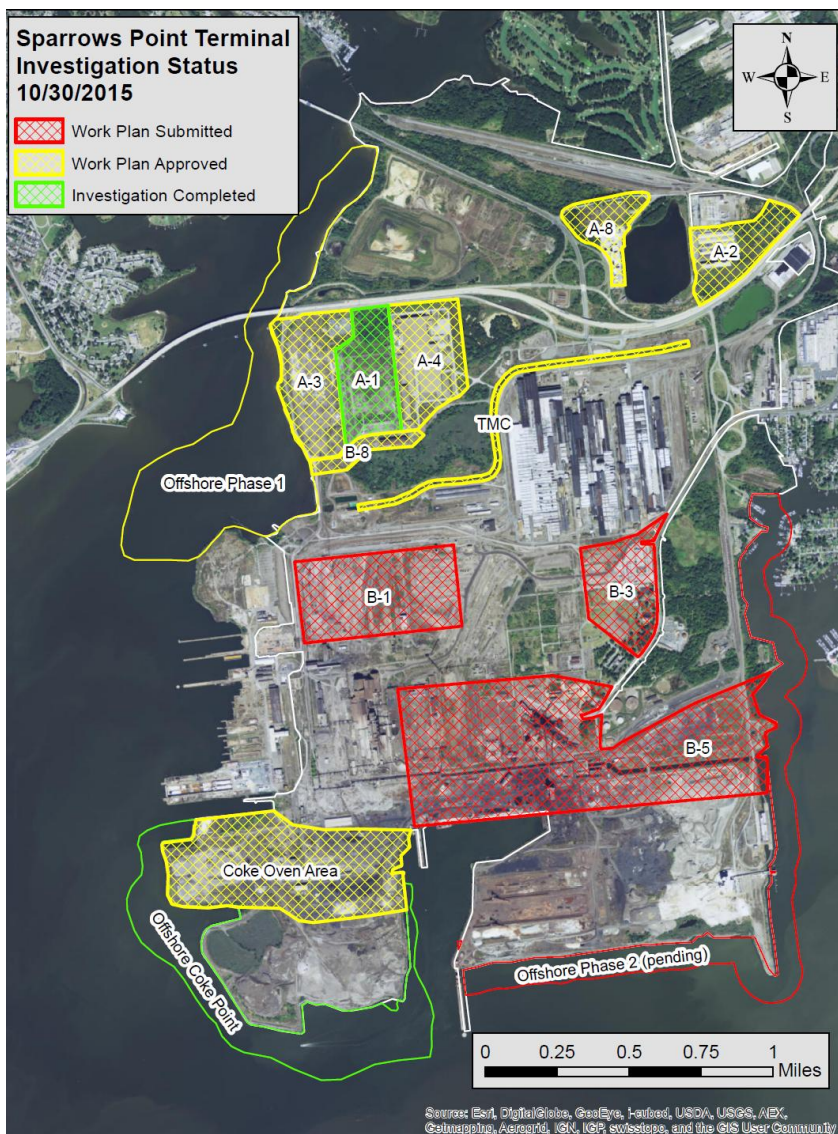


Public Informational Meeting on the Former Sparrows Point Steel Mill Environmental Cleanup



June 20, 2017

Site Investigation Status October 2015



Current Site Investigation Status



Phase II Work Plans Submitted

The Agencies have received the Phase II Work Plans with proposed soil, groundwater and soil gas sampling points based on the location of potential releases from historical processes conducted at that parcel and sufficient additional sampling locations to provide coverage of the entire parcel. The Agencies are currently reviewing these work plans.

Phase II Work Plans Submitted:
Area A Parcels: A-7 Area B Parcels: B-2 and B-17



Phase II Work Plans Approved

The Agencies have reviewed the Phase II Work Plans, conducted site visits and requested revisions, if necessary. Upon approval of the Phase II Work Plan, field work can begin at the Parcel.

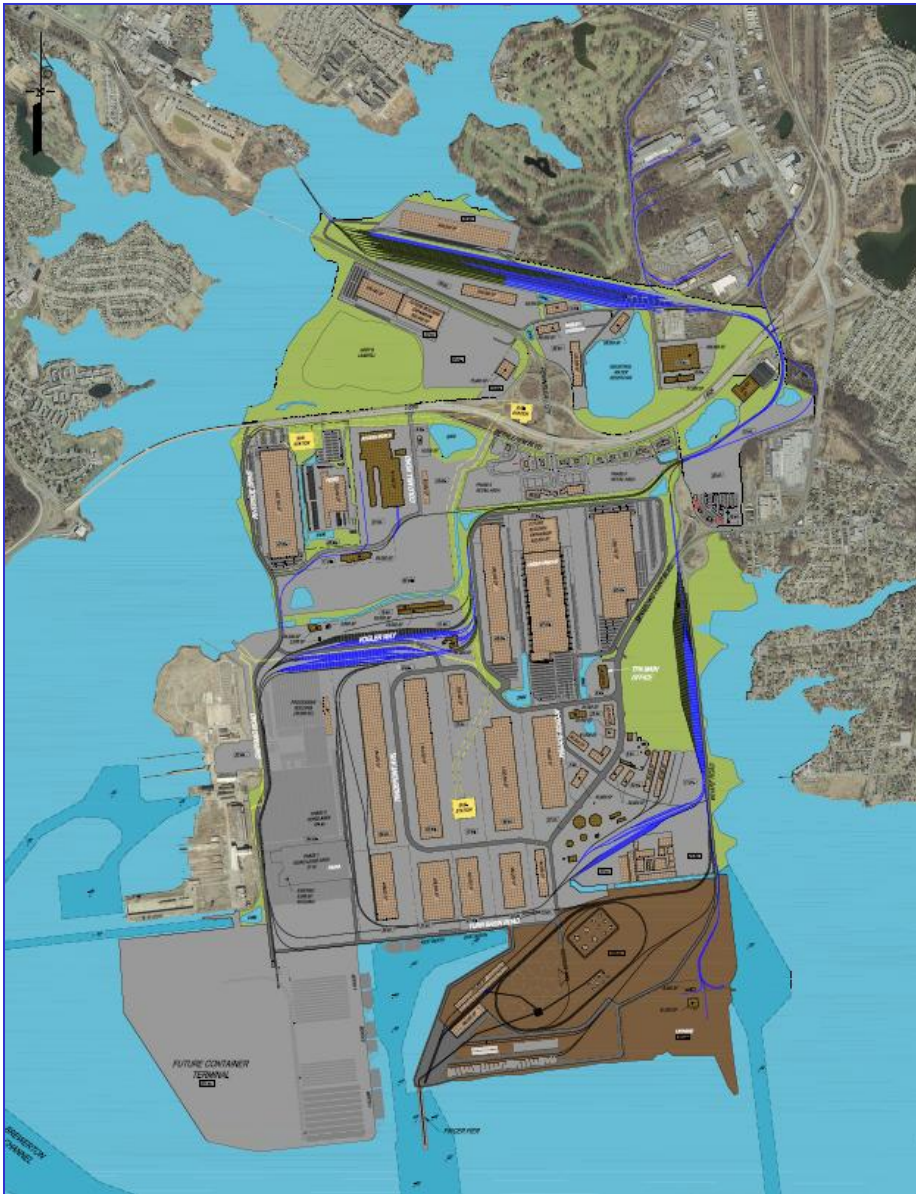
Phase II Work Plans Approved:

