UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III

STATEMENT OF BASIS

STEEL DYNAMICS
ROANOKE BAR DIVISION FACILITY
102 WESTSIDE BOULVARD

ROANOKE, VIRGINIA

EPA ID NO. VAD003122553

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List of Acronyms

AOC	Areas of Concern
AR	Administrative Record
AST	Above Ground Storage Tank
CMS	Corrective Measures Study
COIs	Contaminants of Interest
COCs	Contaminants of Concern
COPECs	Contaminants of Potential Ecological Concern
DEQ	Virginia Department of Environmental Quality
IP	Electronic Interface Probe
EPA	Environmental Protection Agency
FDRTC	Final Decision Response to Comments
HI	Hazard Index
HSWA	Hazardous and Solid Waste Amendments
HHRA	Human Health Risk Assessment
ICs	Institutional Controls
MCLs	Maximum Contaminant Levels
NWS	National Weather Service
PCBs	Polychlorinated biphenyls
RCRA	Resource Conservation and Recovery Act
RSL	Regional Screening Level
SB	Statement of Basis
SDI	Steel Dynamics, Inc.
SVOCs	Semi-Volatile Organic Compounds
UECA	Uniform Environmental Covenants Act
VOCs	Volatile Organic Compounds

Section 1: Introduction

The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy for the Steel Dynamics, Inc. (SDI), Roanoke Bar Division facility (hereinafter referred to as the Facility). The approximate 63 acre Facility is located at 102 Westside Boulevard in Roanoke, Virginia. Prior to 2006, the Facility was called Roanoke Electric Steel Corporation, but was bought by SDI in 2006.

The Facility is subject to the Corrective Action program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. §§ 6901 et seq. The Corrective Action program is designed to ensure that certain facilities subject to RCRA have investigated and addressed any releases of hazardous waste and hazardous constituents that have occurred at or from their property. In addition, information on the Corrective Action program as well as a fact sheet for the Facility can be found at http://www.epa.gov/reg3wcmd/correctiveaction.htm.

This SB explains EPA's proposed remedy to require the Facility to develop and maintain property restrictions to be implemented through Institutional Controls (ICs), maintain the existing security fence around Facility property, and to develop, and implement, a Materials Management Plan.

The proposed ICs are detailed in Section 5 below. The proposed use restrictions will assure that there will be no human exposure to Facility-related contaminants and no interference with EPA's final remedy.

As described more fully in Section 8 below, EPA is providing a 30-day public comment period on this SB. EPA may modify its proposed remedy based on comments received during this period. EPA will announce its selection of a final remedy for the Facility in a document entitled Final Decision and Response to Comments (Final Decision or FDRTC) after the public comment period has ended.

Before EPA makes a final decision on its proposed remedy for the Facility, the public may participate in the remedy selection process by reviewing this SB and documents contained in the Administrative Record (AR) for the Facility. The AR contains the complete set of reports that document Facility conditions, including a map of the Facility, in support of EPA's proposed remedy. EPA encourages anyone interested in this matter to review the AR. The AR is available at the EPA Region III office, the address of which is provided in Section 8, below.

EPA will address all significant comments received during the public comment period. If EPA determines that new information or public comments warrant a significant modification to the proposed remedy, EPA will modify the proposed remedy or select other alternatives based on such new information and/or public comments and will solicit public comment on its modified proposed remedy. If the final remedy is substantially unchanged from the one proposed, EPA will issue a Final Decision and inform all persons who submitted written comments or requested notice of EPA's final determination.

Section 2: Facility Background

The Facility is located at 102 Westside Boulevard within the corporate limits of the City of Roanoke, Virginia. Steel Dynamics, Inc., Roanoke Bar Division (formerly Roanoke Electric Steel Corporation) operates an electric arc furnace steel mill facility on parcel of property about 63 acres in size. Roanoke Electric Steel Corporation began operating the steel mill on this property in 1955. Prior to 1955 the site was used as farmland. Surrounding land uses include residential properties to the north and Norfolk Southern Railroad line and rail yard to the west, south and east. See Figure 1.

In 1955, Roanoke Electric Steel Corporation was founded to provide steel products to manufacturers and distributors in the metal industry. In 2006, SDI acquired the Facility, which produces steel billets and high quality finished steel products, such as angles, channels, rounds, and flat bars. All finished steel products are made from a feedstock of scrap metal and alloys.

The Facility and surrounding properties are served by public utilities, including municipally supplied water provided by the Roanoke City Water Department. The source of potable water for the Facility and its vicinity is Crystal Spring, which serves the southwest area. Crystal Spring is located at the base of Mill Mountain, approximately four miles southeast from the Facility and across the Roanoke River.

The City of Roanoke has a local ordinance which prohibits the installation of private or community supply wells when municipally-supplied water is available, as is the case in the area of the Facility. SDI operates one non-potable well at the Facility, which is not required to be permitted by the Virginia Department of Health or other regulatory agencies. The well, which is completed in competent bedrock at a depth of 160 feet (well below the water table aquifer), yields up to 600 gallons per minute of flow. The well is used solely for process cooling purposes and all discharge is routed through the SDI permitted wastewater treatment facility.

In 1999, EPA issued an Administrative Order on Consent ("Consent Order") under Section 3008(h) of RCRA, 42 U.S.C. §6928 to Roanoke Electric Steel Corporation which requires that the Facility perform a Resource Conservation and Recovery Facility Investigation (RFI), a Corrective Measurement Study (CMS), and any interim measures at the Facility necessary to protect human health and the environment. All work requirements under the Consent Order have been met.

Section 3: Summary of Environmental Investigations

3.1 Environmental Investigations

For all environmental investigations under the RFI, groundwater concentrations were screened against Federal Maximum Contaminant Levels (MCLs) promulgated pursuant to Section 42 U.S.C. §§ 300f et seq. of the Safe Drinking Water Act and codified at 40 C.F.R. Part 141, or EPA Region III Screening Levels dated October 2007 for tap water for chemicals for which there are no applicable MCLs. Soil concentrations were screened against EPA Region III Screening Levels dated October 2007 for residential soil and industrial soil. The RFI Report used EPA

Region III Risk-Based Screening criteria dated October 2007, because the soil data was sampled and screened before 2008. In 2008, EPA switched to the Regional Screening Level (RSL) Table for use in screening constituents. For this SB, EPA uses the updated RSL. For the purpose of screening, the list of Constituents of Interest (COIs) would not have changed with the RSL, as compared to using Risk-Based Screening criteria.

