 3.015182 |
| | | Mean in Original Scale | 1351.1461 |
| | | SD in Original Scale | 3790.3737 |
| | | 95% t UCL | 2468.8067 |
| | | 95% Percentile Bootstrap UCL | 2526.6928 |
| | | 95% BCA Bootstrap UCL | 3240.8766 |
| | | 95% H-UCL | 81713.11 |

| Gamma Distribution Test with Detected Values Only | | Data Distribution Test with Detected Values Only |
|---|---|---|
| k star (bias corrected) | 0.2655501 | Data appear Lognormal at 5% Significance Level |
| Theta Star | 6985.6881 | |
| nu star | 12.746404 | |
| | | |
| A-D Test Statistic | 1.2080864 | Nonparametric Statistics |
| 5% A-D Critical Value | 0.8632419 | Kaplan-Meier (KM) Method |
| K-S Test Statistic | 0.8632419 | Mean 1354.1253 |

APPENDIX E

Onsite Groundwater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| 5% K-S Critical Value | 0.1942737 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 19000 |
| Mean | 1349.1273 |
| Median | 17.6 |
| SD | 3791.1103 |
| k star | 0.1191915 |
| Theta star | 11318.988 |
| Nu star | 7.8666395 |
| AppChi2 | 2.6580349 |
| 95% Gamma Approximate UCL | 3992.8361 |
| 95% Adjusted Gamma UCL | 4237.872 |

Note: DL/2 is not a recommended method.

| | |
|---|---|
| SD | 3731.6141 |
| SE of Mean | 663.58819 |
| 95% KM (t) UCL | 2478.1699 |
| 95% KM (z) UCL | 2445.6308 |
| 95% KM (jackknife) UCL | 2471.4481 |
| 95% KM (bootstrap t) UCL | 4269.0897 |
| 95% KM (BCA) UCL | 2544.6239 |
| 95% KM (Percentile Bootstrap) UCL | 2561.8453 |
| 95% KM (Chebyshev) UCL | 4246.6392 |
| 97.5% KM (Chebyshev) UCL | 5498.2322 |
| 99% KM (Chebyshev) UCL | 7956.7444 |

Potential UCLs to Use

| | |
|---|---|
| 99% KM (Chebyshev) UCL | 7956.7444 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

APPENDIX E

Onsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

## General UCL Statistics for Data Sets with Non-Detects

**User Selected Options**

| | |
|---|---|
| From File | ProUCL.wst |
| Full Precision | ON |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Arsenic, total (mg/kg)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 15 | Number of Distinct Observations | 15 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 2.2 |
| Maximum | 17 |
| Mean | 8.0933333 |
| Median | 7.9 |
| SD | 4.2106102 |
| Std. Error of Mean | 1.0871749 |
| Coefficient of Variation | 0.5202566 |
| Skewness | 0.4223363 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 0.7884574 |
| Maximum of Log Data | 2.8332133 |
| Mean of log Data | 1.9381983 |
| SD of log Data | 0.6114749 |

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.9693336 |
| Shapiro Wilk Critical Value | 0.881 |

Data appear Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.9409867 |
| Shapiro Wilk Critical Value | 0.881 |

Data appear Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 10.008185 |

**95% UCLs (Adjusted for Skewness)**

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 10.008252 |
| 95% Modified-t UCL (Johnson-1978) | 10.027944 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 11.98697 |
| 95% Chebyshev (MVUE) UCL | 14.179564 |
| 97.5% Chebyshev (MVUE) UCL | 16.743087 |
| 99% Chebyshev (MVUE) UCL | 21.778631 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 2.787679 |
| Theta Star | 2.9032515 |
| MLE of Mean | 8.0933333 |
| MLE of Standard Deviation | 4.8473686 |
| nu star | 83.63037 |
| Approximate Chi Square Value (.05) | 63.553733 |
| Adjusted Level of Significance | 0.03235 |
| Adjusted Chi Square Value | 61.401658 |

**Data Distribution**

Data appear Normal at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 9.8815769 |
| 95% Jackknife UCL | 10.008185 |
| 95% Standard Bootstrap UCL | 9.8258466 |

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Onsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Anderson-Darling Test Statistic | 0.2308701 | 95% Bootstrap-t UCL | 10.201772 |
| Anderson-Darling 5% Critical Value | 0.7425879 | 95% Hall's Bootstrap UCL | 10.230794 |
| Kolmogorov-Smirnov Test Statistic | 0.1223718 | 95% Percentile Bootstrap UCL | 9.84 |
| Kolmogorov-Smirnov 5% Critical Value | 0.2229668 | 95% BCA Bootstrap UCL | 9.8733333 |
| Data appear Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL | 12.832219 |
| | | 97.5% Chebyshev(Mean, Sd) UCL | 14.882738 |
| Assuming Gamma Distribution | | 99% Chebyshev(Mean, Sd) UCL | 18.910587 |
| 95% Approximate Gamma UCL | 10.650019 | | |
| 95% Adjusted Gamma UCL | 11.023293 | | |
| Potential UCL to Use | | Use 95% Student's-t UCL | 10.008185 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Cadmium, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 15 | Number of Detected Data | 14 |
| Number of Distinct Detected Data | 14 | Number of Non-Detect Data | 1 |
| | | Percent Non-Detects | 6.67% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 2.4 | Minimum Detected | 0.8754687 |
| Maximum Detected | 550 | Maximum Detected | 6.3099183 |
| Mean of Detected | 51.707143 | Mean of Detected | 2.4022672 |
| SD of Detected | 144.2322 | SD of Detected | 1.4757608 |
| Minimum Non-Detect | 0.275 | Minimum Non-Detect | -1.290984 |
| Maximum Non-Detect | 0.275 | Maximum Non-Detect | -1.290984 |

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.3723269 | Shapiro Wilk Test Statistic | 0.8627282 |
| 5% Shapiro Wilk Critical Value | 0.874 | 5% Shapiro Wilk Critical Value | 0.874 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |
| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 48.269167 | Mean | 2.1098406 |
| SD | 139.62199 | SD | 1.8179679 |
| 95% DL/2 (t) UCL | 111.76482 | 95% H-Stat (DL/2) UCL | 333.05841 |
| Maximum Likelihood Estimate(MLE) Method | | Log ROS Method | |

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Onsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| Mean | 41.707284 |
| SD | 140.82371 |
| 95% MLE (t) UCL | 105.74945 |
| 95% MLE (Tiku) UCL | 99.770886 |

| | |
|---|---|
| Mean in Log Scale | 2.1729475 |
| SD in Log Scale | 1.6766395 |
| Mean in Original Scale | 48.283622 |
| SD in Original Scale | 139.61666 |
| 95% t UCL | 111.77686 |
| 95% Percentile Bootstrap UCL | 117.39333 |
| 95% BCA Bootstrap UCL | 162.04667 |
| 95% H UCL | 209.4758 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.3796817 |
| Theta Star | 136.18551 |
| nu star | 10.631087 |

| | |
|---|---|
| A-D Test Statistic | 1.9204631 |
| 5% A-D Critical Value | 0.8082652 |
| K-S Test Statistic | 0.8082652 |
| 5% K-S Critical Value | 0.244017 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 550 |
| Mean | 48.26 |
| Median | 8.7 |
| SD | 139.62538 |
| k star | 0.2635397 |
| Theta star | 183.12231 |
| Nu star | 7.9061912 |
| AppChi2 | 2.6808148 |
| 95% Gamma Approximate UCL | 142.32717 |
| 95% Adjusted Gamma UCL | 164.42138 |

Note: DL/2 is not a recommended method.

**Data Distribution Test with Detected Values Only**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 48.42 |
| SD | 134.835 |
| SE of Mean | 36.128452 |
| 95% KM (t) UCL | 112.05341 |
| 95% KM (z) UCL | 107.84602 |
| 95% KM (jackknife) UCL | 111.8741 |
| 95% KM (bootstrap t) UCL | 729.43498 |
| 95% KM (BCA) UCL | 120.1 |
| 95% KM (Percentile Bootstrap) UCL | 118.17333 |
| 95% KM (Chebyshev) UCL | 205.90027 |
| 97.5% KM (Chebyshev) UCL | 274.04211 |
| 99% KM (Chebyshev) UCL | 407.89356 |

**Potential UCLs to Use**

| | |
|---|---|
| 97.5% KM (Chebyshev) UCL | 274.04211 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Cobalt, total (mg/kg)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 3 | Number of Distinct Observations | 3 |

APPENDIX E

Onsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Warning: This data set only has 3 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Cobalt, total (mg/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Iron, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 3 | Number of Distinct Observations | 3 |

Warning: This data set only has 3 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Iron, total (mg/kg) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Manganese, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 15 | Number of Distinct Observations | 15 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 36.1 | Minimum of Log Data | 3.5862929 |
| Maximum | 1530 | Maximum of Log Data | 7.333023 |
| Mean | 398.64667 | Mean of log Data | 5.5966609 |
| Median | 336 | SD of log Data | 0.9874015 |
| SD | 372.38965 | | |
| Std. Error of Mean | 96.150594 | | |
| Coefficient of Variation | 0.9341346 | | |
| Skewness | 2.162044 | | |

Relevant UCL Statistics

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.7839877 | Shapiro Wilk Test Statistic | 0.9547606 |
| Shapiro Wilk Critical Value | 0.881 | Shapiro Wilk Critical Value | 0.881 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

Assuming Normal Distribution

Assuming Lognormal Distribution

APPENDIX E

Onsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| 95% Student's-t UCL | 567.99768 | 95% H-UCL | 900.52981 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 928.54904 |
| 95% Adjusted-CLT UCL (Chen-1995) | 614.15268 | 97.5% Chebyshev (MVUE) UCL | 1148.7343 |
| 95% Modified-t UCL (Johnson-1978) | 576.94349 | 99% Chebyshev (MVUE) UCL | 1581.2457 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 1.1812807 |
| Theta Star | 337.46989 |
| MLE of Mean | 398.64667 |
| MLE of Standard Deviation | 366.78501 |
| nu star | 35.438421 |
| Approximate Chi Square Value (.05) | 22.817081 |
| Adjusted Level of Significance | 0.03235 |
| Adjusted Chi Square Value | 21.575295 |
| Anderson-Darling Test Statistic | 0.2826643 |
| Anderson-Darling 5% Critical Value | 0.7552491 |
| Kolmogorov-Smirnov Test Statistic | 0.1315561 |
| Kolmogorov-Smirnov 5% Critical Value | 0.2258906 |

Data appear Gamma Distributed at 5% Significance Level

**Data Distribution**

Data appear Gamma Distributed at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 556.80032 |
| 95% Jackknife UCL | 567.99768 |
| 95% Standard Bootstrap UCL | 553.78274 |
| 95% Bootstrap-t UCL | 689.28728 |
| 95% Hall's Bootstrap UCL | 1294.77 |
| 95% Percentile Bootstrap UCL | 549.78667 |
| 95% BCA Bootstrap UCL | 632.33333 |
| 95% Chebyshev(Mean, Sd) UCL | 817.75739 |
| 97.5% Chebyshev(Mean, Sd) UCL | 999.10693 |
| 99% Chebyshev(Mean, Sd) UCL | 1355.333 |

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 619.15933 |
| 95% Adjusted Gamma UCL | 654.7956 |

**Potential UCL to Use**

Use 95% Approximate Gamma UCL 619.15933

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Zinc, total (mg/kg)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 15 | Number of Distinct Observations | 15 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 241 |
| Maximum | 24000 |
| Mean | 7648.7333 |
| Median | 4170 |
| SD | 6968.4122 |
| Std. Error of Mean | 1799.2363 |
| Coefficient of Variation | 0.9110544 |
| Skewness | 1.1563469 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 5.4847969 |
| Maximum of Log Data | 10.085809 |
| Mean of log Data | 8.4294426 |
| SD of log Data | 1.2251273 |

APPENDIX E

Onsite Sediment ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

## Relevant UCL Statistics

### Normal Distribution Test

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.8699866 |
| Shapiro Wilk Critical Value | 0.881 |

Data not Normal at 5% Significance Level

### Lognormal Distribution Test

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.9328846 |
| Shapiro Wilk Critical Value | 0.881 |

Data appear Lognormal at 5% Significance Level

### Assuming Normal Distribution

| | |
|---|---|
| 95% Student's-t UCL | 10817.746 |

**95% UCLs (Adjusted for Skewness)**

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 11182.213 |
| 95% Modified-t UCL (Johnson-1978) | 10907.279 |

### Assuming Lognormal Distribution

| | |
|---|---|
| 95% H-UCL | 26937.098 |
| 95% Chebyshev (MVUE) UCL | 22811.64 |
| 97.5% Chebyshev (MVUE) UCL | 28799.434 |
| 99% Chebyshev (MVUE) UCL | 40561.295 |

### Gamma Distribution Test

| | |
|---|---|
| k star (bias corrected) | 0.9340375 |
| Theta Star | 8188.8931 |
| MLE of Mean | 7648.7333 |
| MLE of Standard Deviation | 7914.2062 |
| nu star | 28.021125 |
| Approximate Chi Square Value (.05) | 16.944483 |
| Adjusted Level of Significance | 0.03235 |
| Adjusted Chi Square Value | 15.890027 |
| Anderson-Darling Test Statistic | 0.2396951 |
| Anderson-Darling 5% Critical Value | 0.7609604 |
| Kolmogorov-Smirnov Test Statistic | 0.1317184 |
| Kolmogorov-Smirnov 5% Critical Value | 0.2273802 |

Data appear Gamma Distributed at 5% Significance Level

### Data Distribution

Data appear Gamma Distributed at 5% Significance Level

### Nonparametric Statistics

| | |
|---|---|
| 95% CLT UCL | 10608.214 |
| 95% Jackknife UCL | 10817.746 |
| 95% Standard Bootstrap UCL | 10609.454 |
| 95% Bootstrap-t UCL | 11911.107 |
| 95% Hall's Bootstrap UCL | 11732.189 |
| 95% Percentile Bootstrap UCL | 10706.133 |
| 95% BCA Bootstrap UCL | 10986 |
| 95% Chebyshev(Mean, Sd) UCL | 15491.422 |
| 97.5% Chebyshev(Mean, Sd) UCL | 18884.96 |
| 99% Chebyshev(Mean, Sd) UCL | 25550.908 |

### Assuming Gamma Distribution

| | |
|---|---|
| 95% Approximate Gamma UCL | 12648.725 |
| 95% Adjusted Gamma UCL | 13488.091 |

**Potential UCL to Use**

Use 95% Approximate Gamma UCL 12648.725

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

## General UCL Statistics for Data Sets with Non-Detects

**User Selected Options**

| | |
|---|---|
| From File | WorkSheet.wst |
| Full Precision | ON |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Aluminum, total (mg/kg)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 51 | Number of Distinct Observations | 41 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 3800 |
| Maximum | 75500 |
| Mean | 17320.98 |
| Median | 11000 |
| SD | 15213.536 |
| Std. Error of Mean | 2130.3212 |
| Coefficient of Variation | 0.87833 |
| Skewness | 1.7706835 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 8.2427563 |
| Maximum of Log Data | 11.231888 |
| Mean of log Data | 9.4281214 |
| SD of log Data | 0.8188749 |

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.2101258 |
| Lilliefors Critical Value | 0.1240648 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.1084637 |
| Lilliefors Critical Value | 0.1240648 |

Data appear Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 20891.197 |

**95% UCLs (Adjusted for Skewness)**

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 21389.44 |
| 95% Modified-t UCL (Johnson-1978) | 20979.23 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 22247.283 |
| 95% Chebyshev (MVUE) UCL | 26933.079 |
| 97.5% Chebyshev (MVUE) UCL | 31128.825 |
| 99% Chebyshev (MVUE) UCL | 39370.558 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 1.5708129 |
| Theta Star | 11026.762 |
| MLE of Mean | 17320.98 |
| MLE of Standard Deviation | 13820.07 |
| nu star | 160.22292 |
| Approximate Chi Square Value (.05) | 131.95846 |
| Adjusted Level of Significance | 0.0452941 |
| Adjusted Chi Square Value | 131.21411 |

