



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III

STATEMENT OF BASIS

FERRO CORPORATION
251 WEST WYLIE AVENUE

WASHINGTON, PENNSYLVANIA

EPA ID NO. PAD041731670

Prepared by
Office of Remediation
Land and Chemicals Division
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List of Acronyms

AOC	Area of Concern
AR	Administrative Record
AST	Above-ground Storage Tank
EPA	Environmental Protection Agency
MCL	Maximum Contaminant Level
PADEP	Pennsylvania Department of Environmental Protection
RCRA	Resource Conservation and Recovery Act
RSL	Regional Screening Level
SB	Statement of Basis
TCLP	Toxicity Characteristic Leachate Procedure
UST	Underground Storage Tank
VOC	Volatile Organic Compound

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 Ferro Corporation facility located in Washington, Pennsylvania (hereinafter referred to as the Facility or Site). EPA's proposed remedy for the Facility consists of the following components: 1) characterization and disposal of contaminated soil during any intrusive operations at the Facility in accordance with an EPA-approved soil management plan, 2) inspection and maintenance of the integrity of the cover over the former settling ponds, and 3) implementation and compliance with land use restrictions. This SB highlights key information relied upon by EPA in proposing its remedy for the Facility.

The Facility is subject to EPA's Corrective Action program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 *et seq.* (Corrective Action Program). The Corrective Action Program is designed to ensure that certain facilities subject to RCRA have been investigated and any releases of hazardous waste and hazardous constituents, usually in the form of soil or groundwater contamination, that have occurred at or from the property have been addressed. The Commonwealth of Pennsylvania (Commonwealth) is not authorized for the Corrective Action Program under Section 3006 of RCRA. Therefore, EPA retains primary authority in the Commonwealth for the Corrective Action Program.

EPA is providing a thirty (30) day public comment period on this SB. EPA may modify its proposed remedy based on comments received during this period. EPA will announce the selection of its final remedy for the Facility in a Final Decision and Response to Comments (Final Decision) after the public comment period has ended.

Information on the Corrective Action program as well as a fact sheet for the Facility can be found on the internet at <http://www.epa.gov/reg3wcmd/correctiveaction.htm>. The Administrative Record (AR) for the Facility contains all documents, including data and quality assurance information, on which EPA's proposed remedy is based. See *Section 8, Public Participation*, below, for information on how you may review the AR.

Section 2: Facility Background

The Facility is located at 251 West Wylie Avenue, Washington, Pennsylvania 15301. It occupies an approximate 12-acre triangular lot that is bounded by residential development to the north and west and industrial development to the south and east. Most of the Facility is covered by buildings and asphalt or gravel parking and loading areas and the Facility is fully fenced and patrolled by security personnel to deter trespassing. A location map and Facility layout are attached as Figures 1 and 2, respectively.

B. F. Drakenfeld and Company purchased the Facility in 1946 and operated the Facility as a production site for glass enamels, glass oxides, and clayware colors, which has remained the primary focus of the business ever since. In 1966, Hercules, Inc. purchased Drakenfeld Company and in 1979, Ciba-Geigy Corporation bought Hercules, Inc. In 1999, the Facility was purchased by Degussa Metals Catalysts Cerdec Corporation (DMC2), and in 2001 Ferro Corporation (Ferro) purchased DMC2. Ferro is the current owner of the Facility.

Ciba-Geigy submitted a RCRA Hazardous Waste Part A permit application for the Facility in November 1980 to EPA for the treatment and storage of cadmium- and lead-containing waste streams and ignitable waste. In 1983 Ciba Geigy requested that the status of the Facility be changed from a treatment and storage facility to a generator since waste treatment at the Facility consisted of a captive wastewater treatment unit that operated under state permit-by-rule requirements and wastes were not stored at the Facility for more than 90 days. Subsequent notifications reflected this change to generator only status, in addition to including more detailed lists of hazardous waste streams generated that exceed the RCRA Toxicity Characteristic Leaching Procedural (“TCLP”) regulatory limit for heavy metals and ignitable characteristics.