3.2 Soil Sampling

Under the RFI, five areas of the Facility were targeted for surface soil sampling: (1) a portion of the northwest Facility property boundary in an electric utility power easement (Power Line Right-of-Way); (2) an undeveloped residential tract located on Cherry Hill Circle owned by SDI (which abuts the residential properties located to the northwest of the Facility); (3) the Baghouse Area; (4) the power substation located at the north end of the property; and (5) the closed Aboveground Storage Tank (AST) perimeter.

In the spring of 2001, a total of 25 surface soil samples were collected within the Baghouse Area, which was divided into 5 plots, with sampling locations distributed in a diagonal 2-3-2-3 pattern. An additional 4 samples were collected from a depth of two feet below the depth of surface samples in the Baghouse Area. Samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and metals (otherwise referred to as inorganic compounds). In June 2001, a total of 20 samples (surface and subsurface) were collected within the Power Line Right-of-Way (15 samples) and the Cherry Hill Circle parcel (5 samples). Soil samples from the Power Line Right-of-Way were analyzed for PCBs and metals. Soil samples taken from Cherry Hill Circle parcel were analyzed for Metals. Six soil samples from the former 500,000-gallon AST area, spaced approximately 28.5 feet apart and at a distance of four feet from the perimeter of the tank system, were analyzed for total petroleum hydrocarbons (TPH). Three soil samples collected from the SDI owned portion of the power substation area and were analyzed for PCBs. Sampling locations were selected based on topographically low areas, electrical equipment locations, and recommendations.

Results of the soil analysis can be seen in Tables 1 thru 3. For the Baghouse Area, soil contaminant concentrations above the RSLs for residential soil included: aluminum, antimony, cadmium, copper, iron, lead, manganese, thallium, and vanadium. Arsenic was the only metal that exceeded its RSL for industrial soils at a maximum detection of 23.60 mg/kg (RSL for industrial soils of 3.0 mg/kg). The Power Line Right-of-Way also contained an arsenic concentration of at 8.8 mg/kg above the RSL for industrial soil. While these numbers are higher than the industrial RSL of 3.0 mg/kg for arsenic, they still fall within background soil ranges for arsenic, which typically range from 1 to 40 mg/kg. Arsenic is not used in the making of steel, therefore concentrations in soil would be from natural occurring conditions. Manganese concentrations exceeded the RSL for residential soil, but did not exceed the industrial level and were further investigated (Section 3.3). The Cherry Hill Circle parcel had one soil sample (SS-42) for manganese (1870 mg/kg) that exceeded the residential RSL of 1,800 mg/kg.

3.3 Air Emissions Fallout Model

Manganese concentrations in soil became a subject of investigation after that constituent showed up in Baghouse Area, the Power Line Right-of- Way and the Cherry Hill Circle parcel. Past emissions from the Facility mill stacks could have contributed to higher manganese

concentrations in soil. This model assessed the potential total manganese air emission concentrations associated with mill emissions and the likelihood that previous soil sampling locations are representative of potential highest concentrations. The model predicted consistent dispersion based on meteorological data from the National Weather Service (NWS) for each year. The highest theoretical concentrations of manganese deposits are located to the immediate southeast of the stacks, which would be toward the Norfolk Southern rail yard. Also, the model confirms that previous sampling locations at Cherry Hill parcel and the Baghouse Area are ideal locations for assessing maximum manganese concentrations from air emissions to the northwest and southeast, respectively.

3.4 Sediment Sampling

Previous sampling events conducted in Peters Creek by Roanoke Electric (1992) and under the RCRA Facility Assessment (1989) were supplemented by additional assessment performed during the RFI. Sediment samples were collected from Peters Creek, which transects the Facility. Sediment samples were collected immediately upstream, downstream, and at the point of discharge of each of three outfalls. All samples were preserved and submitted for analysis of metals, pH, PCBs, VOCs, and SVOCs. Analytical results showed exceedances of the EPA's sediment quality guidelines. Contaminants identified as sediment Contaminants of Potential Ecological Concern (COPECs) were refined on the basis of frequency of occurrence, contaminant distribution, and toxicity data from literature sources. The following constituents are considered COPECs for sediment following the refinement process:

SVOCs - 4-Methylphenol, benzoic acid, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, and total PAHS;

PCBs - total PCBs; and

Metals - arsenic, barium, cadmium, chromium, iron, lead, and nickel.

It is important to note that the potential ecological impacts associated with COPECs for sediment appears to be limited to areas associated primarily with Outfall 003, especially sample location SS-9, and, to a lesser extent, Outfall 002. The COPECs are carried further in the Ecological Risk Assessment. See Section 3.9 for Ecological Risk Assessment results.

3.5 Surface Water Sampling

Three surface water samples were collected at each outfall area from locations coincident to those described in the sediment sampling. Surface water samples were collected prior to the collection of the sediment samples. Samples were collected immediately upstream, downstream and at the point of discharge of each of three outfalls. All samples were preserved and submitted for analysis of Metals, pH, PCBs, VOCs, and SVOCs. Constituents identified as surface water COPECs were refined on the basis of frequency of occurrence, contaminant distribution, and directly measured toxicity in literature sources. The COPEC for surface water is manganese, which was carried further in the Ecological Risk Assessment. See Section 3.9 for Ecological Risk Assessment results.

3.6 Monitoring Wells Installation

Under the RFI, two additional groundwater monitoring wells were installed at the Facility in March of 2001. One well (MW-12) was installed in the vicinity of a closed former settling pond, south of where Peters Creek and Miller Street intersect at the southeastern boundary of the Facility. A monitoring well, MW-13, was also installed near the former maintenance shop which is southeast of the melt shop. Eight existing monitoring wells, numbered MW-1, MW-2, MW-3, MW-4, MW-7, MW-9, MW-10 and MW-11 were installed prior to the EPA Consent Order.

3.7 Groundwater Elevation Measurement / Sample Collection

In June 2001, all new and existing monitoring wells were gauged with an electronic interface probe (IP) which can detect the air/liquid and oil/water interfaces with an accuracy of 0.01 feet. Mapping contours of the groundwater elevations demonstrated that groundwater flows from west to east towards the Roanoke River. Selected monitoring wells MW-3, MW-7, MW-11, MW-12 and MW-13 were sampled for VOCs, SVOCs, PCBs and metals. Metals were analyze for both dissolved (filtered) and total metals.