**Data Distribution**

Data appear Lognormal at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 20825.047 |
| 95% Jackknife UCL | 20891.197 |
| 95% Standard Bootstrap UCL | 20834.937 |

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Anderson-Darling Test Statistic | 1.0829345 | 95% Bootstrap-t UCL | 21856.153 |
| Anderson-Darling 5% Critical Value | 0.7660014 | 95% Hall's Bootstrap UCL | 21665.926 |
| Kolmogorov-Smirnov Test Statistic | 0.1566809 | 95% Percentile Bootstrap UCL | 21035.098 |
| Kolmogorov-Smirnov 5% Critical Value | 0.1262338 | 95% BCA Bootstrap UCL | 21775.686 |
| Data not Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL | 26606.835 |
| | | 97.5% Chebyshev(Mean, Sd) UCL | 30624.832 |
| Assuming Gamma Distribution | | 99% Chebyshev(Mean, Sd) UCL | 38517.409 |
| 95% Approximate Gamma UCL | 21030.997 | | |
| 95% Adjusted Gamma UCL | 21150.301 | | |
| Potential UCL to Use | | Use 95% H-UCL | 22247.283 |

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Antimony, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 51 | Number of Detected Data | 29 |
| Number of Distinct Detected Data | 28 | Number of Non-Detect Data | 22 |
| | | Percent Non-Detects | 43.14% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.42 | Minimum Detected | -0.867501 |
| Maximum Detected | 665 | Maximum Detected | 6.499787 |
| Mean of Detected | 164.50655 | Mean of Detected | 3.1460664 |
| SD of Detected | 229.8271 | SD of Detected | 2.5472699 |
| Minimum Non-Detect | 0.18 | Minimum Non-Detect | -1.714798 |
| Maximum Non-Detect | 10 | Maximum Non-Detect | 2.3025851 |

| | | | |
|---|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 34 |
| For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 17 |
| Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 66.67% |

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.7236509 | Shapiro Wilk Test Statistic | 0.9006513 |
| 5% Shapiro Wilk Critical Value | 0.926 | 5% Shapiro Wilk Critical Value | 0.926 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

APPENDIX E

**Onsite Surface Soil and Residue ProUCL Output**

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Assuming Normal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 94.780833 |
| SD | 190.04727 |
| 95% DL/2 (t) UCL | 139.37992 |
| Maximum Likelihood Estimate(MLE) Method | N/A |

**MLE yields a negative mean**

**Assuming Lognormal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 1.9479646 |
| SD | 2.564195 |
| 95% H-Stat (DL/2) UCL | 899.38284 |
| Log ROS Method | |
| Mean in Log Scale | 1.2611039 |
| SD in Log Scale | 3.0821769 |
| Mean in Original Scale | 93.922814 |
| SD in Original Scale | 190.46997 |
| 95% t UCL | 138.6211 |
| 95% Percentile Bootstrap UCL | 138.85517 |
| 95% BCA Bootstrap UCL | 149.07774 |
| 95% H-UCL | 3712.5409 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.3318616 |
| Theta Star | 495.70826 |
| nu star | 19.247975 |
| A-D Test Statistic | 1.0696874 |
| 5% A-D Critical Value | 0.8462415 |
| K-S Test Statistic | 0.8462415 |
| 5% K-S Critical Value | 0.1756729 |

**Data not Gamma Distributed at 5% Significance Level**

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 665 |
| Mean | 93.542942 |
| Median | 0.71 |
| SD | 190.65777 |
| k star | 0.1015164 |
| Theta star | 921.45682 |
| Nu star | 10.354669 |
| AppChi2 | 4.164634 |
| 95% Gamma Approximate UCL | 232.57894 |
| 95% Adjusted Gamma UCL | 239.13341 |

**Note: DL/2 is not a recommended method.**

**Data Distribution Test with Detected Values Only**

**Data do not follow a Discernable Distribution (0.05)**

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 94.12042 |
| SD | 188.49849 |
| SE of Mean | 26.86318 |
| 95% KM (t) UCL | 139.14056 |
| 95% KM (z) UCL | 138.30642 |
| 95% KM (jackknife) UCL | 138.75804 |
| 95% KM (bootstrap t) UCL | 149.58761 |
| 95% KM (BCA) UCL | 140.72445 |
| 95% KM (Percentile Bootstrap) UCL | 139.23293 |
| 95% KM (Chebyshev) UCL | 211.21431 |
| 97.5% KM (Chebyshev) UCL | 261.88093 |
| 99% KM (Chebyshev) UCL | 361.40569 |

**Potential UCLs to Use**

| | |
|---|---|
| 99% KM (Chebyshev) UCL | 361.40569 |

**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**
**These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).**
**For additional insight, the user may want to consult a statistician.**

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Arsenic, total (mg/kg)

### General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 90 | Number of Distinct Observations | 72 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 2.3 | Minimum of Log Data | 0.8329091 |
| Maximum | 200 | Maximum of Log Data | 5.2983174 |
| Mean | 23.866667 | Mean of log Data | 2.5498686 |
| Median | 10.85 | SD of log Data | 1.0204951 |
| SD | 36.733822 | | |
| Std. Error of Mean | 3.8720849 | | |
| Coefficient of Variation | 1.5391266 | | |
| Skewness | 3.2255777 | | |

### Relevant UCL Statistics

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.2958973 | Lilliefors Test Statistic | 0.1247294 |
| Lilliefors Critical Value | 0.0933926 | Lilliefors Critical Value | 0.0933926 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 30.302673 | 95% H-UCL | 27.534773 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 33.42699 |
| 95% Adjusted-CLT UCL (Chen-1995) | 31.642412 | 97.5% Chebyshev (MVUE) UCL | 38.64472 |
| 95% Modified-t UCL (Johnson-1978) | 30.522095 | 99% Chebyshev (MVUE) UCL | 48.89394 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 0.9108643 | Data do not follow a Discernable Distribution (0.05) |
| Theta Star | 26.20222 | |
| MLE of Mean | 23.866667 | |
| MLE of Standard Deviation | 25.007192 | |
| nu star | 163.95557 | |
| Approximate Chi Square Value (.05) | 135.34962 | **Nonparametric Statistics** |
| Adjusted Level of Significance | 0.0473333 | 95% CLT UCL 30.23568 |
| Adjusted Chi Square Value | 134.92926 | 95% Jackknife UCL 30.302673 |
| | | 95% Standard Bootstrap UCL 30.241612 |
| Anderson-Darling Test Statistic | 4.7675981 | 95% Bootstrap-t UCL 32.591608 |
| Anderson-Darling 5% Critical Value | 0.7856439 | 95% Hall's Bootstrap UCL 31.839631 |
| Kolmogorov-Smirnov Test Statistic | 0.2129354 | 95% Percentile Bootstrap UCL 30.502222 |
| Kolmogorov-Smirnov 5% Critical Value | 0.0972332 | 95% BCA Bootstrap UCL 31.422222 |
| Data not Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL 40.744693 |
| | | 97.5% Chebyshev(Mean, Sd) UCL 48.047829 |
| **Assuming Gamma Distribution** | | 99% Chebyshev(Mean, Sd) UCL 62.393425 |

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| 95% Approximate Gamma UCL | 28.910852 |
| 95% Adjusted Gamma UCL | 29.000921 |

Potential UCL to Use

Use 95% Chebyshev (Mean, Sd) UCL 40.744693

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Barium, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 61 | Number of Distinct Observations | 41 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 40.7 | Minimum of Log Data | 3.7062281 |
| Maximum | 4670 | Maximum of Log Data | 8.4489144 |
| Mean | 312.65082 | Mean of log Data | 5.2064123 |
| Median | 150 | SD of log Data | 0.8530515 |
| SD | 630.27787 | | |
| Std. Error of Mean | 80.698811 | | |
| Coefficient of Variation | 2.0159162 | | |
| Skewness | 5.9812725 | | |

Relevant UCL Statistics

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.3330605 | Lilliefors Test Statistic | 0.1512983 |
| Lilliefors Critical Value | 0.1134407 | Lilliefors Critical Value | 0.1134407 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 447.47019 | 95% H-UCL | 332.07843 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 401.73744 |
| 95% Adjusted-CLT UCL (Chen-1995) | 511.42386 | 97.5% Chebyshev (MVUE) UCL | 462.8896 |
| 95% Modified-t UCL (Johnson-1978) | 457.77036 | 99% Chebyshev (MVUE) UCL | 583.01116 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 1.0225283 | Data do not follow a Discernable Distribution (0.05) |
| Theta Star | 305.76251 | |
| MLE of Mean | 312.65082 | |
| MLE of Standard Deviation | 309.18748 | |
| nu star | 124.74845 | |
| Approximate Chi Square Value (.05) | 99.952893 | **Nonparametric Statistics** |
| Adjusted Level of Significance | 0.0460656 | 95% CLT UCL 445.38855 |
| Adjusted Chi Square Value | 99.417395 | 95% Jackknife UCL 447.47019 |

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| | | 95% Standard Bootstrap UCL | 451.19964 |
| Anderson-Darling Test Statistic | 4.4073702 | 95% Bootstrap-t UCL | 751.8557 |
| Anderson-Darling 5% Critical Value | 0.7779475 | 95% Hall's Bootstrap UCL | 992.88039 |
| Kolmogorov-Smirnov Test Statistic | 0.2083457 | 95% Percentile Bootstrap UCL | 473.63279 |
| Kolmogorov-Smirnov 5% Critical Value | 0.1170093 | 95% BCA Bootstrap UCL | 546.33115 |
| Data not Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL | 664.40878 |
| | | 97.5% Chebyshev(Mean, Sd) UCL | 816.61474 |
| Assuming Gamma Distribution | | 99% Chebyshev(Mean, Sd) UCL | 1115.5939 |
| 95% Approximate Gamma UCL | 390.21088 | | |
| 95% Adjusted Gamma UCL | 392.3127 | | |
| Potential UCL to Use | | Use 95% Chebyshev (Mean, Sd) UCL | 664.40878 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

BENZO(A)PYRENE (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 11 | Number of Detected Data | 2 |
| Number of Distinct Detected Data | 2 | Number of Non-Detect Data | 9 |
| | | Percent Non-Detects | 81.82% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.043 | Minimum Detected | -3.146555 |
| Maximum Detected | 0.065 | Maximum Detected | -2.733368 |
| Mean of Detected | 0.054 | Mean of Detected | -2.939962 |
| SD of Detected | 0.0155563 | SD of Detected | 0.2921674 |
| Minimum Non-Detect | 0.045 | Minimum Non-Detect | -3.101093 |
| Maximum Non-Detect | 0.06 | Maximum Non-Detect | -2.813411 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 10 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 1 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 90.91% |

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

It is necessary to have 4 or more Distinct Values for bootstrap methods.

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

**Normal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | N/A |
| 5% Shapiro Wilk Critical Value | N/A |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | N/A |
| 5% Shapiro Wilk Critical Value | N/A |

Data not Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 0.0295909 |
| SD | 0.013191 |
| 95% DL/2 (t) UCL | 0.0367995 |
| Maximum Likelihood Estimate(MLE) Method | N/A |

MLE method failed to converge properly

**Assuming Lognormal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | -3.583349 |
| SD | 0.3402281 |
| 95% H-Stat (DL/2) UCL | 0.0364636 |
| Log ROS Method | |
| Mean in Log Scale | N/A |
| SD in Log Scale | N/A |
| Mean in Original Scale | N/A |
| SD in Original Scale | N/A |
| 95% t UCL | N/A |
| 95% Percentile Bootstrap UCL | N/A |
| 95% BCA Bootstrap UCL | N/A |
| 95% H-UCL | N/A |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | N/A |
| Theta Star | N/A |
| nu star | N/A |
| A-D Test Statistic | N/A |
| 5% A-D Critical Value | N/A |
| K-S Test Statistic | N/A |
| 5% K-S Critical Value | N/A |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | N/A |
| Maximum | N/A |
| Mean | N/A |
| Median | N/A |
| SD | N/A |
| k star | N/A |

**Data Distribution Test with Detected Values Only**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 0.045 |
| SD | 0.0063246 |
| SE of Mean | 0.0026968 |
| 95% KM (t) UCL | 0.0498878 |
| 95% KM (z) UCL | 0.0494358 |
| 95% KM (jackknife) UCL | 0.0601834 |
| 95% KM (bootstrap t) UCL | 0.045 |
| 95% KM (BCA) UCL | 0.065 |
| 95% KM (Percentile Bootstrap) UCL | 0.065 |
| 95% KM (Chebyshev) UCL | 0.0567551 |
| 97.5% KM (Chebyshev) UCL | 0.0618415 |
| 99% KM (Chebyshev) UCL | 0.0718328 |

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Theta star | N/A | | |
| Nu star | N/A | Potential UCLs to Use | |
| AppChi2 | N/A | 95% KM (t) UCL | 0.0498878 |
| 95% Gamma Approximate UCL | N/A | 95% KM (% Bootstrap) UCL | 0.065 |
| 95% Adjusted Gamma UCL | N/A | | |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Cadmium, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 91 | Number of Detected Data | 78 |
| Number of Distinct Detected Data | 65 | Number of Non-Detect Data | 13 |
| | | Percent Non-Detects | 14.29% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.12 | Minimum Detected | -2.120264 |
| Maximum Detected | 284 | Maximum Detected | 5.6489742 |
| Mean of Detected | 30.787949 | Mean of Detected | 2.3802032 |
| SD of Detected | 48.390094 | SD of Detected | 1.5744941 |
| Minimum Non-Detect | 0.255 | Minimum Non-Detect | -1.366492 |
| Maximum Non-Detect | 17.5 | Maximum Non-Detect | 2.8622009 |

| | | | |
|---|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 61 |
| For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 30 |
| Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 67.03% |

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.2631171 | Lilliefors Test Statistic | 0.0865805 |
| 5% Lilliefors Critical Value | 0.1003197 | 5% Lilliefors Critical Value | 0.1003197 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 26.934368 | Mean | 2.1547988 |
| SD | 45.766267 | SD | 1.6397572 |
| 95% DL/2 (t) UCL | 34.907807 | 95% H-Stat (DL/2) UCL | 55.051733 |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| MLE yields a negative mean | | Mean in Log Scale | 2.1143358 |
| | | SD in Log Scale | 1.6344765 |

| | |
|---|---|
| Mean in Original Scale | 26.713938 |
| SD in Original Scale | 45.872806 |
| 95% t UCL | 34.705938 |
| 95% Percentile Bootstrap UCL | 35.150757 |
| 95% BCA Bootstrap UCL | 36.721457 |
| 95% H-UCL | 52.270616 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.5772393 |
| Theta Star | 53.33654 |
| nu star | 90.049335 |

| | |
|---|---|
| A-D Test Statistic | 1.7706319 |
| 5% A-D Critical Value | 0.8091782 |
| K-S Test Statistic | 0.8091782 |
| 5% K-S Critical Value | 0.1062438 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 284 |
| Mean | 26.38967 |
| Median | 7.4 |
| SD | 46.05137 |
| k star | 0.2251517 |
| Theta star | 117.20841 |
| Nu star | 40.977607 |
| AppChi2 | 27.307321 |
| 95% Gamma Approximate UCL | 39.600573 |
| 95% Adjusted Gamma UCL | 39.862533 |

Note: DL/2 is not a recommended method.