Section 3: Summary of Environmental Investigations

Groundwater and soil investigations have been performed at the Facility. For all environmental investigations conducted at the Facility, groundwater concentrations were screened against federal Maximum Contaminant Levels (MCLs) promulgated pursuant to 42 U.S.C. §§ 300f et seq. of the Safe Drinking Water Act and codified at 40 CFR Part 141, or if there was no MCL, EPA Region III Screening Levels (RSL) for tap water for chemicals. Soil concentrations were tested using TCLP and were screened against EPA RSLs for residential soil and industrial soil.

Three interconnected settling ponds located near the southwestern corner of the Facility operated from the beginning of Facility operations until around 1967, when a wastewater treatment system was constructed and began operation. The settling ponds ranged in size from approximately 400 square feet to 2700 square feet in area and no more than 8 feet in depth. The ponds were used to treat process and wash-down waters by sedimentation before discharge to Chartiers Creek via a NPDES-permitted outfall. In 1972, Ferro received permission from the local water authority to discharge the effluent from the wastewater treatment system to the sanitary sewer system. The settling ponds were no longer needed as part of the wastewater treatment system and their use was discontinued. The former settling ponds were covered with demolition debris and earthen materials in approximately 1974.

Soils

Ferro conducted soil investigations as part of building expansion projects under PADEP-approved soil sampling and management plans, the most recent of which was outlined in a July 1997 letter from Ferro to PADEP (hereinafter referred to as the 1997 Soil Sampling and Soil Management Plan). The first building expansion project occurred in spring 1983, on the western edge of the Facility (Buildings T, V, and W). Results from one soil sample composited from six locations in the building expansion area exhibited leachable concentrations of lead and cadmium in excess of their respective TCLP regulatory limits of 5 parts per million (PPM) and 1 ppm. This soil material was considered “spoil” as a significant portion of it was composed of coal slag that was used as a parking lot surface and had been occasionally oiled. As a result, approximately 3900 cubic yards of contaminated material was excavated and disposed off-site as a hazardous waste.

In 1991, Ferro planned an office building expansion (Building L). Four soil borings were drilled and sampled for TCLP non-volatiles at five depth intervals from surface to up to 20 feet below ground surface. Two sample locations exceeded either lead or lead and cadmium TCLP limits. These locations were further delineated with six additional soil borings to determine the extent of contaminated soil for disposal. After the building expansion project had been delayed due to economic conditions, approximately 800 cubic yards of contaminated soil, of which 55 cubic yards tested hazardous, was excavated and properly disposed off-site.

In 1995, Ferro planned to construct a new laboratory building southwest of the new office

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building. Composite samples were taken from several soil stockpiles resulting from the expansion project and were analyzed for lead and cadmium. None of the sample results exceeded EPA's industrial RSLs, and TCLP analyses were all below regulatory limits. Therefore, most of these soil stockpiles were used as fill for the construction project, and the remainder (314 tons) was properly disposed off-site.

In 1997 Ferro proposed another building expansion project (building X). Composite samples were taken from 15 soil stockpiles resulting from the expansion project and analyzed for lead and cadmium. Two of the composite samples exceeded the industrial RSL for lead. These samples were further analyzed via TCLP analysis and the results were below TCLP limits in all cases. A total of 814 tons of soil/debris were excavated and properly disposed off-site.

In 2003, Ferro constructed a concrete pad with an enclosure and roof adjacent to the loading dock outside Building 9. The pad and enclosure house a roll-off container for saggar disposal and serve to prevent rainwater from washing any contaminants into the gravel surrounding the pad. The pad is located above a portion of the area formerly used as the largest of the settling ponds. Soil sampling was performed, and TCLP analysis indicated that at least some of the excavated soil exceeded TCLP limits for lead and cadmium. Therefore, a total of 50 cubic yards of contaminated soil was excavated and properly disposed off-site.

Groundwater

Groundwater investigations at the Facility began in 1982 after PADEP expressed concern over the closed settling pond area and its potential to contaminate groundwater or nearby Chartiers Creek. As a result, three pairs of monitoring wells (shallow and deep) were installed around the Facility. Results from four rounds of sampling in 1982 showed lead, chromium, and cadmium contamination primarily in shallow groundwater above their respective MCLs.