For groundwater, manganese was the primary Constituent of Concern (COCs), exceeding the RSL of 430 ug/L for tap water for MW-11 at 3,280 ug/L and MW-12 at 1,020 ug/L. In September 2002, a second round of sampling was conducted at monitoring wells MW-3, MW-7, MW-11, MW-12 and MW-13. Manganese concentrations in MW-11 and MW-12 exceeded the RSL for tap water at 1,600 ug/L and 2,400 ug/L respectively. Additional groundwater sampling was conducted in 2004, 2008 and 2010. Several wells were found to be inadvertently destroyed in 2010, including MW-3, MW-7, MW-11 and MW-12.

In June 2011, three new off-site wells (MW-1NS, MW-2NS, and MW-3NS) were installed on the Norfolk Southern rail yard, located southeast of the Facility, to characterize the extent of the groundwater plume. In addition to those wells, two other wells were installed at the Facility property, MW-12R and MW-1A. See Figure 2 for groundwater monitoring well locations.

Waste piles of K061 hazardous waste (baghouse dust) were previously stored onsite in the early 1980s, but later removed by 1984. Currently SDI stabilizes approximately 30 tons of dust per day, five days per week, in a totally enclosed treatment system. Once stabilized, the baghouse dust is sent off to a Subtitle D landfill.

3.8 Human Health Risk Assessment and Evaluation of Exposure Pathways

Chemical compounds in soil and groundwater samples were evaluated in the 2014 EPA-approved Human Health Risk Assessment (HHRA). COCs were identified for direct contact with soil and groundwater based on a comparison of the analytical data to EPA Region III Risk-Based Screening criteria dated October 2007. The HHRA considered the following potential receptors: on-site Facility workers, current construction workers, future construction workers, and residents located in the vicinity of the Facility, including both children and adults.

• Under both current and future use, an on-site worker may be exposed to COCs via direct contact with soil (ingestion and dermal contact), and from inhalation of particulates and vapor. The HHRA demonstrates a cumulative potential cancer risk of 1×10^{-4}, which is within

the EPA acceptable risk range of 1×10^{-4} to 1×10^{-6}. The total Hazard Index (HI) for the current and future worker is 3, which exceeds the target benchmark of 1.

• Under both current and anticipated future use, a Facility resident may be exposed to chemicals of concern via direct contact with soil or from inhalation of volatiles from the subsurface into indoor air of the residence. A Facility resident was assumed to occupy a home for 30 years. Child and adult risks were evaluated separately. The total non-cancer HI (without groundwater ingestion) is equal to 1 and the potential cancer risk is 2×10^{-5}, which is within EPA acceptable risk range. While groundwater ingestion was evaluated in the risk estimates, this pathway is not complete on or near the Facility.

• Under current and anticipated future use, a construction worker may have direct contact with soil while completing construction activities involving excavation. Current construction workers were evaluated for a three-month exposure period, while future construction workers were evaluated for a twelve-month exposure period. The cumulative potential cancer risk estimate for the current construction worker was 3×10^{-6} and the total HI was 2. For the future construction worker, the cumulative potential cancer risk estimate for the current construction worker was 1×10^{-5} and the total HI was 9. Ingestion of soil was the biggest driver for the HI of both current and future construction workers. Both estimates of potential cancer risk are within the target risk range. The total HI for the current construction worker exceeds the benchmark of 1. The total HI for the future construction worker may indicate the need for protective controls (dust mask, etc.) if a long term construction project is proposed for the property in the future.

3.9 Ecological Risk Assessment and Evaluation of Exposure Pathways

The ecological Risk Assessment findings support a conclusion that no significant risk to ecological receptors exists. There are a limited number of COPECs associated with sediment and surface water at the Facility. The spatial extent of any potential impact of the chemicals is limited, primarily to Outfall 003. Additionally, risk from organic constituents present in Peters Creek sediment is driven by the presence of these constituents from upstream sources. Since ecological risks are negligible and the source of contamination is off-site, there is no need for remediation on the basis of ecological risk.

Section 4: Corrective Action Objectives

EPA's Corrective Action Objectives for the specific environmental media at the Facility are the following:

1. Soils

EPA's Corrective Action Objective for Facility soils is to attain RSLs for Industrial Soils and to control exposure to the hazardous constituents remaining in soils by requiring the compliance with and maintenance of land use restrictions.

2. Groundwater

EPA's Corrective Action Objectives for Facility groundwater are 1) to restore the groundwater to drinking water standards, otherwise known as MCLs, or to the relevant RSL for tap water for each contaminant that does not have an MCL and, 2) until such time as drinking water standards are restored, to control exposure to the hazardous constituents remaining in the groundwater by requiring the continued implementation of the groundwater monitoring program and compliance with and maintenance of groundwater use restrictions.

Section 5: Proposed Remedy

5.1 Introduction

EPA's proposed remedy is comprised of monitored natural attenuation and land and groundwater use restrictions.

1. Soils

EPA's proposed remedy for Facility soils is to prohibit residential use of the Facility and limit exposure of on-site workers to contaminants that remain in soil at the Facility. EPA's proposed remedy therefore requires compliance with and maintenance of the following land use restrictions:

1. Use of Facility property shall be restricted to commercial and/or industrial purposes and shall not include residential purposes unless it is demonstrated to EPA, in consultation with DEQ, that such use will not pose a threat to human health or the environment or adversely affect or interfere with the selected remedy and EPA, in consultation with DEQ, provides prior written approval for such use.

2. All earth moving activities, including excavation, drilling and construction activities in known contaminated areas at the Facility where any contaminants remain in soils above EPA's Screening levels for non-residential use or in groundwater above health based RSL for tap water, shall be conducted in accordance with an EPA and DEQ approved Materials Management Plan.

2. Groundwater

Historical groundwater analytical results from monitoring wells throughout the Facility and the adjoining CSX property has shown that the extent of manganese contamination in groundwater attributable to the Facility is decreasing or stable. Concentrations of total manganese are decreasing and below the RSL for tap water (430 ug/l) in CSX property wells MW-1NS, MW-2NS and MW-3NS (ranging from ND to 20.6 ug/l). In wells MW-13 and MW-1A concentrations have decreased over time. In MW-13 concentrations have decreased from a high of 3000 ug/l in 2010 to 41.2 ug/l in 2014. In MW-1A concentrations have decreased from 1920 ug/l in 2011 to 565 ug/l in 2014. Well MW-12R located downstream of the former setting pond has stable concentrations over time ranging from 980 ug/l to 759 ug/l. Groundwater results

are provided in Section 4.0 Appendix D of the Final RFI Report dated July, 2014 and Groundwater Monitoring Well Sampling dated May 7, 2014.