**Data Distribution Test with Detected Values Only**

Data appear Lognormal at 5% Significance Level

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 26.783763 |
| SD | 45.594199 |
| SE of Mean | 4.8115791 |
| 95% KM (t) UCL | 34.780421 |
| 95% KM (z) UCL | 34.698107 |
| 95% KM (jackknife) UCL | 34.765009 |
| 95% KM (bootstrap t) UCL | 36.892056 |
| 95% KM (BCA) UCL | 35.573503 |
| 95% KM (Percentile Bootstrap) UCL | 35.640217 |
| 95% KM (Chebyshev) UCL | 47.756951 |
| 97.5% KM (Chebyshev) UCL | 56.832066 |
| 99% KM (Chebyshev) UCL | 74.658371 |

**Potential UCLs to Use**

| | |
|---|---|
| 97.5% KM (Chebyshev) UCL | 56.832066 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

**Cobalt, total (mg/kg)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 51 | Number of Distinct Observations | 47 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 2.1 |
| Maximum | 880 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 0.7419373 |
| Maximum of Log Data | 6.7799219 |

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Mean | 117.87843 | Mean of log Data | 3.2807159 |
| Median | 16.5 | SD of log Data | 1.7451943 |
| SD | 211.52321 | | |
| Std. Error of Mean | 29.619174 | | |
| Coefficient of Variation | 1.7944183 | | |
| Skewness | 2.1852058 | | |

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.3112361 |
| Lilliefors Critical Value | 0.1240648 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.1493429 |
| Lilliefors Critical Value | 0.1240648 |

Data not Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 167.51736 |
| **95% UCLs (Adjusted for Skewness)** | |
| 95% Adjusted-CLT UCL (Chen-1995) | 176.28177 |
| 95% Modified-t UCL (Johnson-1978) | 169.02789 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 268.21717 |
| 95% Chebyshev (MVUE) UCL | 283.27816 |
| 97.5% Chebyshev (MVUE) UCL | 356.6472 |
| 99% Chebyshev (MVUE) UCL | 500.76649 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 0.4233359 |
| Theta Star | 278.45132 |
| MLE of Mean | 117.87843 |
| MLE of Standard Deviation | 181.17231 |
| nu star | 43.180259 |
| Approximate Chi Square Value (.05) | 29.112939 |
| Adjusted Level of Significance | 0.0452941 |
| Adjusted Chi Square Value | 28.776308 |
| Anderson-Darling Test Statistic | 3.4907224 |
| Anderson-Darling 5% Critical Value | 0.8298381 |
| Kolmogorov-Smirnov Test Statistic | 0.2262278 |
| Kolmogorov-Smirnov 5% Critical Value | 0.1324507 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 174.83708 |
| 95% Adjusted Gamma UCL | 176.88236 |

**Data Distribution**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 166.59764 |
| 95% Jackknife UCL | 167.51736 |
| 95% Standard Bootstrap UCL | 164.76412 |
| 95% Bootstrap-t UCL | 182.98888 |
| 95% Hall's Bootstrap UCL | 174.62827 |
| 95% Percentile Bootstrap UCL | 167.46471 |
| 95% BCA Bootstrap UCL | 176.36471 |
| 95% Chebyshev(Mean, Sd) UCL | 246.98542 |
| 97.5% Chebyshev(Mean, Sd) UCL | 302.85011 |
| 99% Chebyshev(Mean, Sd) UCL | 412.58549 |

**Potential UCL to Use** — Use 95% Chebyshev (Mean, Sd) UCL 246.98542

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

APPENDIX E

**Onsite Surface Soil and Residue ProUCL Output**

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Copper, total (mg/kg)**

### General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 91 | Number of Distinct Observations | 80 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 8.4 | Minimum of Log Data | 2.1282317 |
| Maximum | 49900 | Maximum of Log Data | 10.817776 |
| Mean | 3918.0802 | Mean of log Data | 5.61954 |
| Median | 394 | SD of log Data | 2.6029071 |
| SD | 9421.2654 | | |
| Std. Error of Mean | 987.61697 | | |
| Coefficient of Variation | 2.4045616 | | |
| Skewness | 3.0223 | | |

### Relevant UCL Statistics

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.3815984 | Lilliefors Test Statistic | 0.1933262 |
| Lilliefors Critical Value | 0.092878 | Lilliefors Critical Value | 0.092878 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 5559.4613 | 95% H-UCL | 25706.884 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 21609.218 |
| 95% Adjusted-CLT UCL (Chen-1995) | 5876.9036 | 97.5% Chebyshev (MVUE) UCL | 27917.048 |
| 95% Modified-t UCL (Johnson-1978) | 5611.6113 | 99% Chebyshev (MVUE) UCL | 40307.557 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 0.2637047 | Data do not follow a Discernable Distribution (0.05) |
| Theta Star | 14857.831 | |
| MLE of Mean | 3918.0802 | |
| MLE of Standard Deviation | 7629.8213 | |
| nu star | 47.99426 | |
| Approximate Chi Square Value (.05) | 33.093358 | |
| Adjusted Level of Significance | 0.0473626 | |
| Adjusted Chi Square Value | 32.894526 | |
| Anderson-Darling Test Statistic | 5.2962953 | |
| Anderson-Darling 5% Critical Value | 0.883073 | |
| Kolmogorov-Smirnov Test Statistic | 0.178983 | |
| Kolmogorov-Smirnov 5% Critical Value | 0.1024737 | |
| Data not Gamma Distributed at 5% Significance Level | | |

| Assuming Gamma Distribution | | Nonparametric Statistics | |
|---|---|---|---|
| 95% Approximate Gamma UCL | 5682.269 | 95% CLT UCL | 5542.5656 |
| 95% Adjusted Gamma UCL | 5716.6156 | 95% Jackknife UCL | 5559.4613 |
| | | 95% Standard Bootstrap UCL | 5537.6494 |
| | | 95% Bootstrap-t UCL | 6049.5138 |
| | | 95% Hall's Bootstrap UCL | 5906.4886 |
| | | 95% Percentile Bootstrap UCL | 5601.7714 |
| | | 95% BCA Bootstrap UCL | 5886.4538 |
| | | 95% Chebyshev(Mean, Sd) UCL | 8223.0028 |
| | | 97.5% Chebyshev(Mean, Sd) UCL | 10085.746 |
| | | 99% Chebyshev(Mean, Sd) UCL | 13744.745 |

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| Potential UCL to Use | Use 95% Chebyshev (Mean, Sd) UCL 8223.0028 |
|---|---|

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Iron, total (mg/Kg)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 51 | Number of Distinct Observations | 40 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 5500 | Minimum of Log Data | 8.6125034 |
| Maximum | 142000 | Maximum of Log Data | 11.863582 |
| Mean | 42204.51 | Mean of log Data | 10.353423 |
| Median | 29100 | SD of log Data | 0.8049129 |
| SD | 32989.727 | | |
| Std. Error of Mean | 4619.4858 | | |
| Coefficient of Variation | 0.7816636 | | |
| Skewness | 1.299963 | | |

**Relevant UCL Statistics**

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.1824338 | Lilliefors Test Statistic | 0.0756476 |
| Lilliefors Critical Value | 0.1240648 | Lilliefors Critical Value | 0.1240648 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 49946.33 | 95% H-UCL | 55176.091 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 66708.262 |
| 95% Adjusted-CLT UCL (Chen-1995) | 50701.392 | 97.5% Chebyshev (MVUE) UCL | 76964.095 |
| 95% Modified-t UCL (Johnson-1978) | 50086.478 | 99% Chebyshev (MVUE) UCL | 97109.692 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 1.7385913 | Data appear Gamma Distributed at 5% Significance Level |
| Theta Star | 24275.118 | |
| MLE of Mean | 42204.51 | |
| MLE of Standard Deviation | 32008.115 | |
| nu star | 177.33632 | |
| Approximate Chi Square Value (.05) | 147.53717 | **Nonparametric Statistics** |
| Adjusted Level of Significance | 0.0452941 | 95% CLT UCL 49802.888 |
| Adjusted Chi Square Value | 146.74864 | 95% Jackknife UCL 49946.33 |
| | | 95% Standard Bootstrap UCL 49683.333 |
| Anderson-Darling Test Statistic | 0.4276579 | 95% Bootstrap-t UCL 51442.136 |

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Anderson-Darling 5% Critical Value | 0.7643974 | 95% Hall's Bootstrap UCL | 51234.118 |
| Kolmogorov-Smirnov Test Statistic | 0.0964895 | 95% Percentile Bootstrap UCL | 49773.137 |
| Kolmogorov-Smirnov 5% Critical Value | 0.1260163 | 95% BCA Bootstrap UCL | 50498.627 |
| Data appear Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL | 62340.382 |
| | | 97.5% Chebyshev(Mean, Sd) UCL | 71053.19 |
| Assuming Gamma Distribution | | 99% Chebyshev(Mean, Sd) UCL | 88167.813 |
| 95% Approximate Gamma UCL | 50728.859 | | |
| 95% Adjusted Gamma UCL | 51001.441 | | |
| Potential UCL to Use | | Use 95% Approximate Gamma UCL | 50728.859 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Manganese, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 81 | Number of Distinct Observations | 74 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 38 | Minimum of Log Data | 3.6375862 |
| Maximum | 19100 | Maximum of Log Data | 9.8574436 |
| Mean | 889.87901 | Mean of log Data | 6.0219628 |
| Median | 374 | SD of log Data | 1.0429485 |
| SD | 2319.4347 | | |
| Std. Error of Mean | 257.71497 | | |
| Coefficient of Variation | 2.6064607 | | |
| Skewness | 6.692692 | | |

Relevant UCL Statistics

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.3680967 | Lilliefors Test Statistic | 0.0878756 |
| Lilliefors Critical Value | 0.0984444 | Lilliefors Critical Value | 0.0984444 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |
| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
| 95% Student's-t UCL | 1318.7488 | 95% H-UCL | 925.97374 |
| 95% UCLs (Adjusted for Skewness) | | 95% Chebyshev (MVUE) UCL | 1132.3178 |
| 95% Adjusted-CLT UCL (Chen-1995) | 1518.5581 | 97.5% Chebyshev (MVUE) UCL | 1317.992 |
| 95% Modified-t UCL (Johnson-1978) | 1350.6897 | 99% Chebyshev (MVUE) UCL | 1682.7131 |
| Gamma Distribution Test | | Data Distribution | |
| k star (bias corrected) | 0.7544464 | Data appear Lognormal at 5% Significance Level | |
| Theta Star | 1179.5126 | | |

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| MLE of Mean | 889.87901 |
| MLE of Standard Deviation | 1024.5113 |
| nu star | 122.22031 |
| Approximate Chi Square Value (.05) | 97.689856 |
| Adjusted Level of Significance | 0.047037 |
| Adjusted Chi Square Value | 97.294433 |
| Anderson-Darling Test Statistic | 5.2821997 |
| Anderson-Darling 5% Critical Value | 0.7920552 |
| Kolmogorov-Smirnov Test Statistic | 0.199544 |
| Kolmogorov-Smirnov 5% Critical Value | 0.103041 |

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

| | |
|---|---|
| 95% Approximate Gamma UCL | 1113.3325 |
| 95% Adjusted Gamma UCL | 1117.8573 |

Nonparametric Statistics

| | |
|---|---|
| 95% CLT UCL | 1313.7824 |
| 95% Jackknife UCL | 1318.7488 |
| 95% Standard Bootstrap UCL | 1320.0989 |
| 95% Bootstrap-t UCL | 2193.0888 |
| 95% Hall's Bootstrap UCL | 2763.7978 |
| 95% Percentile Bootstrap UCL | 1391.5963 |
| 95% BCA Bootstrap UCL | 1563.7025 |
| 95% Chebyshev(Mean, Sd) UCL | 2013.2325 |
| 97.5% Chebyshev(Mean, Sd) UCL | 2499.3085 |
| 99% Chebyshev(Mean, Sd) UCL | 3454.1105 |

Potential UCL to Use

Use 95% H-UCL 925.97374

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Nickel, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 61 | Number of Distinct Observations | 54 |

Raw Statistics

| | |
|---|---|
| Minimum | 6.6 |
| Maximum | 17800 |
| Mean | 2138.8016 |
| Median | 59 |
| SD | 4621.082 |
| Std. Error of Mean | 591.66893 |
| Coefficient of Variation | 2.160594 |
| Skewness | 2.3283402 |

Log-transformed Statistics

| | |
|---|---|
| Minimum of Log Data | 1.8870696 |
| Maximum of Log Data | 9.7869537 |
| Mean of log Data | 4.9995078 |
| SD of log Data | 2.4901304 |

Relevant UCL Statistics

Normal Distribution Test

Lognormal Distribution Test

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.3944571 | Lilliefors Test Statistic | 0.1700974 |
| Lilliefors Critical Value | 0.1134407 | Lilliefors Critical Value | 0.1134407 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 3127.2726 | 95% H-UCL | 10003.767 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 8861.9928 |
| 95% Adjusted-CLT UCL (Chen-1995) | 3300.4798 | 97.5% Chebyshev (MVUE) UCL | 11511.412 |
| 95% Modified-t UCL (Johnson-1978) | 3156.67 | 99% Chebyshev (MVUE) UCL | 16715.684 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 0.2618158 | Data do not follow a Discernable Distribution (0.05) |
| Theta Star | 8169.1093 | |
| MLE of Mean | 2138.8016 | |
| MLE of Standard Deviation | 4179.9646 | |
| nu star | 31.941524 | |
| Approximate Chi Square Value (.05) | 20.025669 | **Nonparametric Statistics** |
| Adjusted Level of Significance | 0.0460656 | 95% CLT UCL 3112.0104 |
| Adjusted Chi Square Value | 19.796893 | 95% Jackknife UCL 3127.2726 |
| | | 95% Standard Bootstrap UCL 3128.1065 |
| Anderson-Darling Test Statistic | 4.992174 | 95% Bootstrap-t UCL 3456.6629 |
| Anderson-Darling 5% Critical Value | 0.8802702 | 95% Hall's Bootstrap UCL 3191.217 |
| Kolmogorov-Smirnov Test Statistic | 0.231405 | 95% Percentile Bootstrap UCL 3148.4082 |
| Kolmogorov-Smirnov 5% Critical Value | 0.1245344 | 95% BCA Bootstrap UCL 3319.5475 |
| Data not Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL 4717.8267 |
| | | 97.5% Chebyshev(Mean, Sd) UCL 5833.7729 |
| **Assuming Gamma Distribution** | | 99% Chebyshev(Mean, Sd) UCL 8025.8331 |
| 95% Approximate Gamma UCL | 3411.4508 | |
| 95% Adjusted Gamma UCL | 3450.874 | |
| Potential UCL to Use | | Use 95% Chebyshev (Mean, Sd) UCL 4717.8267 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Silver, total (mg/kg)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 51 | Number of Detected Data | 38 |
| Number of Distinct Detected Data | 37 | Number of Non-Detect Data | 13 |
| | | Percent Non-Detects | 25.49% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.054 | Minimum Detected | -2.918771 |

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Maximum Detected | 140 | Maximum Detected | 4.9416424 |
| Mean of Detected | 18.587211 | Mean of Detected | 1.2897793 |
| SD of Detected | 28.892149 | SD of Detected | 2.3310027 |
| Minimum Non-Detect | 0.0365 | Minimum Non-Detect | -3.310443 |
| Maximum Non-Detect | 0.5 | Maximum Non-Detect | -0.693147 |

Note: Data have multiple DLs - Use of KM Method is recommended

For all methods (except KM, DL/2, and ROS Methods),

Observations < Largest ND are treated as NDs

| | |
|---|---|
| Number treated as Non-Detect | 24 |
| Number treated as Detected | 27 |
| Single DL Non-Detect Percentage | 47.06% |

UCL Statistics

**Normal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.6815097 |
| 5% Shapiro Wilk Critical Value | 0.938 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.9239663 |
| 5% Shapiro Wilk Critical Value | 0.938 |

Data not Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 13.862701 |
| SD | 26.158585 |
| 95% DL/2 (t) UCL | 20.001432 |
| Maximum Likelihood Estimate(MLE) Method | N/A |