Groundwater sampling of the shallow wells was continued under PADEP oversight to determine the potential for migration of hazardous metal contaminants from the closed settling pond area. Groundwater sampling was performed quarterly until 1985, when semi-annual sampling was begun in accordance with PADEP requirements. Semi-annual groundwater sampling was continued until 1990, when PADEP authorized the cessation of groundwater monitoring due to the trend in sampling results showing no significant dissolved contamination, suggesting that the remaining wastes from the former settling pond area are immobile in groundwater.

In 1991, significant heavy metals soil contamination was discovered during an office expansion project. In 1993, PADEP required a resumption of the semi-annual groundwater monitoring program. The deep wells were included in the first round of sampling in 1993, but PADEP removed them from the monitoring program after lead and cadmium were not detected. Semi-annual monitoring of shallow wells has continued up to the present time.

Throughout the history of groundwater monitoring at the Facility, elevated concentrations of total metals have been detected at each of the shallow wells (including WO-1SA, which is a

background well that is upgradient of the Facility) due to high amounts of total solids that have been unable to be eliminated through multiple well development procedures or the replacement of several wells. As a result, concentrations of total lead and cadmium have occasionally exceeded MCLs at each well. However, groundwater concentrations of dissolved lead and cadmium, which are more mobile and biologically available and are indicative of actual contaminant concentrations in the aqueous phase, have not exceeded MCLs since November 2004.

Under the Government Performance and Results Act (“GPRA”), EPA has set national goals to address RCRA corrective action facilities. Under GPRA, EPA evaluates two key environmental clean-up indicators for each facility: (1) Current Human Exposures Under Control, and (2) Migration of Contaminated Groundwater Under Control. The Facility met both of these indicators based on an Environmental Indicator Determination dated November 10, 2009.

The following table shows the most recent groundwater sampling results from the semi-annual groundwater monitoring program.

Table 1: Analytical results from groundwater sampling on 6/24/15

Constituent	MCL	WO-1SA	WO-2S	WO-3S
Cadmium, total	5	5.8	4.9	19.1
Cadmium, dissolved	5	<3	<3	<3
Lead, total	5	<5	<5	186
Lead, dissolved	15	<5	<5	<5

All results in ug/L

Section 4: Corrective Action Objectives

Soils

Some contaminants remain in Facility soils above EPA's RSLs appropriate for residential use. Therefore, the corrective action objectives for soil are to:

- 1) Prevent exposure to soil contaminated with metals above residential RSLs, and
- 2) Establish inspection and maintenance requirements that ensure the long-term integrity of the cover over the former settling ponds.

Groundwater

EPA expects final remedies to return groundwater to its maximum beneficial use within a timeframe that is reasonable given the particular circumstances of the project. For facilities associated with aquifers that are either currently used for water supply or have the potential to be used for water supply, EPA will require the groundwater be remediated to National Primary Drinking Water Standard Maximum Contaminant Levels (MCLs) promulgated pursuant to 42 U.S.C. §§ 300f et seq. of the Safe Drinking Water Act and codified at 40 C.F.R. Part 141, or to EPA Regional Screening Levels (RSLs) for tap water for chemicals for which there are no applicable MCLs.

Since there have been no MCL/RSL exceedances of dissolved contaminants in groundwater from Facility monitoring wells in at least the past 10 years of semi-annual sampling events, the Corrective Action objective of returning groundwater to maximum beneficial use has already been met.

Section 5: Proposed Remedy

A. Soils

Because contaminants remain in the soil at the Facility above levels appropriate for residential use, EPA's proposed remedy requires land use restrictions to restrict activities that may result in exposure to those contaminants. EPA proposes that the restrictions be implemented and maintained through institutional controls (ICs). ICs are non-engineered instruments, such as administrative and legal controls, that minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land or resource use.