The most contaminated groundwater is less than ten times levels appropriate for use as drinking water. Therefore, the proposed remedy for groundwater consists of natural attenuation with continued monitoring until the manganese health based RSL for tap water is met, and compliance with and maintenance of groundwater use restrictions, to be implemented through institutional controls, at the Facility to prevent exposure to manganese while levels remain above the health based RSL for tap water. EPA's proposed remedy includes the following groundwater use restrictions:

1. Groundwater at the Facility shall not be used for any purpose other than the operation, maintenance, and monitoring activities required by DEQ and/or EPA, unless it is demonstrated to EPA in consultation with DEQ, that such use will not pose a threat to human health or the environment or adversely affect or interfere with the final remedy and EPA provides prior written-approval for such use;

2. No new wells shall be installed on Facility property unless it is demonstrated to EPA, in consultation with DEQ, that such wells are necessary to implement the final remedy and EPA provides prior written approval to install such wells; and

3. Owner shall comply with the EPA-approved groundwater monitoring program.

The property will not be used in a way that will adversely affect or interfere with the integrity and protectiveness of the final remedy selected by EPA in the Final Decision and Response to Comments (FDRTC);

EPA, VADEQ, and/or their authorized agents and representatives, shall have access to the Facility property to inspect and evaluate the continues effectiveness of the final remedy and if necessary, to conduct additional remediation to ensure the protection of the public health and safety and the environment based upon the final remedy selected in the FDRTC.

EPA proposes to implement the land and groundwater use restrictions through an institutional control (IC) such as an enforceable order, permit and/or an Environmental Covenant pursuant to the Virginia Uniform Environmental Covenants Act (UECA), Title 10.1, Chapter 12.2, §§10.1-1238 – 10.1-1250 of the Code of Virginia. If an Environmental Covenant is selected, it will be recorder in the chain of the title for the Facility property and, once recorded, will be enforceable against future land owners.

In addition, the Commonwealth of Virginia State Board of Health Private Well Regulations, 12 VAC 5-630-10 et seq. (Regulations) and its implementing statue set forth at the Code of Virginia, Title 32.1 (Health), Chapter 6 (Environmental Health Services), Va. Code §32.1, is an institutional control mechanism that will reduce potential human exposure to contaminated groundwater attributable to the Facility. Pursuant to Section 12 VAC 5-630-30, the purpose of these Regulations is to "ensure that all private wells are located, constructed and

maintained in a manner which does not adversely affect groundwater resources, or the public welfare, safety and health.

Accordingly, Sections 12 VAC 5-630-230 through VAC 5-630-270 of the Regulations prescribe the process by which construction permits for the installation of private well are received and issued. Pursuant to the Regulations, if a private well is installed or modified without a permit, Section VAC 5-630-150 sets forth an enforcement mechanism which provides for the notification of violations of the Regulations, the issuance of orders requiring cessation and correction of violation, appropriate remedial action to ensure that the violation does not recur, and any appropriate corrective action to ensure compliance with the Regulations.

3. Additional Requirements

1. On an annual basis and whenever requested by DEQ and EPA, the then current owner shall submit to DEQ and EPA a written certification stating whether or not the groundwater and land use restrictions are in place and being complied with.

2. Within one month after any of the following events, the then current owner of the Facility shall submit, to DEQ and EPA written documentation describing the following: observed noncompliance with the groundwater use restrictions; transfer of the Facility; changes in use of the Facility.

3. The Facility shall not be used in a way that will adversely affect or interfere with the integrity and protectiveness of the final remedy.

4. In addition, the Facility shall provide DEQ and EPA with a coordinate survey as well as a metes and bounds survey, of the Facility boundary. Mapping the extent of the land use restrictions will allow for presentation in a publicly accessible mapping program such as Google Earth or Google Maps.

Development and Implementation of a Materials Management Plan

EPA's proposed remedy requires the development and implementation of a Materials Management Plan to be submitted for review and approval by EPA before any earth moving activities, including construction and drilling, can be conducted on areas known to contain contaminants. The Materials Management Plan will detail how soil and groundwater will be managed during any future subsurface activities conducted at the Facility. The Materials Management Plan will detail how all excavated soils will be handled and disposed. Emphasis shall be placed on preventing exposure to contaminated soil during construction activities associated with airborne dust. All soils that are to be disposed of shall be sampled and disposed of in accordance with applicable State and Federal regulations. The Materials Management Plan will require analysis of the full suite of VOCs, SVOCs, PCBs, and metals.

Soil remediation cleanup standards will be EPA's RSL for industrial soil. In addition, the Materials Management Plan will include soil stabilization requirements to minimize contact between storm water runoff and Facility soils. Soil stabilization measures may include the

construction of berms to prevent storm water from flowing onto certain areas as well as the construction of sumps with pumps to remove ponded water from low lying areas.

Section 6: Evaluation of Proposed Remedy

This section provides a description of the criteria EPA used to evaluate the proposed remedy consistent with EPA guidance. The criteria are applied in two phases. In the first phase, EPA evaluates three decision threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria.

Threshold Criteria	Evaluation
1) Protect human health and the environment	EPA's proposed remedy protects human health and the environment by eliminating, reducing, or controlling potential unacceptable risk through the implementation and maintenance of ICs. For Facility soils, EPA is proposing ICs to restrict land use to commercial or industrial purposes at the Facility and to require compliance with a Materials management Plan. With respect to groundwater, while low levels of manganese remain in the groundwater beneath the Facility, the contaminant are contained in the aquifer and decreasing through attenuation or are stable, depending on location, at the Facility as shown by groundwater monitoring. In addition, groundwater monitoring will continue until groundwater clean-up standards are met. With respect to future uses, the proposed remedy requires groundwater use restrictions to minimize the potential for human exposure to contamination and protect the integrity of the remedy. In addition, the existing City of Roanoke ordinance on groundwater use for potable use when municipal water is available restricts the installation of wells in contaminated water sources.
2) Achieve media cleanup objectives	EPA's proposed remedy meets the media cleanup objectives based on assumptions regarding current and reasonably anticipated land and water use(s). The remedy proposed in this SB is based on the current and future anticipated land use at the Facility as commercial or industrial. As such, industrial media cleanup objectives were selected and the Facility soils contain contaminant concentrations that are below EPA's industrial soil RSLs. The HHRA for the Facility concluded that there would be no risk associated with the soil as long as protective controls are in place for workers during long-term construction projects and the Facility remains industrial.