MLE yields a negative mean

**Assuming Lognormal Distribution**

| | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 0.0970925 |
| SD | 2.9055504 |
| 95% H-Stat (DL/2) UCL | 541.52883 |
| Log ROS Method | |
| Mean in Log Scale | 0.0527915 |
| SD in Log Scale | 2.9507344 |
| Mean in Original Scale | 13.858717 |
| SD in Original Scale | 26.160716 |
| 95% t UCL | 19.997948 |
| 95% Percentile Bootstrap UCL | 19.928161 |
| 95% BCA Bootstrap UCL | 21.545306 |
| 95% H-UCL | 626.76272 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.3883735 |
| Theta Star | 47.859113 |
| nu star | 29.516385 |
| A-D Test Statistic | 0.4771773 |
| 5% A-D Critical Value | 0.8343972 |
| K-S Test Statistic | 0.8343972 |
| 5% K-S Critical Value | 0.1533397 |

Data appear Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |

**Data Distribution Test with Detected Values Only**

Data appear Gamma Distributed at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 13.865131 |
| SD | 25.899553 |
| SE of Mean | 3.6753462 |
| 95% KM (t) UCL | 20.024663 |
| 95% KM (z) UCL | 19.910538 |
| 95% KM (jackknife) UCL | 20.003158 |
| 95% KM (bootstrap t) UCL | 23.322251 |

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Maximum | 140 | 95% KM (BCA) UCL | 20.495832 |
| Mean | 13.849294 | 95% KM (Percentile Bootstrap) UCL | 19.906105 |
| Median | 1.8 | 95% KM (Chebyshev) UCL | 29.885594 |
| SD | 26.165794 | 97.5% KM (Chebyshev) UCL | 36.817661 |
| k star | 0.1527039 | 99% KM (Chebyshev) UCL | 50.434364 |
| Theta star | 90.693779 | | |
| Nu star | 15.575798 | Potential UCLs to Use | |
| AppChi2 | 7.6637651 | 95% KM (Chebyshev) UCL | 29.885594 |
| 95% Gamma Approximate UCL | 28.147237 | | |
| 95% Adjusted Gamma UCL | 28.754947 | | |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Thallium, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 38 | Number of Detected Data | 26 |
| Number of Distinct Detected Data | 22 | Number of Non-Detect Data | 12 |
| | | Percent Non-Detects | 31.58% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.053 | Minimum Detected | -2.937463 |
| Maximum Detected | 2.1 | Maximum Detected | 0.7419373 |
| Mean of Detected | 0.4466923 | Mean of Detected | -1.374661 |
| SD of Detected | 0.5216496 | SD of Detected | 1.0561602 |
| Minimum Non-Detect | 0.155 | Minimum Non-Detect | -1.86433 |
| Maximum Non-Detect | 1 | Maximum Non-Detect | 0 |

| | | | |
|---|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 33 |
| For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 5 |
| Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 86.84% |

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.730087 | Shapiro Wilk Test Statistic | 0.9099478 |
| 5% Shapiro Wilk Critical Value | 0.92 | 5% Shapiro Wilk Critical Value | 0.92 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 0.3826053 | Mean | -1.48382 |
| SD | 0.4507083 | SD | 0.9947057 |

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| 95% DL/2 (t) UCL | 0.5059564 |

| | |
|---|---|
| 95% H-Stat (DL/2) UCL | 0.5496983 |

Maximum Likelihood Estimate(MLE) Method

| | |
|---|---|
| Mean | 0.1532263 |
| SD | 0.7469291 |
| 95% MLE (t) UCL | 0.3576479 |
| 95% MLE (Tiku) UCL | 0.8503443 |

Log ROS Method

| | |
|---|---|
| Mean in Log Scale | -1.595114 |
| SD in Log Scale | 0.951223 |
| Mean in Original Scale | 0.3480852 |
| SD in Original Scale | 0.4542147 |
| 95% t UCL | 0.4723959 |
| 95% Percentile Bootstrap UCL | 0.4746036 |
| 95% BCA Bootstrap UCL | 0.4899711 |
| 95% H UCL | 0.4598784 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.9220004 |
| Theta Star | 0.4844817 |
| nu star | 47.944021 |

| | |
|---|---|
| A-D Test Statistic | 1.5853155 |
| 5% A-D Critical Value | 0.7731159 |
| K-S Test Statistic | 0.7731159 |
| 5% K-S Critical Value | 0.1762942 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 2.1 |
| Mean | 0.3490341 |
| Median | 0.1655789 |
| SD | 0.4604537 |
| k star | 0.5111625 |
| Theta star | 0.6828243 |
| Nu star | 38.848346 |
| AppChi2 | 25.572248 |
| 95% Gamma Approximate UCL | 0.5302388 |
| 95% Adjusted Gamma UCL | 0.5396732 |

Note: DL/2 is not a recommended method.

**Data Distribution Test with Detected Values Only**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 0.3489748 |
| SD | 0.4516118 |
| SE of Mean | 0.0755027 |
| 95% KM (t) UCL | 0.4763549 |
| 95% KM (z) UCL | 0.4731656 |
| 95% KM (jackknife) UCL | 0.4756633 |
| 95% KM (bootstrap t) UCL | 0.5339384 |
| 95% KM (BCA) UCL | 0.4892463 |
| 95% KM (Percentile Bootstrap) UCL | 0.4730128 |
| 95% KM (Chebyshev) UCL | 0.6780833 |
| 97.5% KM (Chebyshev) UCL | 0.8204888 |
| 99% KM (Chebyshev) UCL | 1.1002168 |

Potential UCLs to Use

| | |
|---|---|
| 97.5% KM (Chebyshev) UCL | 0.8204888 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

APPENDIX E

Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Vanadium, total (mg/kg)

### General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 51 | Number of Distinct Observations | 43 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 5.7 | Minimum of Log Data | 1.7404662 |
| Maximum | 66 | Maximum of Log Data | 4.1896547 |
| Mean | 28.568627 | Mean of log Data | 3.1948694 |
| Median | 25.2 | SD of log Data | 0.582136 |
| SD | 15.748898 | | |
| Std. Error of Mean | 2.2052869 | | |
| Coefficient of Variation | 0.5512655 | | |
| Skewness | 0.6408363 | | |

### Relevant UCL Statistics

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.1381786 | Lilliefors Test Statistic | 0.0837439 |
| Lilliefors Critical Value | 0.1240648 | Lilliefors Critical Value | 0.1240648 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 32.264479 | 95% H-UCL | 33.901055 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 39.725663 |
| 95% Adjusted-CLT UCL (Chen-1995) | 32.407451 | 97.5% Chebyshev (MVUE) UCL | 44.452129 |
| 95% Modified-t UCL (Johnson-1978) | 32.297461 | 99% Chebyshev (MVUE) UCL | 53.736356 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 3.1502395 | Data appear Gamma Distributed at 5% Significance Level |
| Theta Star | 9.0687161 | |
| MLE of Mean | 28.568627 | |
| MLE of Standard Deviation | 16.095986 | |
| nu star | 321.32443 | |
| Approximate Chi Square Value (.05) | 280.79413 | |
| Adjusted Level of Significance | 0.0452941 | |
| Adjusted Chi Square Value | 279.69648 | |
| Anderson-Darling Test Statistic | 0.6709362 | |
| Anderson-Darling 5% Critical Value | 0.755862 | |
| Kolmogorov-Smirnov Test Statistic | 0.0963096 | |
| Kolmogorov-Smirnov 5% Critical Value | 0.1249757 | |
| Data appear Gamma Distributed at 5% Significance Level | | |

| Nonparametric Statistics | |
|---|---|
| 95% CLT UCL | 32.196002 |
| 95% Jackknife UCL | 32.264479 |
| 95% Standard Bootstrap UCL | 32.192696 |
| 95% Bootstrap-t UCL | 32.434908 |
| 95% Hall's Bootstrap UCL | 32.265337 |
| 95% Percentile Bootstrap UCL | 32.282353 |
| 95% BCA Bootstrap UCL | 32.219608 |
| 95% Chebyshev(Mean, Sd) UCL | 38.18125 |
| 97.5% Chebyshev(Mean, Sd) UCL | 42.340639 |
| 99% Chebyshev(Mean, Sd) UCL | 50.510955 |

| Assuming Gamma Distribution | |
|---|---|
| 95% Approximate Gamma UCL | 32.692272 |
| 95% Adjusted Gamma UCL | 32.820569 |

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Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Potential UCL to Use — Use 95% Approximate Gamma UCL 32.692272

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Zinc, total (mg/kg)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 91 | Number of Distinct Observations | 82 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 50 |
| Maximum | 407000 |
| Mean | 101528.79 |
| Median | 32700 |
| SD | 126902.42 |
| Std. Error of Mean | 13302.989 |
| Coefficient of Variation | 1.2499156 |
| Skewness | 1.0765175 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 3.912023 |
| Maximum of Log Data | 12.916568 |
| Mean of log Data | 9.6007268 |
| SD of log Data | 2.6737103 |

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.2307927 |
| Lilliefors Critical Value | 0.092878 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.187585 |
| Lilliefors Critical Value | 0.092878 |

Data not Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 123637.84 |

**95% UCLs (Adjusted for Skewness)**

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 125014.36 |
| 95% Modified-t UCL (Johnson-1978) | 123888.05 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 1759495.3 |
| 95% Chebyshev (MVUE) UCL | 1410440.1 |
| 97.5% Chebyshev (MVUE) UCL | 1827000.5 |
| 99% Chebyshev (MVUE) UCL | 2645252.8 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 0.3448628 |
| Theta Star | 294403.42 |
| MLE of Mean | 101528.79 |
| MLE of Standard Deviation | 172888.47 |
| nu star | 62.765033 |
| Approximate Chi Square Value (.05) | 45.541025 |
| Adjusted Level of Significance | 0.0473626 |
| Adjusted Chi Square Value | 45.305544 |
| Anderson-Darling Test Statistic | 3.2360279 |

**Data Distribution**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 123410.26 |
| 95% Jackknife UCL | 123637.84 |
| 95% Standard Bootstrap UCL | 123095.8 |
| 95% Bootstrap-t UCL | 125309.7 |

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Onsite Surface Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Anderson-Darling 5% Critical Value | 0.8557702 | 95% Hall's Bootstrap UCL | 124648.33 |
| Kolmogorov-Smirnov Test Statistic | 0.1673514 | 95% Percentile Bootstrap UCL | 122354.04 |
| Kolmogorov-Smirnov 5% Critical Value | 0.1011056 | 95% BCA Bootstrap UCL | 125086.51 |
| Data not Gamma Distributed at 5% Significance Level | | 95% Chebyshev(Mean, Sd) UCL | 159515.18 |
| | | 97.5% Chebyshev(Mean, Sd) UCL | 184605.93 |
| Assuming Gamma Distribution | | 99% Chebyshev(Mean, Sd) UCL | 233891.86 |
| 95% Approximate Gamma UCL | 139927.86 | | |
| 95% Adjusted Gamma UCL | 140655.15 | | |
| Potential UCL to Use | | Use 95% Chebyshev (Mean, Sd) UCL | 159515.18 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

APPENDIX E

Onsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

## General UCL Statistics for Data Sets with Non-Detects

**User Selected Options**

| | |
|---|---|
| From File | macro.wst |
| Full Precision | OFF |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

**Cadmium, total (ug/L)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 23 | Number of Detected Data | 19 |
| Number of Distinct Detected Data | 18 | Number of Non-Detect Data | 4 |
| | | Percent Non-Detects | 17.39% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 1.3 | Minimum Detected | 0.262 |
| Maximum Detected | 230 | Maximum Detected | 5.438 |
| Mean of Detected | 44.68 | Mean of Detected | 2.932 |
| SD of Detected | 57.54 | SD of Detected | 1.529 |
| Minimum Non-Detect | 5 | Minimum Non-Detect | 1.609 |
| Maximum Non-Detect | 5 | Maximum Non-Detect | 1.609 |

**UCL Statistics**

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.742 | Shapiro Wilk Test Statistic | 0.952 |
| 5% Shapiro Wilk Critical Value | 0.901 | 5% Shapiro Wilk Critical Value | 0.901 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 37.35 | Mean | 2.581 |
| SD | 54.56 | SD | 1.588 |
| 95% DL/2 (t) UCL | 56.88 | 95% H-Stat (DL/2) UCL | 146.7 |
| | | | |
| Maximum Likelihood Estimate(MLE) Method | | Log ROS Method | |
| Mean | 20.11 | Mean in Log Scale | 2.557 |
| SD | 72.07 | SD in Log Scale | 1.635 |
| 95% MLE (t) UCL | 45.91 | Mean in Original Scale | 37.36 |
| 95% MLE (Tiku) UCL | 47.97 | SD in Original Scale | 54.55 |
| | | 95% t UCL | 56.89 |
| | | 95% Percentile Bootstrap UCL | 57.23 |
| | | 95% BCA Bootstrap UCL | 60.48 |
| | | 95% H UCL | 163.9 |

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Onsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.622 |
| Theta Star | 71.86 |
| nu star | 23.63 |
| | |
| A-D Test Statistic | 0.308 |
| 5% A-D Critical Value | 0.784 |
| K-S Test Statistic | 0.784 |
| 5% K-S Critical Value | 0.207 |

Data appear Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 230 |
| Mean | 36.91 |
| Median | 17.4 |
| SD | 54.85 |
| k star | 0.207 |
| Theta star | 178.6 |
| Nu star | 9.507 |
| AppChi2 | 3.636 |
| 95% Gamma Approximate UCL | 96.52 |
| 95% Adjusted Gamma UCL | 103.9 |

Note: DL/2 is not a recommended method.

**Data Distribution Test with Detected Values Only**

Data appear Gamma Distributed at 5% Significance Level

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 37.25 |
| SD | 53.42 |
| SE of Mean | 11.44 |
| 95% KM (t) UCL | 56.9 |
| 95% KM (z) UCL | 56.08 |
| 95% KM (jackknife) UCL | 56.81 |
| 95% KM (bootstrap t) UCL | 70.57 |
| 95% KM (BCA) UCL | 58.72 |
| 95% KM (Percentile Bootstrap) UCL | 57.56 |
| 95% KM (Chebyshev) UCL | 87.14 |
| 97.5% KM (Chebyshev) UCL | 108.7 |
| 99% KM (Chebyshev) UCL | 151.1 |

**Potential UCLs to Use**

| | |
|---|---|
| 95% KM (Chebyshev) UCL | 87.14 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Cobalt, total (ug/L)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 5 | Number of Detected Data | 3 |
| Number of Distinct Detected Data | 3 | Number of Non-Detect Data | 2 |
| | | Percent Non-Detects | 40.00% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.92 | Minimum Detected | -0.0834 |
| Maximum Detected | 2.4 | Maximum Detected | 0.875 |
| Mean of Detected | 1.74 | Mean of Detected | 0.478 |
| SD of Detected | 0.753 | SD of Detected | 0.5 |
| Minimum Non-Detect | 0.9 | Minimum Non-Detect | -0.105 |
| Maximum Non-Detect | 0.9 | Maximum Non-Detect | -0.105 |

APPENDIX E

Onsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Warning: There are only 3 Distinct Detected Values in this data set

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.

Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

| Normal Distribution Test with Detected Values Only | |
|---|---|
| Shapiro Wilk Test Statistic | 0.966 |
| 5% Shapiro Wilk Critical Value | 0.767 |
| Data appear Normal at 5% Significance Level | |

| Lognormal Distribution Test with Detected Values Only | |
|---|---|
| Shapiro Wilk Test Statistic | 0.919 |
| 5% Shapiro Wilk Critical Value | 0.767 |
| Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | |
|---|---|
| DL/2 Substitution Method | |
| Mean | 1.224 |
| SD | 0.885 |
| 95% DL/2 (t) UCL | 2.067 |
| | |
| Maximum Likelihood Estimate(MLE) Method | |
| Mean | 1.135 |
| SD | 0.941 |
| 95% MLE (t) UCL | 2.033 |
| 95% MLE (Tiku) UCL | 2.147 |

| Assuming Lognormal Distribution | |
|---|---|
| DL/2 Substitution Method | |
| Mean | -0.0326 |
| SD | 0.783 |
| 95% H-Stat (DL/2) UCL | 6.29 |
| | |
| Log ROS Method | |
| Mean in Log Scale | -0.108 |
| SD in Log Scale | 0.894 |
| Mean in Original Scale | 1.198 |
| SD in Original Scale | 0.916 |
| 95% t UCL | 2.071 |
| 95% Percentile Bootstrap UCL | 1.816 |
| 95% BCA Bootstrap UCL | 1.878 |
| 95% H UCL | 9.818 |

| Gamma Distribution Test with Detected Values Only | |
|---|---|
| k star (bias corrected) | N/A |
| Theta Star | N/A |
| nu star | N/A |
| | |
| A-D Test Statistic | N/A |
| 5% A-D Critical Value | N/A |
| K-S Test Statistic | N/A |
| 5% K-S Critical Value | N/A |
| Data not Gamma Distributed at 5% Significance Level | |
| | |
| Assuming Gamma Distribution | |
| Gamma ROS Statistics using Extrapolated Data | |

| Data Distribution Test with Detected Values Only |
|---|
| Data appear Normal at 5% Significance Level |

| Nonparametric Statistics | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 1.412 |
| SD | 0.623 |
| SE of Mean | 0.341 |
| 95% KM (t) UCL | 2.139 |
| 95% KM (z) UCL | 1.973 |
| 95% KM (jackknife) UCL | 2.276 |

APPENDIX E

Onsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Minimum | N/A | 95% KM (bootstrap t) UCL | 1.911 |
| Maximum | N/A | 95% KM (BCA) UCL | 2.4 |
| Mean | N/A | 95% KM (Percentile Bootstrap) UCL | 2.4 |
| Median | N/A | 95% KM (Chebyshev) UCL | 2.899 |
| SD | N/A | 97.5% KM (Chebyshev) UCL | 3.543 |
| k star | N/A | 99% KM (Chebyshev) UCL | 4.807 |
| Theta star | N/A | | |
| Nu star | N/A | Potential UCLs to Use | |
| AppChi2 | N/A | 95% KM (t) UCL | 2.139 |
| 95% Gamma Approximate UCL | N/A | 95% KM (Percentile Bootstrap) UCL | 2.4 |
| 95% Adjusted Gamma UCL | N/A | | |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Iron, total (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 5 | Number of Distinct Observations | 5 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 56 | Minimum of Log Data | 4.025 |
| Maximum | 3200 | Maximum of Log Data | 8.071 |
| Mean | 771.2 | Mean of log Data | 5.575 |
| Median | 170 | SD of log Data | 1.512 |
| SD | 1360 | | |
| Std. Error of Mean | 608.2 | | |
| Coefficient of Variation | 1.764 | | |
| Skewness | 2.217 | | |

Warning: A sample size of 'n' = 5 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 5 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

APPENDIX E

Onsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.608 |
| Shapiro Wilk Critical Value | 0.762 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.881 |
| Shapiro Wilk Critical Value | 0.762 |

Data appear Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 2068 |
| **95% UCLs (Adjusted for Skewness)** | |
| 95% Adjusted-CLT UCL (Chen-1995) | 2416 |
| 95% Modified-t UCL (Johnson-1978) | 2168 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 187786 |
| 95% Chebyshev (MVUE) UCL | 2157 |
| 97.5% Chebyshev (MVUE) UCL | 2835 |
| 99% Chebyshev (MVUE) UCL | 4166 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 0.365 |
| Theta Star | 2113 |
| MLE of Mean | 771.2 |
| MLE of Standard Deviation | 1277 |
| nu star | 3.65 |
| Approximate Chi Square Value (.05) | 0.589 |
| Adjusted Level of Significance | 0.0086 |
| Adjusted Chi Square Value | 0.232 |
| Anderson-Darling Test Statistic | 0.703 |
| Anderson-Darling 5% Critical Value | 0.707 |
| Kolmogorov-Smirnov Test Statistic | 0.378 |
| Kolmogorov-Smirnov 5% Critical Value | 0.37 |

Data follow Appr. Gamma Distribution at 5% Significance Level

**Data Distribution**

Data Follow Appr. Gamma Distribution at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 1772 |
| 95% Jackknife UCL | 2068 |
| 95% Standard Bootstrap UCL | 1668 |
| 95% Bootstrap-t UCL | 17418 |
| 95% Hall's Bootstrap UCL | 15282 |
| 95% Percentile Bootstrap UCL | 1965 |
| 95% BCA Bootstrap UCL | 2010 |
| 95% Chebyshev(Mean, Sd) UCL | 3422 |
| 97.5% Chebyshev(Mean, Sd) UCL | 4570 |
| 99% Chebyshev(Mean, Sd) UCL | 6823 |

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 4783 |
| 95% Adjusted Gamma UCL | 12129 |

**Potential UCL to Use**

Use 95% Approximate Gamma UCL 4783

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Lead, total (ug/L)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 23 | Number of Detected Data | 10 |
| Number of Distinct Detected Data | 10 | Number of Non-Detect Data | 13 |
| | | Percent Non-Detects | 56.52% |

APPENDIX E

Onsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 2.2 | Minimum Detected | 0.788 |
| Maximum Detected | 40.1 | Maximum Detected | 3.691 |
| Mean of Detected | 12.69 | Mean of Detected | 2.062 |
| SD of Detected | 13.36 | SD of Detected | 1.011 |
| Minimum Non-Detect | 1.3 | Minimum Non-Detect | 0.262 |
| Maximum Non-Detect | 10 | Maximum Non-Detect | 2.303 |

Note: Data have multiple DLs - Use of KM Method is recommended

For all methods (except KM, DL/2, and ROS Methods),

Observations < Largest ND are treated as NDs

| | |
|---|---|
| Number treated as Non-Detect | 20 |
| Number treated as Detected | 3 |
| Single DL Non-Detect Percentage | 86.96% |

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.76 | Shapiro Wilk Test Statistic | 0.892 |
| 5% Shapiro Wilk Critical Value | 0.842 | 5% Shapiro Wilk Critical Value | 0.842 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 7.776 | Mean | 1.54 |
| SD | 9.719 | SD | 1.036 |
| 95% DL/2 (t) UCL | 11.26 | 95% H-Stat (DL/2) UCL | 14.09 |
| Maximum Likelihood Estimate(MLE) Method | | Log ROS Method | |
| Mean | 2.948 | Mean in Log Scale | 1.311 |
| SD | 25.22 | SD in Log Scale | 1.181 |
| 95% MLE (t) UCL | 11.98 | Mean in Original Scale | 7.319 |
| 95% MLE (Tiku) UCL | 25.36 | SD in Original Scale | 10.07 |
| | | 95% t UCL | 10.92 |
| | | 95% Percentile Bootstrap UCL | 11.08 |
| | | 95% BCA Bootstrap UCL | 11.79 |
| | | 95% H UCL | 14.97 |

| Gamma Distribution Test with Detected Values Only | | Data Distribution Test with Detected Values Only |
|---|---|---|
| k star (bias corrected) | 0.895 | Data Follow Appr. Gamma Distribution at 5% Significance Level |
| Theta Star | 14.18 | |
| nu star | 17.9 | |
| A-D Test Statistic | 0.786 | Nonparametric Statistics |
| 5% A-D Critical Value | 0.745 | Kaplan-Meier (KM) Method |
| K-S Test Statistic | 0.745 | Mean 7.548 |
| 5% K-S Critical Value | 0.273 | SD 9.612 |
| Data follow Appr. Gamma Distribution at 5% Significance Level | | SE of Mean 2.155 |
| | | 95% KM (t) UCL 11.25 |

APPENDIX E

Onsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| Assuming Gamma Distribution | | | |
|---|---|---|---|
| Gamma ROS Statistics using Extrapolated Data | | 95% KM (z) UCL | 11.09 |
| Minimum | 0.000001 | 95% KM (jackknife) UCL | 10.98 |
| Maximum | 40.1 | 95% KM (bootstrap t) UCL | 13.57 |
| Mean | 7.751 | 95% KM (BCA) UCL | 11.31 |
| Median | 4.1 | 95% KM (Percentile Bootstrap) UCL | 11.32 |
| SD | 10.72 | 95% KM (Chebyshev) UCL | 16.94 |
| k star | 0.152 | 97.5% KM (Chebyshev) UCL | 21 |
| Theta star | 51.12 | 99% KM (Chebyshev) UCL | 28.99 |
| Nu star | 6.975 | Potential UCLs to Use | |
| AppChi2 | 2.157 | 95% KM (t) UCL | 11.25 |
| 95% Gamma Approximate UCL | 25.07 | | |
| 95% Adjusted Gamma UCL | 27.47 | | |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Manganese, total (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 23 | Number of Detected Data | 20 |
| Number of Distinct Detected Data | 18 | Number of Non-Detect Data | 3 |
| | | Percent Non-Detects | 13.04% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 7.6 | Minimum Detected | 2.028 |
| Maximum Detected | 1100 | Maximum Detected | 7.003 |
| Mean of Detected | 267 | Mean of Detected | 4.852 |
| SD of Detected | 254.1 | SD of Detected | 1.594 |
| Minimum Non-Detect | 15 | Minimum Non-Detect | 2.708 |
| Maximum Non-Detect | 15 | Maximum Non-Detect | 2.708 |

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.815 | Shapiro Wilk Test Statistic | 0.814 |
| 5% Shapiro Wilk Critical Value | 0.905 | 5% Shapiro Wilk Critical Value | 0.905 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 233.2 | Mean | 4.482 |
| SD | 252.5 | SD | 1.775 |

APPENDIX E

Onsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| 95% DL/2 (t) UCL | 323.6 |
| 95% H-Stat (DL/2) UCL | 1721 |

| | |
|---|---|
| Maximum Likelihood Estimate(MLE) Method | |
| Mean | 170.8 |
| SD | 326.7 |
| 95% MLE (t) UCL | 287.8 |
| 95% MLE (Tiku) UCL | 295.5 |

| | |
|---|---|
| Log ROS Method | |
| Mean in Log Scale | 4.578 |
| SD in Log Scale | 1.658 |
| Mean in Original Scale | 234.5 |
| SD in Original Scale | 251.3 |
| 95% t UCL | 324.4 |
| 95% Percentile Bootstrap UCL | 320.9 |
| 95% BCA Bootstrap UCL | 339.9 |
| 95% H UCL | 1325 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.719 |
| Theta Star | 371.4 |
| nu star | 28.76 |
| | |
| A-D Test Statistic | 1.128 |
| 5% A-D Critical Value | 0.777 |
| K-S Test Statistic | 0.777 |
| 5% K-S Critical Value | 0.201 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| Gamma ROS Statistics using Extrapolated Data | |
| Minimum | 0.000001 |
| Maximum | 1100 |
| Mean | 232.4 |
| Median | 270 |
| SD | 253.2 |
| k star | 0.284 |
| Theta star | 819.4 |
| Nu star | 13.05 |
| AppChi2 | 5.924 |
| 95% Gamma Approximate UCL | 511.8 |
| 95% Adjusted Gamma UCL | 543.5 |

Note: DL/2 is not a recommended method.

**Data Distribution Test with Detected Values Only**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| Kaplan-Meier (KM) Method | |
| Mean | 233.4 |
| SD | 246.7 |
| SE of Mean | 52.78 |
| 95% KM (t) UCL | 324 |
| 95% KM (z) UCL | 320.2 |
| 95% KM (jackknife) UCL | 323.7 |
| 95% KM (bootstrap t) UCL | 360.4 |
| 95% KM (BCA) UCL | 320.7 |
| 95% KM (Percentile Bootstrap) UCL | 322.9 |
| 95% KM (Chebyshev) UCL | 463.5 |
| 97.5% KM (Chebyshev) UCL | 563 |
| 99% KM (Chebyshev) UCL | 758.6 |

**Potential UCLs to Use**

| | |
|---|---|
| 99% KM (Chebyshev) UCL | 758.6 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

APPENDIX E

Onsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

TRICHLOROETHYLENE (TCE) (ug/L)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 7 | Number of Detected Data | 6 |
| Number of Distinct Detected Data | 6 | Number of Non-Detect Data | 1 |
| | | Percent Non-Detects | 14.29% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 1.4 | Minimum Detected | 0.336 |
| Maximum Detected | 6.3 | Maximum Detected | 1.841 |
| Mean of Detected | 3.167 | Mean of Detected | 1.051 |
| SD of Detected | 1.661 | SD of Detected | 0.486 |
| Minimum Non-Detect | 0.39 | Minimum Non-Detect | -0.942 |
| Maximum Non-Detect | 0.39 | Maximum Non-Detect | -0.942 |

Warning: There are only 6 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.839 | Shapiro Wilk Test Statistic | 0.941 |
| 5% Shapiro Wilk Critical Value | 0.788 | 5% Shapiro Wilk Critical Value | 0.788 |
| Data appear Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 2.742 | Mean | 0.668 |
| SD | 1.887 | SD | 1.108 |
| 95% DL/2 (t) UCL | 4.128 | 95% H-Stat (DL/2) UCL | 22.06 |
| | | | |
| Maximum Likelihood Estimate(MLE) Method | | Log ROS Method | |
| Mean | 2.632 | Mean in Log Scale | 0.882 |
| SD | 1.945 | SD in Log Scale | 0.631 |
| 95% MLE (t) UCL | 4.061 | Mean in Original Scale | 2.839 |
| 95% MLE (Tiku) UCL | 4.096 | SD in Original Scale | 1.746 |
| | | 95% t UCL | 4.122 |
| | | 95% Percentile Bootstrap UCL | 3.9 |
| | | 95% BCA Bootstrap UCL | 4.182 |
| | | 95% H UCL | 5.972 |

APPENDIX E

Onsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 2.656 |
| Theta Star | 1.192 |
| nu star | 31.87 |
| | |
| A-D Test Statistic | 0.389 |
| 5% A-D Critical Value | 0.698 |
| K-S Test Statistic | 0.698 |
| 5% K-S Critical Value | 0.333 |

Data appear Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 6.3 |
| Mean | 2.714 |
| Median | 2.6 |
| SD | 1.932 |
| k star | 0.283 |
| Theta star | 9.6 |
| Nu star | 3.958 |
| AppChi2 | 0.705 |
| 95% Gamma Approximate UCL | 15.23 |
| 95% Adjusted Gamma UCL | 27.64 |

Note: DL/2 is not a recommended method.