EPA's proposed remedy for Facility soils consists of the following land use restrictions:

- a) The Facility property shall be restricted to commercial and/or industrial purposes and shall not be used for residential purposes unless it is demonstrated to EPA that such use will not pose a threat to human health or the environment or adversely affect or interfere with the selected remedy and the Facility owner receives prior written approval from EPA for such use.
- b) Except for the areas identified as the "Parking Lot" and the "Grass Area (future parking)" on Figure 2, soils from any earth-moving activities, including excavation, drilling and construction activities, that involve the disturbance of greater than 10 cubic yards of material shall be sampled and managed in accordance with the PADEP-approved 1997 Soil Sampling and Soil Management Plan.
- c) The Facility owner shall perform annual inspections of the former settling pond area and maintain the integrity of the cover with a minimum of 6 inches of fill/soil, gravel, or other suitable cover material over the areal extent of the former settling ponds to prevent exposure to remaining contamination. Records of each inspection including a written summary of any maintenance activities performed shall be maintained at the Facility for 10 years and made available to EPA or PADEP upon request.

B. Groundwater

EPA has determined that corrective action objectives for groundwater have been met. Therefore, EPA is proposing that Corrective Action is Complete without Controls for groundwater at the Facility.

C. Additional Requirements

- 1) EPA, PADEP and/or their authorized agents and representatives, shall have access to the Facility to inspect and evaluate the continued 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 upon the final remedy selection in the FDRTC.

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- 2) In addition, the Facility owner shall provide 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.

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 for the Facility protects human health and the environment by eliminating, reducing, or controlling potential unacceptable risk from exposure to contaminated soil through the implementation and maintenance of land use restrictions. Several soil cleanups occurred under PADEP-approved soil sampling and management plans at the Facility as part of building expansion projects. No significant potential for exposure to soil remains at the Facility since most of the Facility is covered by buildings and asphalt or gravel parking and loading areas, minimal operations are conducted outdoors (loading/unloading of materials and some raw material storage), and the Facility is fully fenced and patrolled by security personnel to deter trespassing. In addition, any residual contamination remaining from the former settling ponds were covered with demolition debris and earthen materials when the ponds were closed in approximately 1974. EPA's proposed remedy will minimize the potential for exposure to the remaining soil contamination through land use restrictions. In addition, the remaining soil contamination at the Facility is immobile, as suggested by groundwater sampling results.
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 resource 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. Dissolved metals concentrations meet MCLs in groundwater, and exposures to any remaining soil contamination will be adequately controlled through land use restrictions.
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. The Facility has met this objective by closing the former settling ponds, modernizing the wastewater treatment

	system, and characterizing and disposing of contaminated soil during building expansion projects. There are no remaining large, discrete sources of waste from which constituents would be released to the environment. Therefore, EPA has determined that this criterion has been met.
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Balancing Criteria	Evaluation
4) Long-term effectiveness	The long-term effectiveness of the proposed remedy for the Facility will be maintained by the compliance with appropriate soil management procedures and the implementation of land use restrictions.
5) Reduction of toxicity, mobility, or volume of the Hazardous Constituents	The lack of mobility of any remaining soil contamination has been demonstrated by the results from the long-standing groundwater monitoring program. Reduction of the volume of hazardous constituents in soil has been achieved through several soil characterization and removal efforts as part of building expansion projects.
6) Short-term effectiveness	EPA's proposed remedy does not involve any activities such as construction or excavation that would pose short-term risks to workers, residents, and/or the environment. EPA anticipates that the land use restrictions will be fully implemented shortly after the issuance of the Final Decision and Response to Comments.
7) Implementability	EPA's proposed remedy is readily implementable. EPA proposes to implement the land use restrictions through an enforceable mechanism such as an Environmental Covenant, permit, or order.
8) Cost	EPA's proposed remedy is cost effective. Most of the costs associated with this proposed remedy have already been incurred and the remaining costs to implement an enforceable mechanism for land use restrictions are 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	PADEP 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 actions to remediate soil or groundwater at this time and given that the costs of implementing institutional and engineering controls at the Facility will be minimal, 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 thirty (30) calendar days from the date that notice is published in a local newspaper. Comments may be submitted by mail, fax, or electronic mail to Mr. Griff Miller at the contact information listed below.