	The groundwater plume appears to be stable (not migrating); although manganese concentrations are above the RSL tap water value, they are either stable or declining over time. In addition, groundwater monitoring will continue until groundwater clean-up standards are met. The Facility meets EPA risk guidelines for human health and the environment. EPA's proposed remedy requires the implementation and maintenance of institutional controls to ensure that groundwater beneath Facility property is not used for any purpose except to conduct the operation, maintenance, and monitoring activities required by DEQ and EPA
3) Remediating the Source of Releases	In all proposed remedies, EPA seeks to eliminate or reduce further releases of hazardous wastes and hazardous constituents that may pose a threat to human health and the environment. Controlling the sources of contamination relates to the ability of the proposed remedy to eliminate or reduce, to the maximum extent practicable, further releases. Roanoke Electric modified its manufacturing process in early 1980s to collect and treat air emissions containing manganese, which significantly reduce further releases to on-site soils as well as the source of the groundwater contamination, with respect to prior releases. Natural attenuation processes are preventing the migration of COCs in concentrations that would pose an unacceptable risk.
Balancing Criteria	Evaluation
4) Long-term effectiveness	The long term effectiveness of the proposed remedy for the Facility will be maintained by the continuation of the groundwater monitoring program and implementation of land and groundwater use restrictions through institutional controls until the RSL for manganese is achieved though natural attenuation.
5) Reduction of toxicity, mobility, or volume of the Hazardous Constituents	The reduction of toxicity, mobility and volume of hazardous constituents will continue by attenuation at the Facility. Reduction has already been achieved, as demonstrated by the data from the *Final RFI Report* and groundwater monitoring. In addition, the groundwater monitoring program already in place will continue.

6) Short-term effectiveness	EPA's proposed remedy does not involve any activities, such as construction or excavation, which would pose short-term risks to workers, residents, and the environment. EPA anticipates that the land and groundwater use restrictions will be fully implemented shortly after the issuance of the Final Decision and Response to Comments. The groundwater monitoring program is already in place and will continue.
7) Implementability	EPA's proposed decision is readily implementable. The groundwater monitoring is already in place and operational. EPA does not anticipate any regulatory constraints in implementing its proposed remedy. EPA proposes to implement the institutional controls through an enforceable mechanism such as an Environmental Covenant.
8) Cost	EPA's proposed decision is cost effective. The costs associated with this proposed remedy and the continuation of groundwater monitoring have already been incurred and the remaining costs are minimal. The costs to record an environmental covenant in the chain of title to the Facility property are minimal. The costs associated with issuing an order are also minimal.
9) Community Acceptance	EPA will evaluate community acceptance of the proposed remedy during the public comment period, and it will be described in the Final Decision and Response to Comments.
10) State/Support Agency Acceptance	DEQ has reviewed and concurred with the proposed remedy for the Facility.

Section 7: Financial Assurance

EPA has evaluated whether financial assurance for corrective action is necessary to implement EPA's proposed remedy at the Facility. Given that EPA's proposed remedy does not require any further engineering actions to remediate soil or groundwater contamination at this time and given that the costs of implementing institutional controls at the Facility will be approximately $30,000, and are, therefore, de minimis, EPA is proposing that no financial assurance be required.

Section 8: Public Participation

Interested persons are invited to comment on EPA's proposed remedy. The public comment period will last 30 calendar days from the date that notice is published in a local newspaper. Comments may be submitted by mail, fax, e-mail, or phone to Mr. John Hopkins at the address listed below.

A public meeting will be held upon request. Requests for a public meeting should be made to Mr. John Hopkins at the address listed below. A meeting will not be scheduled unless one is requested.

The Administrative Record contains all the information considered by EPA for the proposed remedy at this Facility. The Administrative Record is available at the following location:

U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103
Contact: Mr. John Hopkins (3LC20)
Phone: (215) 814-3437
Fax: (215) 814-3113
Email: hopkins.john@epa.gov

Date: 6.18.15

John A. Armstead, Director
Land and Chemicals Division
US EPA, Region III

Section 9: Index to Administrative Record

Administrative Order on Consent for Roanoke Electric Steel Corporation, dated September 29, 1999

RCRA Facility Investigation Report for Steel Dynamics Facility, dated July 2014.

Corrective Measures Study for Steel Dynamics, dated November 2014.

Groundwater Monitoring Well Sampling Results, contained in an APEX letter dated May 7, 2014

Groundwater Monitoring Well Sampling Results, contained in an APEX letter dated July 6, 2010

Attachments:

Figure 1: Map of Facility
Figure 2: Groundwater Monitoring Well Locations
Table 1: Summary of Soil Analytical Results: Baghouse Area
Table 2: Summary of Soil Analytical Results: Power Right of Way
Table 3: Summary of Soil Analytical Results: Cherry Hill
Table 4: Summary of Groundwater Analytical Results for Manganese

Property Boundary
Roanoke City GIS

REV	BY	DATE	
			DR. RSW
			CK.:
			APP'D.:
			SCALE: NA
			APEX PROJ. NO.: 726001.010
			www.apexcos.com