**Data Distribution Test with Detected Values Only**

Data appear Normal at 5% Significance Level

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 2.914 |
| SD | 1.534 |
| SE of Mean | 0.635 |
| 95% KM (t) UCL | 4.148 |
| 95% KM (z) UCL | 3.959 |
| 95% KM (jackknife) UCL | 4.126 |
| 95% KM (bootstrap t) UCL | 4.87 |
| 95% KM (BCA) UCL | 4.2 |
| 95% KM (Percentile Bootstrap) UCL | 3.943 |
| 95% KM (Chebyshev) UCL | 5.682 |
| 97.5% KM (Chebyshev) UCL | 6.88 |
| 99% KM (Chebyshev) UCL | 9.233 |

**Potential UCLs to Use**

| | |
|---|---|
| 95% KM (t) UCL | 4.148 |
| 95% KM (Percentile Bootstrap) UCL | 3.943 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Zinc, total (ug/L)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 23 | Number of Distinct Observations | 23 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 179 |
| Maximum | 26000 |
| Mean | 5935 |
| Median | 3790 |
| SD | 6136 |
| Std. Error of Mean | 1279 |
| Coefficient of Variation | 1.034 |
| Skewness | 1.878 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 5.187 |
| Maximum of Log Data | 10.17 |
| Mean of log Data | 8.048 |
| SD of log Data | 1.376 |

APPENDIX E

Onsite Surfacewater ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Relevant UCL Statistics

**Normal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.812 |
| Shapiro Wilk Critical Value | 0.914 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.915 |
| Shapiro Wilk Critical Value | 0.914 |

Data appear Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 8132 |
| **95% UCLs (Adjusted for Skewness)** | |
| 95% Adjusted-CLT UCL (Chen-1995) | 8575 |
| 95% Modified-t UCL (Johnson-1978) | 8216 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 19800 |
| 95% Chebyshev (MVUE) UCL | 18771 |
| 97.5% Chebyshev (MVUE) UCL | 23646 |
| 99% Chebyshev (MVUE) UCL | 33222 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 0.822 |
| Theta Star | 7222 |
| MLE of Mean | 5935 |
| MLE of Standard Deviation | 6547 |
| nu star | 37.8 |
| Approximate Chi Square Value (.05) | 24.72 |
| Adjusted Level of Significance | 0.0389 |
| Adjusted Chi Square Value | 23.96 |
| Anderson-Darling Test Statistic | 0.337 |
| Anderson-Darling 5% Critical Value | 0.774 |
| Kolmogorov-Smirnov Test Statistic | 0.17 |
| Kolmogorov-Smirnov 5% Critical Value | 0.187 |

Data appear Gamma Distributed at 5% Significance Level

**Data Distribution**

Data appear Gamma Distributed at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 8040 |
| 95% Jackknife UCL | 8132 |
| 95% Standard Bootstrap UCL | 7966 |
| 95% Bootstrap-t UCL | 9208 |
| 95% Hall's Bootstrap UCL | 9713 |
| 95% Percentile Bootstrap UCL | 8159 |
| 95% BCA Bootstrap UCL | 8804 |
| 95% Chebyshev(Mean, Sd) UCL | 11512 |
| 97.5% Chebyshev(Mean, Sd) UCL | 13925 |
| 99% Chebyshev(Mean, Sd) UCL | 18666 |

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 9075 |
| 95% Adjusted Gamma UCL | 9365 |

**Potential UCL to Use**

Use 95% Approximate Gamma UCL 9075

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

APPENDIX E

Onsite Total Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

General UCL Statistics for Data Sets with Non-Detects

| User Selected Options | |
|---|---|
| From File | C:\Documents and Settings\hawata\My Documents_Project\Eagle Zinc\ProUCL\Onsite_TS&Res.xls.wst |
| Full Precision | ON |
| Confidence Coefficient | 95% |
| Number of Bootstrap Operations | 2000 |

Antimony, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Data | 63 | Number of Detected Data | 36 |
| Number of Distinct Detected Data | 34 | Number of Non-Detect Data | 27 |
| | | Percent Non-Detects | 42.86% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.34 | Minimum Detected | -1.07881 |
| Maximum Detected | 665 | Maximum Detected | 6.499787 |
| Mean of Detected | 132.65028 | Mean of Detected | 2.4448291 |
| SD of Detected | 215.82584 | SD of Detected | 2.7045319 |
| Minimum Non-Detect | 0.165 | Minimum Non-Detect | -1.80181 |
| Maximum Non-Detect | 10 | Maximum Non-Detect | 2.3025851 |

| | | |
|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | Number treated as Non-Detect | 46 |
| For all methods (except KM, DL/2, and ROS Methods), | Number treated as Detected | 17 |
| Observations < Largest ND are treated as NDs | Single DL Non-Detect Percentage | 73.02% |

UCL Statistics

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Shapiro Wilk Test Statistic | 0.6552382 | Shapiro Wilk Test Statistic | 0.870978 |
| 5% Shapiro Wilk Critical Value | 0.935 | 5% Shapiro Wilk Critical Value | 0.935 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 76.812857 | Mean | 1.3617464 |
| SD | 174.70445 | SD | 2.632965 |
| 95% DL/2 (t) UCL | 113.5664 | 95% H-Stat (DL/2) UCL | 399.50835 |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| MLE yields a negative mean | | Mean in Log Scale | 0.4863233 |
| | | SD in Log Scale | 3.2580208 |
| | | Mean in Original Scale | 76.017316 |
| | | SD in Original Scale | 175.04668 |
| | | 95% t UCL | 112.84286 |

APPENDIX E

Onsite Total Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| 95% Percentile Bootstrap UCL | 112.4005 |
| 95% BCA Bootstrap UCL | 123.08605 |
| 95% H-UCL | 1998.4413 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 0.2794889 |
| Theta Star | 474.61736 |
| nu star | 20.1232 |
| A-D Test Statistic | 2.0515174 |
| 5% A-D Critical Value | 0.8633516 |
| K-S Test Statistic | 0.8633516 |
| 5% K-S Critical Value | 0.1598454 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 665 |
| Mean | 76.00515 |
| Median | 0.66 |
| SD | 175.05836 |
| k star | 0.1011388 |
| Theta star | 751.49382 |
| Nu star | 12.743483 |
| AppChi2 | 5.7206359 |
| 95% Gamma Approximate UCL | 169.31166 |
| 95% Adjusted Gamma UCL | 172.64251 |

Note: DL/2 is not a recommended method.

**Data Distribution Test with Detected Values Only**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 76.174647 |
| SD | 173.58521 |
| SE of Mean | 22.18034 |
| 95% KM (t) UCL | 113.21147 |
| 95% KM (z) UCL | 112.65806 |
| 95% KM (jackknife) UCL | 112.96761 |
| 95% KM (bootstrap t) UCL | 123.35601 |
| 95% KM (BCA) UCL | 116.08027 |
| 95% KM (Percentile Bootstrap) UCL | 113.28935 |
| 95% KM (Chebyshev) UCL | 172.85651 |
| 97.5% KM (Chebyshev) UCL | 214.69083 |
| 99% KM (Chebyshev) UCL | 296.86625 |

**Potential UCLs to Use**

| | |
|---|---|
| 97.5% KM (Chebyshev) UCL | 214.69083 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Arsenic, total (mg/kg)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 122 | Number of Distinct Observations | 90 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 1.7 |
| Maximum | 200 |
| Mean | 19.49918 |
| Median | 8.9 |
| SD | 32.398989 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 0.5306283 |
| Maximum of Log Data | 5.2983174 |
| Mean of log Data | 2.3667948 |
| SD of log Data | 0.9662329 |

APPENDIX E

Onsite Total Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| Std. Error of Mean | 2.9332666 |
| Coefficient of Variation | 1.6615564 |
| Skewness | 3.8101676 |

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.3298885 |
| Lilliefors Critical Value | 0.0802147 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.1282834 |
| Lilliefors Critical Value | 0.0802147 |

Data not Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 24.3612 |

**95% UCLs (Adjusted for Skewness)**

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 25.40515 |
| 95% Modified-t UCL (Johnson-1978) | 24.529841 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 20.554091 |
| 95% Chebyshev (MVUE) UCL | 24.597178 |
| 97.5% Chebyshev (MVUE) UCL | 27.922397 |
| 99% Chebyshev (MVUE) UCL | 34.454144 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 0.9427011 |
| Theta Star | 20.684373 |
| MLE of Mean | 19.49918 |
| MLE of Standard Deviation | 20.083036 |
| nu star | 230.01906 |
| Approximate Chi Square Value (.05) | 195.91248 |
| Adjusted Level of Significance | 0.0480328 |
| Adjusted Chi Square Value | 195.53939 |
| Anderson-Darling Test Statistic | 7.8060581 |
| Anderson-Darling 5% Critical Value | 0.7850654 |
| Kolmogorov-Smirnov Test Statistic | 0.2228717 |
| Kolmogorov-Smirnov 5% Critical Value | 0.0864042 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 22.89381 |
| 95% Adjusted Gamma UCL | 22.937491 |

**Data Distribution**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 24.323975 |
| 95% Jackknife UCL | 24.3612 |
| 95% Standard Bootstrap UCL | 24.333126 |
| 95% Bootstrap-t UCL | 25.760095 |
| 95% Hall's Bootstrap UCL | 25.284152 |
| 95% Percentile Bootstrap UCL | 24.704918 |
| 95% BCA Bootstrap UCL | 25.55 |
| 95% Chebyshev(Mean, Sd) UCL | 32.284993 |
| 97.5% Chebyshev(Mean, Sd) UCL | 37.817424 |
| 99% Chebyshev(Mean, Sd) UCL | 48.684815 |

**Potential UCL to Use**

Use 95% Chebyshev (Mean, Sd) UCL 32.284993

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

APPENDIX E

**Onsite Total Soil and Residue ProUCL Output**

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Cadmium, total (mg/kg)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 123 | Number of Detected Data | 109 |
| Number of Distinct Detected Data | 88 | Number of Non-Detect Data | 14 |
| | | Percent Non-Detects | 11.38% |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum Detected | 0.12 | Minimum Detected | -2.120264 |
| Maximum Detected | 284 | Maximum Detected | 5.6489742 |
| Mean of Detected | 29.570092 | Mean of Detected | 2.2952512 |
| SD of Detected | 46.848992 | SD of Detected | 1.587593 |
| Minimum Non-Detect | 0.255 | Minimum Non-Detect | -1.366492 |
| Maximum Non-Detect | 17.5 | Maximum Non-Detect | 2.8622009 |

| | | | |
|---|---|---|---|
| Note: Data have multiple DLs - Use of KM Method is recommended | | Number treated as Non-Detect | 82 |
| For all methods (except KM, DL/2, and ROS Methods), | | Number treated as Detected | 41 |
| Observations < Largest ND are treated as NDs | | Single DL Non-Detect Percentage | 66.67% |

**UCL Statistics**

| Normal Distribution Test with Detected Values Only | | Lognormal Distribution Test with Detected Values Only | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.2647998 | Lilliefors Test Statistic | 0.0740027 |
| 5% Lilliefors Critical Value | 0.0848634 | 5% Lilliefors Critical Value | 0.0848634 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| DL/2 Substitution Method | | DL/2 Substitution Method | |
| Mean | 26.608435 | Mean | 2.1022196 |
| SD | 44.863369 | SD | 1.6663523 |
| 95% DL/2 (t) UCL | 33.3131 | 95% H-Stat (DL/2) UCL | 50.549214 |
| Maximum Likelihood Estimate(MLE) Method | N/A | Log ROS Method | |
| MLE yields a negative mean | | Mean in Log Scale | 2.0741702 |
| | | SD in Log Scale | 1.6547933 |
| | | Mean in Original Scale | 26.439935 |
| | | SD in Original Scale | 44.945121 |
| | | 95% t UCL | 33.156818 |
| | | 95% Percentile Bootstrap UCL | 33.188676 |
| | | 95% BCA Bootstrap UCL | 34.612004 |
| | | 95% H-UCL | 47.979127 |

| Gamma Distribution Test with Detected Values Only | | Data Distribution Test with Detected Values Only |
|---|---|---|
| k star (bias corrected) | 0.5607735 | Data appear Lognormal at 5% Significance Level |
| Theta Star | 52.730901 | |
| nu star | 122.24862 | |

APPENDIX E

Onsite Total Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| A-D Test Statistic | 2.5968256 |
| 5% A-D Critical Value | 0.8120291 |
| K-S Test Statistic | 0.8120291 |
| 5% K-S Critical Value | 0.0916981 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 284 |
| Mean | 26.20439 |
| Median | 7.3 |
| SD | 45.076397 |
| k star | 0.2520712 |
| Theta star | 103.95629 |
| Nu star | 62.009521 |
| AppChi2 | 44.897163 |
| 95% Gamma Approximate UCL | 36.192079 |
| 95% Adjusted Gamma UCL | 36.331273 |

Note: DL/2 is not a recommended method.

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 26.48033 |
| SD | 44.747783 |
| SE of Mean | 4.0540228 |
| 95% KM (t) UCL | 33.199629 |
| 95% KM (z) UCL | 33.148604 |
| 95% KM (jackknife) UCL | 33.188017 |
| 95% KM (bootstrap t) UCL | 35.114892 |
| 95% KM (BCA) UCL | 33.103113 |
| 95% KM (Percentile Bootstrap) UCL | 33.668969 |
| 95% KM (Chebyshev) UCL | 44.151406 |
| 97.5% KM (Chebyshev) UCL | 51.797695 |
| 99% KM (Chebyshev) UCL | 66.817348 |

**Potential UCLs to Use**

| | |
|---|---|
| 97.5% KM (Chebyshev) UCL | 51.797695 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Cobalt, total (mg/kg)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 63 | Number of Distinct Observations | 55 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 2.1 |
| Maximum | 880 |
| Mean | 96.434921 |
| Median | 9.7 |
| SD | 195.11196 |
| Std. Error of Mean | 24.581797 |
| Coefficient of Variation | 2.0232501 |
| Skewness | 2.5315623 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 0.7419373 |
| Maximum of Log Data | 6.7799219 |
| Mean of log Data | 2.964125 |
| SD of log Data | 1.7050603 |

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.3388281 |
| Lilliefors Critical Value | 0.1116255 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.1798527 |
| Lilliefors Critical Value | 0.1116255 |

Data not Lognormal at 5% Significance Level

APPENDIX E

Onsite Total Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 137.48171 |
| **95% UCLs (Adjusted for Skewness)** | |
| 95% Adjusted-CLT UCL (Chen-1995) | 145.24584 |
| 95% Modified-t UCL (Johnson-1978) | 138.78842 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 149.47807 |
| 95% Chebyshev (MVUE) UCL | 182.88523 |
| 97.5% Chebyshev (MVUE) UCL | 228.00839 |
| 99% Chebyshev (MVUE) UCL | 316.64411 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 0.3997713 |
| Theta Star | 241.22523 |
| MLE of Mean | 96.434921 |
| MLE of Standard Deviation | 152.52061 |
| nu star | 50.371183 |
| Approximate Chi Square Value (.05) | 35.074272 |
| Adjusted Level of Significance | 0.0461905 |
| Adjusted Chi Square Value | 34.775384 |
| Anderson-Darling Test Statistic | 6.0270851 |
| Anderson-Darling 5% Critical Value | 0.8380336 |
| Kolmogorov-Smirnov Test Statistic | 0.2580244 |
| Kolmogorov-Smirnov 5% Critical Value | 0.120136 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 138.493 |
| 95% Adjusted Gamma UCL | 139.68332 |

**Data Distribution**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 136.86838 |
| 95% Jackknife UCL | 137.48171 |
| 95% Standard Bootstrap UCL | 136.64218 |
| 95% Bootstrap-t UCL | 152.0367 |
| 95% Hall's Bootstrap UCL | 142.58417 |
| 95% Percentile Bootstrap UCL | 138.96349 |
| 95% BCA Bootstrap UCL | 146.33651 |
| 95% Chebyshev(Mean, Sd) UCL | 203.58449 |
| 97.5% Chebyshev(Mean, Sd) UCL | 249.94819 |
| 99% Chebyshev(Mean, Sd) UCL | 341.02071 |

**Potential UCL to Use**

Use 95% Chebyshev (Mean, Sd) UCL 203.58449

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Copper, total (mg/kg)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 123 | Number of Distinct Observations | 102 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 6.6 |
| Maximum | 49900 |
| Mean | 2902.8602 |
| Median | 26 |
| SD | 8272.4769 |
| Std. Error of Mean | 745.90412 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 1.8870696 |
| Maximum of Log Data | 10.817776 |
| Mean of log Data | 4.8570457 |
| SD of log Data | 2.5891291 |

APPENDIX E

Onsite Total Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| Coefficient of Variation | 2.8497676 |
| Skewness | 3.6223941 |

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.3763909 |
| Lilliefors Critical Value | 0.0798879 |