A public meeting may be held upon request. Requests for a public meeting should be submitted to Mr. Miller in writing at the contact information 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. Griff Miller (3LC30)
Phone: (215) 814-3407
Fax: (215) 814 - 3113
Email: miller.griff@epa.gov

Attachments:

Figure 1: Location Map

Figure 2: Property Diagram

Date: 3.30.16

/John A. Armstead/

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

Section 9: Index to Administrative Record

Letter from Cerdec Corporation to PADEP regarding Shuttle Kiln project, July 29, 1997.

Ferro Corporation (formerly DMC2-Cerdec) Groundwater Monitoring Well Sampling and Analyses First Semi-Annual Event 2004, prepared by Environmental Management Associates, June 2004.

Final Environmental Indicator Inspection Report for Ferro Glass & Color Corporation, prepared by Tetra Tech FW, November 2004.

Ferro Corporation (formerly DMC2-Cerdec) Groundwater Monitoring Well Sampling and Analyses Second Semi-Annual Event 2004, prepared by Environmental Management Associates, December 2004.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, September 2005.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, December 2005.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, September 2006.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, February 2007.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, August 2007.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, January 2008.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, July 2008.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, January 2009.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, July 2009.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, January

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2011.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, September 2005.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, October 2011.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, January 2012.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, July 2012.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, January 2013.

Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, July 2013.

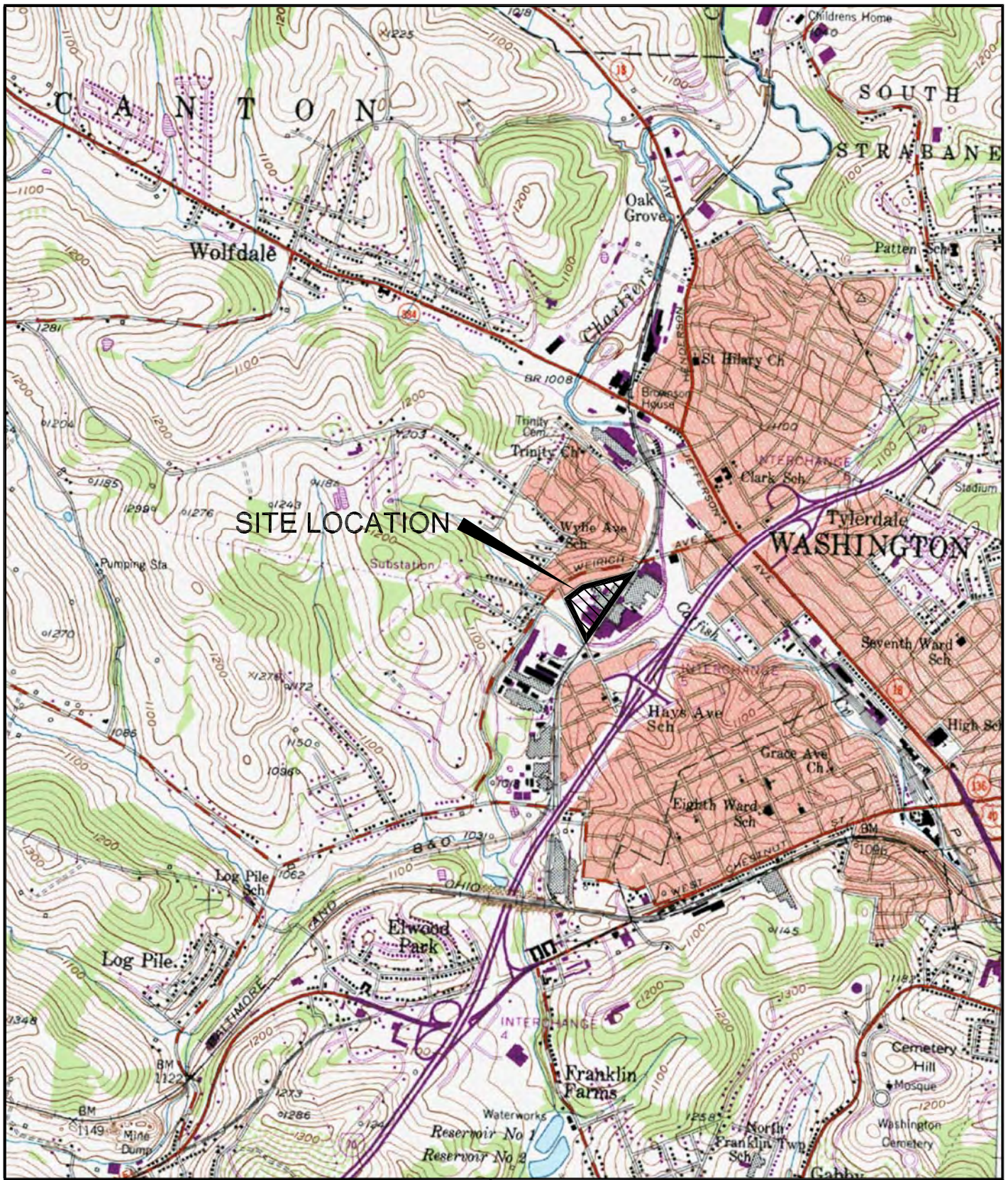
Semi Annual Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, January 2014.