SDI Site Plan

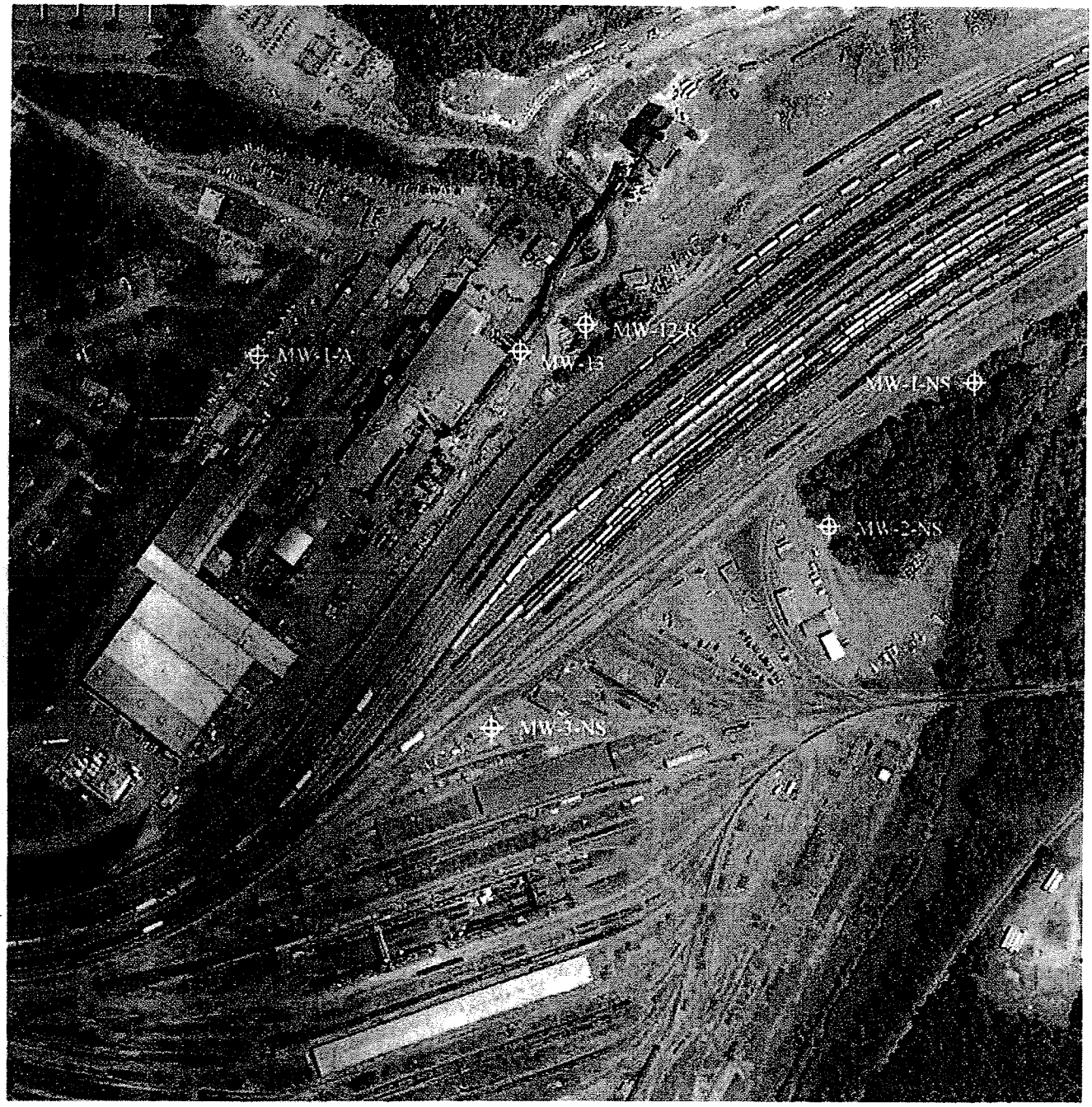
APEX
7744 Garland Circle
Roanoke, Virginia 24019
(540) 563-4920

DRAWING TITLE
SDI Aerial
Steel Dynamics, Inc.
Roanoke, Virginia

DRAWING NUMBER: FIGURE No. 1

REV: 0

Groundwater Monitoring Well Locations
Steel Dynamics (Formerly Roanoke Electric Steel)
102 Westside Boulevard, N.W.
Roanoke, Virginia 24017



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(Roanoke, Virginia)

Steel Dynamics
(Formerly Roanoke Electric Steel)
102 Westside Boulevard, N.W.
Roanoke, Virginia 24017

Project: Monitoring Well Installation and Sampling

Client: Steel Dynamics

Apex Job #: 726001.010

Date: 06/22/2011

TABLE 1
Summary of Soil Analytical Results
Baghouse
Roanoke Electric Steel Corporation
102 Westside Boulevard
Roanoke, Virginia

Compound	Number of Detects	Number of Samples (a)	Frequency of Detect	Minimum Detect (mg/kg)	Location of Minimum	Maximum Detect (mg/kg)	Location of Maximum	EPA Region III Risk-Based Criteria (b)			Notes	Chemical of Potential Concern (c)
								Residential (mg/kg)	Industrial (mg/kg)	20 DAF Soil to Groundwater (mg/kg)		
Volatile Organic Compounds (VOCs)												
Methylene Chloride	4	4	100%	0.003	BH-19, 24"	0.011	BH-6, 24"	85	380	0.019		no
Acetone	4	4	100%	0.019	BH-19, 24"	0.045	BH-14, 24"	7,000	92,000	2.2		no
Carbon Disulfide	2	4	50%	0.0008	BH-22, 24"	0.006	BH-14, 24"	780	10,000	1.9		no
Chloroform	4	4	100%	0.0006	BH-6, 24"	0.005	BH-14, 24"	78	1,000	0.0009		yes
2-Butanone	3	4	75%	0.003	BH-19, 24"	0.013	BH-14, 24"	4,700	61,000	2.9		no
Benzene	2	4	50%	0.0005	BH-19, 24"	0.002	BH-14, 24"	12	52	0.0019		yes
4-Methyl-2-Pentanone	1	4	25%	0.010	BH-14, 24"	0.010	BH-14, 24"	--	--	5.9		no
Toluene	3	4	75%	0.0009	BH-22, 24"	0.004	BH-19, 24"	630	8,200	2.7		no
Ethylbenzene	1	4	25%	0.002	BH-19, 24"	0.002	BH-19, 24"	780	10,000	1.5		no
Xylene (total)	2	4	50%	0.0005	BH-14, 24"	0.003	BH-19, 24"	1,600	20,000	0.3		no
Semi-Volatile Organic Compounds (SVOCs)												
Naphthalene	1	4	25%	0.014	BH-19, 24"	0.014	BH-19, 24"	160	2,000	0.015		no
2-Methylnaphthalene	2	4	50%	0.019	BH-19, 24"	0.022	BH-22, 24"	31	410	0.44		no
Phenanthrene	3	4	75%	0.043	BH-22, 24"	0.056	BH-14, 24"	310	4,100	630	e	no
Fluoranthene	2	4	50%	0.012	BH-22, 24"	0.034	BH-19, 24"	310	4,100	630		no
Pyrene	1	4	25%	0.050	BH-19, 24"	0.050	BH-19, 24"	230	3,100	68		no
bis(2-Ethylhexyl)phthalate	2	4	50%	0.100	BH-19, 24"	0.130	BH-22, 24"	46	200	2,900		no
Polychlorinated Biphenyls (PCBs)												
Aroclor-1242	4	4	100%	0.007	BH-6, 24"	0.800	BH-19, 24"	0.32	1.40	---		yes
Aroclor-1254	1	4	25%	0.032	BH-14, 24"	0.032	BH-14, 24"	0.32	1.40	1.10		no
Aroclor-1260	3	4	75%	0.061	BH-14, 24"	0.760	BH-19, 24"	0.32	1.40	---		yes
Inorganics												
Aluminum	25	25	100%	6,330	BH-11, 6"	27,100	BH-13, 6"	7,800	100,000	---		yes
Antimony	4	25	16%	0.81	BH-24, 6"	1.80	BH-21, 6"	3.1	41	1.3		yes
Arsenic	25	25	100%	4.40	BH-12, 6"	23.60	BH-17, 6"	0.43	1.90	0.026		yes
Barium	25	25	100%	62.90	BH-3, 6"	536	BH-23, 6"	1,600	20,000	600		no
Beryllium	6	25	24%	0.44	BH-25, 6"	0.54	BH-23, 6"	16	200	120		no
Cadmium	6	25	24%	0.46	BH-20, 6"	8.30	BH-23, 6"	7.8	100	5.5		yes
Calcium	25	25	100%	1,780	BH-18, 6"	211,000	BH-23, 6"	---	---	---		no (EN)
Chromium (total)	25	25	100%	26.60	BH-20, 6"	1,880	BH-19, 6"	23	310	4.2		yes
Cobalt	25	25	100%	2.10	BH-4, 6"	19.70	BH-11, 6"	---	---	---		yes
Copper	25	25	100%	15.50	BH-20, 6"	667	BH-11, 6"	310	4,100	1,100		yes
Iron	25	25	100%	30,800	BH-4, 6"	199,000	BH-11, 6"	5,500	72,000	---		yes
Lead	25	25	100%	14.30	BH-3, 6"	859	BH-11, 6"	400	400	---	(d)	yes
Magnesium	25	25	100%	1,430	BH-3, 6"	86,200	BH-4, 6"	---	---			no (EN)
Manganese	6	25	24%	245	BH-20, 6"	24,100	BH-23, 6"	160	2,000	950		yes