Data not Normal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 4139.1513 |

**95% UCLs (Adjusted for Skewness)**

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 4390.0827 |
| 95% Modified-t UCL (Johnson-1978) | 4179.7559 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 0.2306429 |
| Theta Star | 12585.952 |
| MLE of Mean | 2902.8602 |
| MLE of Standard Deviation | 6044.4403 |
| nu star | 56.738148 |
| Approximate Chi Square Value (.05) | 40.424661 |
| Adjusted Level of Significance | 0.0480488 |
| Adjusted Chi Square Value | 40.261926 |
| Anderson-Darling Test Statistic | 12.361236 |
| Anderson-Darling 5% Critical Value | 0.8989338 |
| Kolmogorov-Smirnov Test Statistic | 0.2706584 |
| Kolmogorov-Smirnov 5% Critical Value | 0.0919342 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 4074.3176 |
| 95% Adjusted Gamma UCL | 4090.7857 |

**Lognormal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.2513903 |
| Lilliefors Critical Value | 0.0798879 |

Data not Lognormal at 5% Significance Level

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 9329.9796 |
| 95% Chebyshev (MVUE) UCL | 9352.4146 |
| 97.5% Chebyshev (MVUE) UCL | 11976.288 |
| 99% Chebyshev (MVUE) UCL | 17130.38 |

**Data Distribution**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 4129.7633 |
| 95% Jackknife UCL | 4139.1513 |
| 95% Standard Bootstrap UCL | 4102.2252 |
| 95% Bootstrap-t UCL | 4552.0775 |
| 95% Hall's Bootstrap UCL | 4340.9645 |
| 95% Percentile Bootstrap UCL | 4227.7764 |
| 95% BCA Bootstrap UCL | 4428.5707 |
| 95% Chebyshev(Mean, Sd) UCL | 6154.1809 |
| 97.5% Chebyshev(Mean, Sd) UCL | 7561.0299 |
| 99% Chebyshev(Mean, Sd) UCL | 10324.512 |

| | |
|---|---|
| Potential UCL to Use | Use 95% Chebyshev (Mean, Sd) UCL 6154.1809 |

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

APPENDIX E

**Onsite Total Soil and Residue ProUCL Output**

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Iron, total (mg/kg)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 63 | Number of Distinct Observations | 42 |

**Raw Statistics**

| | |
|---|---|
| Minimum | 5500 |
| Maximum | 142000 |
| Mean | 37943.333 |
| Median | 27000 |
| SD | 31057.563 |
| Std. Error of Mean | 3912.8851 |
| Coefficient of Variation | 0.8185249 |
| Skewness | 1.5814465 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum of Log Data | 8.6125034 |
| Maximum of Log Data | 11.863582 |
| Mean of log Data | 10.255833 |
| SD of log Data | 0.764504 |

**Relevant UCL Statistics**

**Normal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.2074991 |
| Lilliefors Critical Value | 0.1116255 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test**

| | |
|---|---|
| Lilliefors Test Statistic | 0.0743114 |
| Lilliefors Critical Value | 0.1116255 |

Data appear Lognormal at 5% Significance Level

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 44477.085 |

**95% UCLs (Adjusted for Skewness)**

| | |
|---|---|
| 95% Adjusted-CLT UCL (Chen-1995) | 45212.489 |
| 95% Modified-t UCL (Johnson-1978) | 44607.021 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 46545.885 |
| 95% Chebyshev (MVUE) UCL | 55621.899 |
| 97.5% Chebyshev (MVUE) UCL | 63299.306 |
| 99% Chebyshev (MVUE) UCL | 78380.084 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 1.8063922 |
| Theta Star | 21005.036 |
| MLE of Mean | 37943.333 |
| MLE of Standard Deviation | 28231.208 |
| nu star | 227.60542 |
| Approximate Chi Square Value (.05) | 193.68462 |
| Adjusted Level of Significance | 0.0461905 |
| Adjusted Chi Square Value | 192.95562 |
| Anderson-Darling Test Statistic | 0.9329383 |
| Anderson-Darling 5% Critical Value | 0.764374 |
| Kolmogorov-Smirnov Test Statistic | 0.126957 |
| Kolmogorov-Smirnov 5% Critical Value | 0.1137747 |

Data not Gamma Distributed at 5% Significance Level

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 44588.509 |
| 95% Adjusted Gamma UCL | 44756.967 |

**Data Distribution**

Data appear Lognormal at 5% Significance Level

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 44379.457 |
| 95% Jackknife UCL | 44477.085 |
| 95% Standard Bootstrap UCL | 44087.712 |
| 95% Bootstrap-t UCL | 45804.01 |
| 95% Hall's Bootstrap UCL | 45595.301 |
| 95% Percentile Bootstrap UCL | 44883.016 |
| 95% BCA Bootstrap UCL | 45062.381 |
| 95% Chebyshev(Mean, Sd) UCL | 54999.204 |
| 97.5% Chebyshev(Mean, Sd) UCL | 62379.293 |
| 99% Chebyshev(Mean, Sd) UCL | 76876.049 |

APPENDIX E

Onsite Total Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

Potential UCL to Use — Use 95% H-UCL 46545.885

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Manganese, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 113 | Number of Distinct Observations | 102 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 37.1 | Minimum of Log Data | 3.613617 |
| Maximum | 19100 | Maximum of Log Data | 9.8574436 |
| Mean | 763.89646 | Mean of log Data | 5.9275383 |
| Median | 330 | SD of log Data | 1.0113866 |
| SD | 1986.663 | | |
| Std. Error of Mean | 186.88954 | | |
| Coefficient of Variation | 2.6006967 | | |
| Skewness | 7.7415521 | | |

Relevant UCL Statistics

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.3572431 | Lilliefors Test Statistic | 0.0695016 |
| Lilliefors Critical Value | 0.0833479 | Lilliefors Critical Value | 0.0833479 |
| Data not Normal at 5% Significance Level | | Data appear Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 1073.8664 | 95% H-UCL | 774.18226 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 932.44139 |
| 95% Adjusted-CLT UCL (Chen-1995) | 1216.7325 | 97.5% Chebyshev (MVUE) UCL | 1066.9593 |
| 95% Modified-t UCL (Johnson-1978) | 1096.5505 | 99% Chebyshev (MVUE) UCL | 1331.1935 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 0.8145964 | Data appear Lognormal at 5% Significance Level |
| Theta Star | 937.76062 | |
| MLE of Mean | 763.89646 | |
| MLE of Standard Deviation | 846.37581 | |
| nu star | 184.0988 | |

APPENDIX E

Onsite Total Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| Approximate Chi Square Value (.05) | 153.71379 |
| Adjusted Level of Significance | 0.0478761 |
| Adjusted Chi Square Value | 153.35781 |
| Anderson-Darling Test Statistic | 6.1670965 |
| Anderson-Darling 5% Critical Value | 0.7912735 |
| Kolmogorov-Smirnov Test Statistic | 0.1801316 |
| Kolmogorov-Smirnov 5% Critical Value | 0.0892124 |

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

| | |
|---|---|
| 95% Approximate Gamma UCL | 914.89784 |
| 95% Adjusted Gamma UCL | 917.02154 |

Nonparametric Statistics

| | |
|---|---|
| 95% CLT UCL | 1071.3024 |
| 95% Jackknife UCL | 1073.8664 |
| 95% Standard Bootstrap UCL | 1070.3309 |
| 95% Bootstrap-t UCL | 1613.9443 |
| 95% Hall's Bootstrap UCL | 2448.1399 |
| 95% Percentile Bootstrap UCL | 1089.3221 |
| 95% BCA Bootstrap UCL | 1307.4195 |
| 95% Chebyshev(Mean, Sd) UCL | 1578.5291 |
| 97.5% Chebyshev(Mean, Sd) UCL | 1931.0213 |
| 99% Chebyshev(Mean, Sd) UCL | 2623.4239 |

Potential UCL to Use

Use 95% H-UCL 774.18226

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Nickel, total (mg/kg)

General Statistics

| | | | |
|---|---|---|---|
| Number of Valid Observations | 73 | Number of Distinct Observations | 55 |

Raw Statistics

| | |
|---|---|
| Minimum | 6.6 |
| Maximum | 17800 |
| Mean | 1789.9301 |
| Median | 30.2 |
| SD | 4292.1589 |
| Std. Error of Mean | 502.3592 |
| Coefficient of Variation | 2.3979477 |
| Skewness | 2.6385505 |

Log-transformed Statistics

| | |
|---|---|
| Minimum of Log Data | 1.8870696 |
| Maximum of Log Data | 9.7869537 |
| Mean of log Data | 4.6336347 |
| SD of log Data | 2.4222097 |

Relevant UCL Statistics

Normal Distribution Test

| | |
|---|---|
| Lilliefors Test Statistic | 0.3994681 |
| Lilliefors Critical Value | 0.1036985 |

Data not Normal at 5% Significance Level

Lognormal Distribution Test

| | |
|---|---|
| Lilliefors Test Statistic | 0.2131849 |
| Lilliefors Critical Value | 0.1036985 |

Data not Lognormal at 5% Significance Level

APPENDIX E

Onsite Total Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

**Assuming Normal Distribution**

| | |
|---|---|
| 95% Student's-t UCL | 2627.0081 |
| **95% UCLs (Adjusted for Skewness)** | |
| 95% Adjusted-CLT UCL (Chen-1995) | 2782.0047 |
| 95% Modified-t UCL (Johnson-1978) | 2652.8644 |

**Assuming Lognormal Distribution**

| | |
|---|---|
| 95% H-UCL | 5997.7131 |
| 95% Chebyshev (MVUE) UCL | 5078.7488 |
| 97.5% Chebyshev (MVUE) UCL | 6551.2608 |
| 99% Chebyshev (MVUE) UCL | 9443.7254 |

**Gamma Distribution Test**

| | |
|---|---|
| k star (bias corrected) | 0.2477639 |
| Theta Star | 7224.3371 |
| MLE of Mean | 1789.9301 |
| MLE of Standard Deviation | 3595.9781 |
| nu star | 36.173533 |
| Approximate Chi Square Value (.05) | 23.408435 |
| Adjusted Level of Significance | 0.0467123 |
| Adjusted Chi Square Value | 23.201477 |
| Anderson-Darling Test Statistic | 8.0712323 |
| Anderson-Darling 5% Critical Value | 0.8881756 |
| Kolmogorov-Smirnov Test Statistic | 0.2747583 |
| Kolmogorov-Smirnov 5% Critical Value | 0.1146022 |

Data not Gamma Distributed at 5% Significance Level

**Data Distribution**

Data do not follow a Discernable Distribution (0.05)

**Nonparametric Statistics**

| | |
|---|---|
| 95% CLT UCL | 2616.2375 |
| 95% Jackknife UCL | 2627.0081 |
| 95% Standard Bootstrap UCL | 2607.8544 |
| 95% Bootstrap-t UCL | 2891.7884 |
| 95% Hall's Bootstrap UCL | 2699.3381 |
| 95% Percentile Bootstrap UCL | 2704.5288 |
| 95% BCA Bootstrap UCL | 2855.7534 |
| 95% Chebyshev(Mean, Sd) UCL | 3979.6631 |
| 97.5% Chebyshev(Mean, Sd) UCL | 4927.1623 |
| 99% Chebyshev(Mean, Sd) UCL | 6788.341 |

**Assuming Gamma Distribution**

| | |
|---|---|
| 95% Approximate Gamma UCL | 2766.0156 |
| 95% Adjusted Gamma UCL | 2790.6886 |

**Potential UCL to Use**

Use 95% Chebyshev (Mean, Sd) UCL 3979.6631

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

**Thallium, total (mg/kg)**

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Data | 50 | Number of Detected Data | 36 |
| Number of Distinct Detected Data | 30 | Number of Non-Detect Data | 14 |
| | | Percent Non-Detects | 28.00% |

**Raw Statistics**

| | |
|---|---|
| Minimum Detected | 0.053 |
| Maximum Detected | 2.1 |
| Mean of Detected | 0.539 |
| SD of Detected | 0.4954705 |

**Log-transformed Statistics**

| | |
|---|---|
| Minimum Detected | -2.937463 |
| Maximum Detected | 0.7419373 |
| Mean of Detected | -1.084239 |
| SD of Detected | 1.033067 |

APPENDIX E

**Onsite Total Soil and Residue ProUCL Output**

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| Minimum Non-Detect | 0.155 | Minimum Non-Detect | -1.86433 |
| Maximum Non-Detect | 1 | Maximum Non-Detect | 0 |

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

| | |
|---|---|
| Number treated as Non-Detect | 42 |
| Number treated as Detected | 8 |
| Single DL Non-Detect Percentage | 84.00% |

**UCL Statistics**

**Normal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.8502002 |
| 5% Shapiro Wilk Critical Value | 0.935 |

Data not Normal at 5% Significance Level

**Lognormal Distribution Test with Detected Values Only**

| | |
|---|---|
| Shapiro Wilk Test Statistic | 0.9360829 |
| 5% Shapiro Wilk Critical Value | 0.935 |

Data appear Lognormal at 5% Significance Level

**Assuming Normal Distribution**

DL/2 Substitution Method

| | |
|---|---|
| Mean | 0.45363 |
| SD | 0.4497625 |
| 95% DL/2 (t) UCL | 0.5602687 |

Maximum Likelihood Estimate(MLE) Method

| | |
|---|---|
| Mean | 0.386211 |
| SD | 0.6063946 |
| 95% MLE (t) UCL | 0.5299872 |
| 95% MLE (Tiku) UCL | 0.8048082 |

**Assuming Lognormal Distribution**

DL/2 Substitution Method

| | |
|---|---|
| Mean | -1.262966 |
| SD | 1.0020576 |
| 95% H-Stat (DL/2) UCL | 0.6537232 |

Log ROS Method

| | |
|---|---|
| Mean in Log Scale | -1.325677 |
| SD in Log Scale | 0.9769626 |
| Mean in Original Scale | 0.4309598 |
| SD in Original Scale | 0.4549942 |
| 95% t UCL | 0.5388389 |
| 95% Percentile Bootstrap UCL | 0.5434569 |
| 95% BCA Bootstrap UCL | 0.5513648 |
| 95% H UCL | 0.5916752 |

**Gamma Distribution Test with Detected Values Only**

| | |
|---|---|
| k star (bias corrected) | 1.1295397 |
| Theta Star | 0.4771855 |
| nu star | 81.326857 |

| | |
|---|---|
| A-D Test Statistic | 0.8773655 |
| 5% A-D Critical Value | 0.7721139 |
| K-S Test Statistic | 0.7721139 |
| 5% K-S Critical Value | 0.1504862 |

Data follow Appr. Gamma Distribution at 5% Significance Level

**Assuming Gamma Distribution**

Gamma ROS Statistics using Extrapolated Data

| | |
|---|---|
| Minimum | 0.000001 |
| Maximum | 2.1 |
| Mean | 0.4301311 |
| Median | 0.195 |

**Data Distribution Test with Detected Values Only**

Data Follow Appr. Gamma Distribution at 5% Significance Level

**Nonparametric Statistics**

Kaplan-Meier (KM) Method

| | |
|---|---|
| Mean | 0.4329106 |
| SD | 0.4547096 |
| SE of Mean | 0.0660884 |
| 95% KM (t) UCL | 0.5437111 |
| 95% KM (z) UCL | 0.5416163 |
| 95% KM (jackknife) UCL | 0.5433644 |
| 95% KM (bootstrap t) UCL | 0.5581711 |
| 95% KM (BCA) UCL | 0.54089 |
| 95% KM (Percentile Bootstrap) UCL | 0.5428104 |
| 95% KM (Chebyshev) UCL | 0.7209832 |