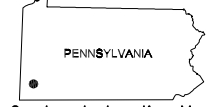

Semi Annual Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, August 2014.






Semi Annual Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, January 2015.

Semi Annual Groundwater Monitoring Report, prepared by Groundwater & Environmental Services, July 2015.

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 <p>Quadrangle Location Map</p> <p>0 2000 4000 Feet</p> <p>Source: U.S.G.S. Topographic Maps (7.5 Minute) Washington West, PA</p>	Commonwealth of Pennsylvania Department of Environmental Protection
	Ferro Glass & Color Corporation Formerly DMC2 Degussa Metals Catalysts - Cerdec Corp. Washington, PA
	FIGURE 1 SITE LOCATION MAP
	 TETRA TECH FW, INC.

-  1983 BUILDING EXPANSION
(HAZARDOUS SOIL DISPOSAL)
-  1993 OFFICE EXPANSION
(SOME HAZARDOUS SOIL DISPOSAL)
-  1996 LABORATORY EXPANSION
(NON-HAZARDOUS SOIL DISPOSAL)
-  1997 SHUTTLE KILN BUILDING EXPANSION
(CONTAMINATED SOIL < TCLP LIMITS
DISPOSAL)
-  2003 SAGGER ROLL-OFF AREA
CONSTRUCTION
(HAZARDOUS SOIL DISPOSAL)

WO-1SA	EXISTING MONITORING WELL
WO-1S	ABANDONED MONITORING WELL
()	FORMER WASTE HOLDING TANK
TK#1	TUNNEL KILN
	SHUTTLE KILN
X	CHAIN-LINK FENCE
- - -	PROPERTY LINE
A	DUMPSTER FOR REFRACTORY BRICK (HAZARDOUS)
B	DUMPSTER FOR REFRACTORY BRICK AND WASTE (RESIDUAL)
C	TRAILER FOR EMPTY DRUMS
	HAZARDOUS WASTE STORAGE AREA
PT	POLE TRANSFORMER THAT CONTAINED PCBs
PT _O	POLE TRANSFORMER
	APPROXIMATE LOCATION OF FORMER WASTEWATER COLLECTION SUMP
	APPROXIMATE LOCATION OF FLOW-THROUGH MANHOLE (CONVEYS TREATED WASTEWATER TO LOCAL POTW)



1. DRAKENFELD COLORS, APPLICATION FOR NPDES PERMIT, DATE: 9/18/92, FIGURE: 4-3 "LOCATION OF PLANT PROCESS CENTERS".
2. PART A HAZARDOUS WASTE PERMIT APPLICATION, 11/14/80.
3. FERRO CORPORATION, WASHINGTON, PA, REF. DWG.: SITEBASE1.DGN.

Commonwealth of Pennsylvania Department of Environmental Protection
Ferro Glass & Color Corporation Formerly DMC2 Degussa Metals Catalysts - Cerdec Corporation Washington, PA
FIGURE 2 SITE LAYOUT MAP
 TETRA TECH FW, INC.