TABLE 1
Summary of Soil Analytical Results
Baghouse
Roanoke Electric Steel Corporation
102 Westside Boulevard
Roanoke, Virginia

Compound	Number of Detects	Number of Samples (a)	Frequency of Detect	Minimum Detect (mg/kg)	Location of Minimum	Maximum Detect (mg/kg)	Location of Maximum	EPA Region III Risk-Based Criteria (b)			Notes	Chemical of Potential Concern (c)
								Residential (mg/kg)	Industrial (mg/kg)	20 DAF Soil to Groundwater (mg/kg)		
Inrganics (continued)												
Mercury	25	25	100%	0.0041	BH-4, 6"	0.28	BH-11, 6"	2.30	31	---		no
Nickel	25	25	100%	11.30	BH-20, 6"	224	BH-11, 6"	160	2,000	--		yes
Potassium	25	25	100%	243	BH-19, 6"	2,250	BH-3, 6"	---	---	---		no (EN)
Silver	4	25	16%	0.26	BH-25, 6"	3.20	BH-11, 6"	39	510	3		yes
Sodium	25	25	100%	69	BH-18, 6"	1,020	BH-23, 6"	---	---	---		no (EN)
Thallium	1	25	4%	8.10	BH-24, 6"	8.10	BH-24, 6"	0.55	7.2	0.36		yes
Vanadium	25	25	100%	27.10	BH-25, 6"	219	BH-19, 6"	7.8	100	5,100		yes
Zinc	23	25	92%	50	BH-3, 6"	4,590	BH-11, 6"	2,300	31,000	1,400		yes

Notes:
mg/kg = milligrams per kilogram
--- = not available
Only detected compounds shown above.
(a) = Includes samples SS-41 to SS-45 taken 6/25/01.
(b) = EPA Region III RBC Table (October 2007). Noncancer-based RBCs adjusted by 0.1 to reflect a hazard index of 0.1.
(c) = Selected as a chemical of potential concern (COPC) if maximum detect was higher than lowest RBC.
(d) = Interim soil lead action level residential (EPA, August 1994. OSWER Directive #9355.4-12. Memorandum, OSWER Directive: Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. Office of Solid Waste and Emergency Response, Washington, D.C.).
(e) = Value for fluoranthene substituted.
Bold indicates that constituent was selected as a COPC. EN = Constituent ruled out as a COPC as it is an essential nutrient.

This table is copied from Table 1 of the July 2014 RCRA Facility Investigation Report prepared by Apex Companies, LLC.

TABLE 2
Summary of Soil Analytical Results
Power Right of Way
Roanoke Electric Steel Corporation
102 Westside Boulevard
Roanoke, Virginia

Compound	Number of Detects	Number of Samples (a)	Frequency of Detect	Minimum Detect (mg/kg)	Location of Minimum	Maximum Detect (mg/kg)	Location of Maximum	EPA Region III Risk-Based Criteria (b)			Notes	Chemical of Potential Concern (c)
								Residential (mg/kg)	Industrial (mg/kg)	20 DAF Soil to Groundwater (mg/kg)		
Polychlorinated Biphenyls (PCBs)												
Aroclor-1248	1	1	100%	0.065	SS-26, 2"	0.065	SS-26, 2"	0.32	1.40	---		no
Aroclor-1254	1	1	100%	0.022	SS-26, 2"	0.022	SS-26, 2"	0.32	1.40	1.10		no
Aroclor-1260	1	1	100%	0.012	SS-26, 2"	0.012	SS-26, 2"	0.32	1.40	---		no
Inorganics												
Aluminum	23	23	100%	11,400	SS-30, 2"	19,200	SS-38, 2"	7,800	100,000	---		**yes**
Arsenic	23	23	100%	4.7	SS-30, 12"	8.8	SS-31, 12"	0.43	1.90	0.026		**yes**
Barium	23	23	100%	102	SS-34, 2"	225	SS-33, 6"	1,600	20,000	600		no
Beryllium	23	23	100%	0.55	SS-27/40, 2"	0.8	SS-37, 2"	16	200	120		no
Cadmium	18	23	78%	0.20	SS-36, 2"	10	SS-31, 12"	7.8	100	5.5		**yes**
Calcium	23	23	100%	347	SS-30, 12"	16,500	SS-31, 12"	---	---	---		no (EN)
Chromium (total)	23	23	100%	18.1	SS-32, 6"	153	SS-31, 12"	23	310	4.2		**yes**
Cobalt	23	23	100%	8.3	SS-40, 2"	18	SS-31, 6"	---	---	---		**yes**
Copper	23	23	100%	9.1	SS-30, 12"	83	SS-31, 12"	310	4,100	1,100		no
Iron	23	23	100%	17,800	SS-32, 6"	44,200	SS-31, 12"	5,500	72,000	---		**yes**
Lead	23	23	100%	22.3	SS-30, 12"	297	SS-31, 12"	400	400	---	d	no
Magnesium	23	23	100%	660	SS-30, 12"	6,280	SS-31, 12"	---	---	---		no (EN)
Manganese	23	23	100%	1,240	SS-27, 2"	4,960	SS-31, 12"	160	2,000	950		**yes**
Mercury	23	23	100%	0.03	SS-32, 12"	0.10	SS-30, 2"	2.30	31.00	---		no
Nickel	23	23	100%	7.3	SS-30, 12"	26	SS-31, 12"	160	2,000	--		no
Potassium	23	23	100%	874	SS-30, 12"	2,180	SS-38, 2"	---	---	---		no (EN)
Selenium	2	23	9%	1.2	SS-39/40, 2"	1.20	SS-39/40, 2"	39	510	1.9		no
Silver	4	23	17%	0.27	SS-35, 2"	0.68	SS-31, 12"	39	510	3.1		no
Sodium	23	23	100%	17	SS-32, 12"	407	SS-40, 2"	---	---	---		no (EN)
Vanadium	23	23	100%	28.9	SS-32, 6"	53	SS-31, 12"	7.8	100	5,100		yes
Zinc	23	23	100%	43.9	SS-30, 12"	1,470	SS-31, 12"	2,300	31,000	1,400		yes