APPENDIX E

Onsite Total Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | | | |
|---|---|---|---|
| SD | 0.4621533 | 97.5% KM (Chebyshev) UCL | 0.8456324 |
| k star | 0.5089752 | 99% KM (Chebyshev) UCL | 1.0904817 |
| Theta star | 0.8450925 | | |
| Nu star | 50.897518 | **Potential UCLs to Use** | |
| AppChi2 | 35.514199 | 95% KM (Percentile Bootstrap) UCL | 0.5428104 |
| 95% Gamma Approximate UCL | 0.6164465 | | |
| 95% Adjusted Gamma UCL | 0.6231501 | | |

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Zinc, total (mg/kg)

**General Statistics**

| | | | |
|---|---|---|---|
| Number of Valid Observations | 123 | Number of Distinct Observations | 108 |

| Raw Statistics | | Log-transformed Statistics | |
|---|---|---|---|
| Minimum | 50 | Minimum of Log Data | 3.912023 |
| Maximum | 407000 | Maximum of Log Data | 12.916568 |
| Mean | 75965.96 | Mean of log Data | 8.9523972 |
| Median | 2800 | SD of log Data | 2.6245102 |
| SD | 117352.47 | | |
| Std. Error of Mean | 10581.316 | | |
| Coefficient of Variation | 1.5448034 | | |
| Skewness | 1.5139113 | | |

**Relevant UCL Statistics**

| Normal Distribution Test | | Lognormal Distribution Test | |
|---|---|---|---|
| Lilliefors Test Statistic | 0.3032768 | Lilliefors Test Statistic | 0.1545934 |
| Lilliefors Critical Value | 0.0798879 | Lilliefors Critical Value | 0.0798879 |
| Data not Normal at 5% Significance Level | | Data not Lognormal at 5% Significance Level | |

| Assuming Normal Distribution | | Assuming Lognormal Distribution | |
|---|---|---|---|
| 95% Student's-t UCL | 93503.854 | 95% H-UCL | 628999.39 |
| **95% UCLs (Adjusted for Skewness)** | | 95% Chebyshev (MVUE) UCL | 620621.96 |
| 95% Adjusted-CLT UCL (Chen-1995) | 94914.039 | 97.5% Chebyshev (MVUE) UCL | 795937.85 |
| 95% Modified-t UCL (Johnson-1978) | 93744.587 | 99% Chebyshev (MVUE) UCL | 1140312 |

| Gamma Distribution Test | | Data Distribution |
|---|---|---|
| k star (bias corrected) | 0.2995234 | Data do not follow a Discernable Distribution (0.05) |
| Theta Star | 253622.76 | |
| MLE of Mean | 75965.96 | |
| MLE of Standard Deviation | 138804.53 | |

APPENDIX E

Onsite Total Soil and Residue ProUCL Output

*Eagle Zinc Site*

*Hillsboro, Illinois*

| | |
|---|---|
| nu star | 73.682766 |
| Approximate Chi Square Value (.05) | 54.915087 |
| Adjusted Level of Significance | 0.0480488 |
| Adjusted Chi Square Value | 54.723836 |
| | |
| Anderson-Darling Test Statistic | 6.325362 |
| Anderson-Darling 5% Critical Value | 0.8676199 |
| Kolmogorov-Smirnov Test Statistic | 0.2181758 |
| Kolmogorov-Smirnov 5% Critical Value | 0.0906346 |

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

| | |
|---|---|
| 95% Approximate Gamma UCL | 101927.95 |
| 95% Adjusted Gamma UCL | 102284.17 |

Nonparametric Statistics

| | |
|---|---|
| 95% CLT UCL | 93370.676 |
| 95% Jackknife UCL | 93503.854 |
| 95% Standard Bootstrap UCL | 93286.118 |
| 95% Bootstrap-t UCL | 95295.739 |
| 95% Hall's Bootstrap UCL | 95408.702 |
| 95% Percentile Bootstrap UCL | 93996.456 |
| 95% BCA Bootstrap UCL | 94695.415 |
| 95% Chebyshev(Mean, Sd) UCL | 122088.85 |
| 97.5% Chebyshev(Mean, Sd) UCL | 142046.26 |
| 99% Chebyshev(Mean, Sd) UCL | 181248.72 |

Potential UCL to Use

Use 95% Chebyshev (Mean, Sd) UCL 122088.85

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

# Attachment F
# Evaluation of Lead Exposure

**TABLE 11.1**
Calculations of Blood Lead Concentrations (PbBs)
Eagle Zinc
Hillsboro Illinois

Exposure Medium: Exposure Area 2 Surface Soil and Residue (0-2 ft)
Receptor: Industrial Worker

| Variable | Description of Variable | Units | GSDi and PbBo from Analysis of NHANES 1999-2004 | GSDi and PbBo from Analysis of NHANES III (Phases 1&2) |
|---|---|---|---|---|
| PbS | Soil lead concentration | µg/g or ppm | 4508 | 4508 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 0.9 | 0.9 |
| BKSF | Biokinetic Slope Factor | µg/dL per ug/day | 0.4 | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 | 2.1 |
| $PbB_0$ | Baseline PbB | µg/dL | 1.0 | 1.5 |
| $IR_S$ | Soil ingestion rate (including soil-derived indoor dust) | g/day | 0.100 | 0.100 |
| $IR_{S+D}$ | Total ingestion rate of outdoor soil and indoor dust | g/day | -- | -- |
| $W_S$ | Weighting factor; fraction of $IR_{S+D}$ ingested as outdoor soil | -- | -- | -- |
| $K_{SD}$ | Mass fraction of soil in dust | -- | -- | -- |
| $AF_{S, D}$ | Absorption fraction (same for soil and dust) | -- | 0.12 | 0.12 |
| $EF_{S, D}$ | Exposure frequency (same for soil and dust) | days/yr | 250 | 250 |
| $AT_{S, D}$ | Averaging time (same for soil and dust) | days/yr | 365 | 365 |
| **$PbB_{adult}$** | **PbB of adult worker, geometric mean** | **µg/dL** | **15.8** | **16.3** |
| $PbB_{fetal, 0.95}$ | 95th percentile PbB among fetuses of adult workers | µg/dL | 37.4 | 49.8 |
| $PbB_t$ | Target PbB level of concern (e.g., 10 ug/dL) | µg/dL | **10.0** | **10.0** |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distribution** | **%** | **72.6%** | **69.8%** |

**USEPA Technical Review Workgroup for Lead, Adult Lead Committee**
**Version date 6/21/09**

**Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil**

**TABLE 11.2 - RAGS D Adult Lead Worksheet**
**Site Name: Eagle Zinc, Hillsboro, Illinois**
**Receptor: Industrial Worker, Exposure to Media as Described**

## 1. Lead Screening Questions

| Medium | Lead Concentration used in Model Run | | Basis for Lead Concentration Used For Model Run | Lead Screening Concentration | | Basis for Lead Screening Level |
|---|---|---|---|---|---|---|
| | Value | Units | | Value | Units | |
| Soil | 4508 | mg/kg | Avg Measured | 4508 | mg/kg | Recommended Soil Screening Level |

## 2. Lead Model Questions

| Question | Response for Residential Lead Model |
|---|---|
| What lead model was used? Provide reference and version | EPA Adult Lead Model, Version date 6/21/2009 |
| If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected. | -- |
| Where are the input values located in the risk assessment report? | Attachment A, Table 3.6 |
| What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics? | Arithmetic mean value of exposure area; data presented in Attachment A, Table 3.6. |
| What was the point of exposure and location? | Exposure Area 2 Surface Soil and Residue (0-2 ft) |
| Where are the output values located in the risk assessment report? | Attachment F, Table 11.1 |
| What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale. | Default GSDs of 2.1 and 2.3 for homogeneous and heterogeneous population, respectively (EPA, 2002). |
| What baseline blood lead concentration (PbB0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale. | Default PbB0 of 1.7 for heterogeneous population (EPA, 2002). |
| Was the default exposure frequency (EF; 219 days/year) used? | No. An exposure frequency of 250 days/year was used. |
| Was the default BKSF used (0.4 ug/dL per ug/day) used? | Yes |
| Was the default absorption fraction (AF; 0.12) used? | Yes |
| Was the default soil ingestion rate (IR; 50 mg/day) used? | No. A soil ingestion rate of 100 mg/day was used. |
| If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report? | Attachment A, Table 4.5 |

**TABLE 11.2 - RAGS D Adult Lead Worksheet**
**Site Name: Eagle Zinc, Hillsboro, Illinois**
**Receptor: Industrial Worker, Exposure to Media as Described**

| Medium | Result | Comment/PRG 1 |
|---|---|---|
| Soil and Residue | Input value of 4508 mg/kg in soil results in 73 % of general public residents above a blood lead level of 10 ug/dL. The geometric mean blood lead level = 15.8 ug/dL. This exceeds the blood lead goal as described in the 1994 OSWER Directive of no more than 5% of children (fetuses of exposed women) exceeding 10 ug/dL blood lead. | |

**Reference**

USEPA. 2009. Update of the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameter. OSWER Dir #9200.2-82. 2009.

USEPA. 2002. Blood Lead Concentrations of U.S. Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III). Final. Technical Review Workgroup for Lead. March.

**TABLE 11.3**
Calculations of Blood Lead Concentrations (PbBs)
Eagle Zinc
Hillsboro, Illinois

Exposure Medium: Exposure Area 2 Total Soil and Residue (0-10 ft)
Receptor: Construction/Utility Worker

| Variable | Description of Variable | Units | GSDi and PbBo from Analysis of NHANES 1999-2004 | GSDi and PbBo from Analysis of NHANES III (Phases 1&2) |
|---|---|---|---|---|
| PbS | Soil lead concentration | ug/g or ppm | 3113 | 3113 |
| $R_{fetal/maternal}$ | Fetal/maternal PbB ratio | -- | 0.9 | 0.9 |
| BKSF | Biokinetic Slope Factor | ug/dL per ug/day | 0.4 | 0.4 |
| $GSD_i$ | Geometric standard deviation PbB | -- | 1.8 | 2.1 |
| $PbB_0$ | Baseline PbB | ug/dL | 1.0 | 1.5 |
| $IR_S$ | Soil ingestion rate (including soil-derived indoor dust) | g/day | 0.330 | 0.330 |
| $IR_{S+D}$ | Total ingestion rate of outdoor soil and indoor dust | g/day | -- | -- |
| $W_S$ | Weighting factor; fraction of $IR_{S+D}$ ingested as outdoor soil | -- | -- | -- |
| $K_{SD}$ | Mass fraction of soil in dust | -- | -- | -- |
| $AF_{S, D}$ | Absorption fraction (same for soil and dust) | -- | 0.12 | 0.12 |
| $EF_{S, D}$ | Exposure frequency (same for soil and dust) | days/yr | 250 | 250 |
| $AT_{S, D}$ | Averaging time (same for soil and dust) | days/yr | 365 | 365 |
| **$PbB_{adult}$** | **PbB of adult worker, geometric mean** | **ug/dL** | **34.8** | **35.3** |
| $PbB_{fetal, 0.95}$ | 95th percentile PbB among fetuses of adult workers | ug/dL | 82.3 | 107.6 |
| $PbB_t$ | Target PbB level of concern (e.g., 10 ug/dL) | ug/dL | **10.0** | **10.0** |
| **$P(PbB_{fetal} > PbB_t)$** | **Probability that fetal PbB > $PbB_t$, assuming lognormal distribution** | **%** | **97.4%** | **94.0%** |

**USEPA Technical Review Workgroup for Lead, Adult Lead Committee**
**Version date 6/21/09**

**Source: USEPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil**

**TABLE 11.4 - RAGS D Adult Lead Worksheet**
**Site Name: Eagle Zinc, Hillsboro, Illinois**
**Receptor: Construction Worker, Exposure to Media as Described**

## 1. Lead Screening Questions

| Medium | Lead Concentration used in Model Run | | Basis for Lead Concentration Used For Model Run | Lead Screening Concentration | | Basis for Lead Screening Level |
|---|---|---|---|---|---|---|
| | Value | Units | | Value | Units | |
| Soil | 3113 | mg/kg | Avg Measured | 3113 | mg/kg | Recommended Soil Screening Level |

## 2. Lead Model Questions

| Question | Response for Residential Lead Model |
|---|---|
| What lead model was used? Provide reference and version | EPA Adult Lead Model, Version date 6/21/2009 |
| If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected. | -- |
| Where are the input values located in the risk assessment report? | Attachment A, Table 3.8 |
| What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics? | Arithmetic mean value of exposure area; data presented in Attachment A, Table 3.8. |
| What was the point of exposure and location? | Exposure Area 2 Total Soil and Residue (0-10 ft) |
| Where are the output values located in the risk assessment report? | Attachment F, Table 11.3 |
| What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale. | Default GSDs of 2.1 and 2.3 for homogeneous and heterogeneous population, respectively (EPA, 2002). |
| What baseline blood lead concentration (PbB0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale. | Default PbB0 of 1.7 for heterogeneous population (EPA, 2002). |
| Was the default exposure frequency (EF; 219 days/year) used? | No. An exposure frequency of 250 days/year was used. |
| Was the default BKSF used (0.4 ug/dL per ug/day) used? | Yes |
| Was the default absorption fraction (AF; 0.12) used? | Yes |
| Was the default soil ingestion rate (IR; 50 mg/day) used? | No. A soil ingestion rate of 330 mg/day was used. |
| If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report? | Attachment A, Table 4.8 |

**TABLE 11.4 - RAGS D Adult Lead Worksheet**
**Site Name: Eagle Zinc, Hillsboro, Illinois**
**Receptor: Construction Worker, Exposure to Media as Described**

| Medium | Result | Comment/PRG 1 |
|---|---|---|
| Soil | Input value of 3113 mg/kg in soil results in 97.4 % of general public residents above a blood lead level of 10 ug/dL. The geometric mean blood lead level = 34.8 ug/dL. This exceeds the blood lead goal as described in the 1994 OSWER Directive of no more than 5% of children (fetuses of exposed women) exceeding 10 ug/dL blood lead. | |

**Reference**

USEPA. 2009. Update of the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameter. OSWER Dir #9200.2-82. 2009.

USEPA. 2002. Blood Lead Concentrations of U.S. Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III). Final. Technical Review Workgroup for Lead. March.

# Attachment G
# Ratios

**Average Ratios of Metals in Site Residues and Offsite Areas**
**Eagle Zinc Superfund Site**

| | Ratio of Arsenic to: | | | | | | | | Ratio of Manganese to: | | | | | | | | Ratio of Lead to: | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | **Aluminum** | **Arsenic** | **Cadmium** | **Calcium** | **Copper** | **Lead** | **Manganese** | **Zinc** | **Aluminum** | **Arsenic** | **Cadmium** | **Calcium** | **Copper** | **Lead** | **Manganese** | **Zinc** | **Aluminum** | **Arsenic** | **Cadmium** | **Calcium** | **Copper** | **Lead** | **Manganese** | **Zinc** |
| ***Onsite Residue Pile*** | 688 | 1 | 2 | 652 | 273 | 78 | 43 | 10954 | 20 | 0.032 | 0.064 | 16 | 8 | 2 | 1 | 306 | 23 | 0.031 | 0.065 | 25 | 6 | 1 | 1 | 413 |
| **Onsite Surface Residue** | NA | 1 | 3 | NA | 85 | 98 | 143 | 11600 | NA | 0.051 | 0.281 | NA | 4 | 8 | 1 | 573 | NA | 0.062 | 0.101 | NA | 7 | 1 | 32 | 970 |
| ***Exposure Area 1*** | NA | 1 | 0.124 | NA | 1 | 2 | 121 | 45 | NA | 0.010 | 0.001 | NA | 0.013 | 0.017 | 1 | 0.454 | NA | 4 | 0.387 | NA | 4 | 1 | 315 | 177 |
| ***Exposure Area 3*** | NA | 1 | 0.085 | NA | 2 | 2 | 48 | 31 | NA | 0.062 | 0.006 | NA | 0.130 | 0.142 | 1 | 1 | NA | 1 | 0.037 | NA | 1 | 1 | 22 | 16 |