Notes:
mg/kg = milligrams per kilogram
--- = not detected or not applicable
(a) = Includes samples SS-26 for PCBs and SS-26 through SS-40 for inorganics.
(b) = EPA Region III RBC Table (October 2007) unless otherwise noted. Noncancer-based RBCs adjusted by 0.1 to reflect a hazard index of 0.1.
(c) = Selected as a chemical of potential concern (COPC) if maximum detect was higher than lowest RBC.
(d) = Interim soil lead action level residential (EPA, August 1994. OSWER Directive #9355.4-12. Memorandum, OSWER Directive: Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. Office of Solid Waste and Emergency Response, Washington, D.C.).

Bold indicates that constituent was selected as a COPC. EN = Constituent ruled out as a COPC as it is an essential nutrient.

This table is copied from Table 4 of the July 2014 RCRA Facility Investigation Report prepared by Apex Companies, LLC.

TABLE 3
Summary of Soil Analytical Results
Cherry Hill
Roanoke Electric Steel Corporation
102 Westside Boulevard
Roanoke, Virginia

Compound	Number of Detects	Number of Samples (a)	Frequency of Detect	Minimum Detect (mg/kg)	Location of Minimum	Maximum Detect (mg/kg)	Location of Maximum	EPA Region III Risk-Based Criteria (b)			Notes	Chemical of Potential Concern (c)
								Residential (mg/kg)	Industrial (mg/kg)	20 DAF Soil to Groundwater (mg/kg)		
Inorganics												
Aluminum	6	6	100%	10,900	SS-41, 2"	18,500	SS-43, 6"	7,800	100,000	---		**yes**
Arsenic	6	6	100%	6	SS-41, 2"	8.5	SS-43, 6"	0.43	1.90	0.026		**yes**
Barium	6	6	100%	127	SS-41, 2"	174	SS-45, 2"	1,600	20,000	600		no
Beryllium	6	6	100%	0.37	SS-42, 2"	0.63	SS-45, 2"	16	200	120		no
Cadmium	6	6	100%	1.3	SS-43, 2"	2.8	SS-45, 2"	7.8	100	5.5		no
Calcium	6	6	100%	2,700	SS-43, 2"	6,090	SS-45, 2"	---	---	---		no (EN)
Chromium (total)	6	6	100%	25.8	SS-43, 2"	62	SS-45, 2"	23	310	4.2		**yes**
Cobalt	6	6	100%	7.4	SS-41, 2"	15	SS-43, 6"	---	---	---		**yes**
Copper	6	6	100%	26	SS-43, 2"	49.4	SS-45, 2"	310	4,100	1,100		no
Iron	6	6	100%	23,300	SS-41, 2"	32,300	SS-45, 2"	5,500	72,000	---		**yes**
Lead	6	6	100%	75.1	SS-43, 2"	161	SS-45, 2"	400	400	---	d	no
Magnesium	6	6	100%	944	SS-43, 2"	1,420	SS-45, 2"	---	---	---		no (EN)
Manganese	6	6	100%	1,010	SS-41, 2"	1,870	SS-43, 6"	160	2,000	950		**yes**
Mercury	5	6	83%	0.09	SS-43, 2"	0.29	SS-45, 2"	2.30	31.00	---		no
Nickel	6	6	100%	12.2	SS-43, 2"	18.2	SS-45, 2"	160	2,000	--		no
Potassium	6	6	100%	1,540	SS-41, 2"	2,300	SS-43, 6"	---	---	---		no (EN)
Selenium	5	6	83%	1.2	SS-44, 2"	1.70	SS-43, 6"	39	510	1.9		no
Silver	3	6	50%	0.21	SS-42, 2"	0.32	SS-45, 2"	39	510	3.1		no
Sodium	6	6	100%	31	SS-41, 2"	477	SS-44, 2"	---	---	---		no (EN)
Thallium	3	6	50%	2.5	SS-43, 6"	2.8	SS-45, 2"	0.55	7.2	0.36		**yes**
Vanadium	6	6	100%	29.3	SS-41, 2"	47.9	SS-43, 6"	7.8	100	5,100		**yes**
Zinc	6	6	100%	187	SS-43, 6"	489	SS-45, 2"	2,300	31,000	1,400		no

Notes:

mg/kg = milligrams per kilogram

--- = not detected or not applicable

(a) = Includes samples SS-41 to SS-45 taken 6/25/01.

(b) = EPA Region III RBC Table (October 2007) unless otherwise noted. Noncancer-based RBCs adjusted by 0.1 to reflect a hazard index of 0.1.

(c) = Selected as a chemical of potential concern (COPC) if maximum detect was higher than lowest RBC.

(d) = Interim soil lead action level residential (EPA, August 1994. OSWER Directive #9355.4-12. Memorandum, OSWER Directive: Revised Interim Soil Lead Guidance CERCLA Sites and RCRA Corrective Action Facilities. Office of Solid Waste and Emergency Response, Washingt

Bold indicates that constituent was selected as a COPC. EN = Constituent ruled out as a COPC as it is an essential nutrient.

This table is copied from Table 5 of the July 2014 RCRA Facility Investigation Report prepared by Apex Companies, LLC.