Area A Parcels: A-1, A-2, A-3, A-4, A-8, A-10 and A-11

Area B Parcels: B-1, B-4, B-5, B-6, B-8, B-15, B-19 and B-22



Investigation Completed: Response and Development Work Plans



Received for Parcels:
B4-1, B-15, B6-1, B5-1, B19-1
and B22

The evaluation of risks and development of remedial measures as part of the redevelopment process relies on the information collected from site-wide studies conducted over 20 years and current soil and groundwater samples collected under the ACO procedure for Parcels or Portions of Parcels.

This process ensures that redevelopment occurs in a way that protects human health and the environment.



Response and Development Work Plans



Based upon the results of the Development Area Specific Risk Assessment and Depending on the Parcel Conditions and Proposed Development Configuration Each Development Work Plan May Include Procedures for:

- Delineation and Removal of Contaminated Soil
- Installation of Sediment and Erosion Controls
- Monitoring well abandonment
- Grading and site preparation
- Light Standard Pier Installation
- Installation of underground utilities such as electrical conduit,stormwater piping and other structures
- Landscaping
- Asphalt Paving
- Security and Lighting
- Storm Water Management-during and after construction
- Dust control
- Soil Management
- Dewatering
- Health and Safety
- Long Term Maintenance

Parcel A3-1 Rod and Wire Mill

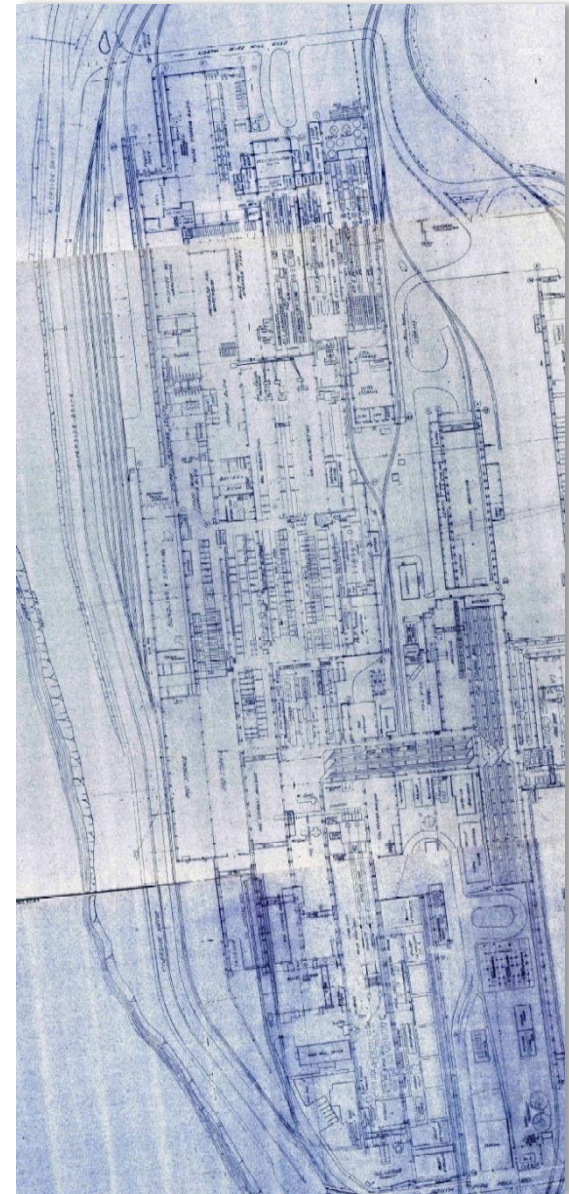
The former mill produced rod and wire products from 1940's to early 1980's

Approximately 60 acres of the former mill have been demolished.

Manufacturing process included leaching of zinc ore and treatment to remove cadmium impurities.

Storage of leach residue, dewatered sludge and excess filtrate resulted in soil and ground water contamination with zinc and cadmium.

Interim measures
pump and treat system
In operation since 1987

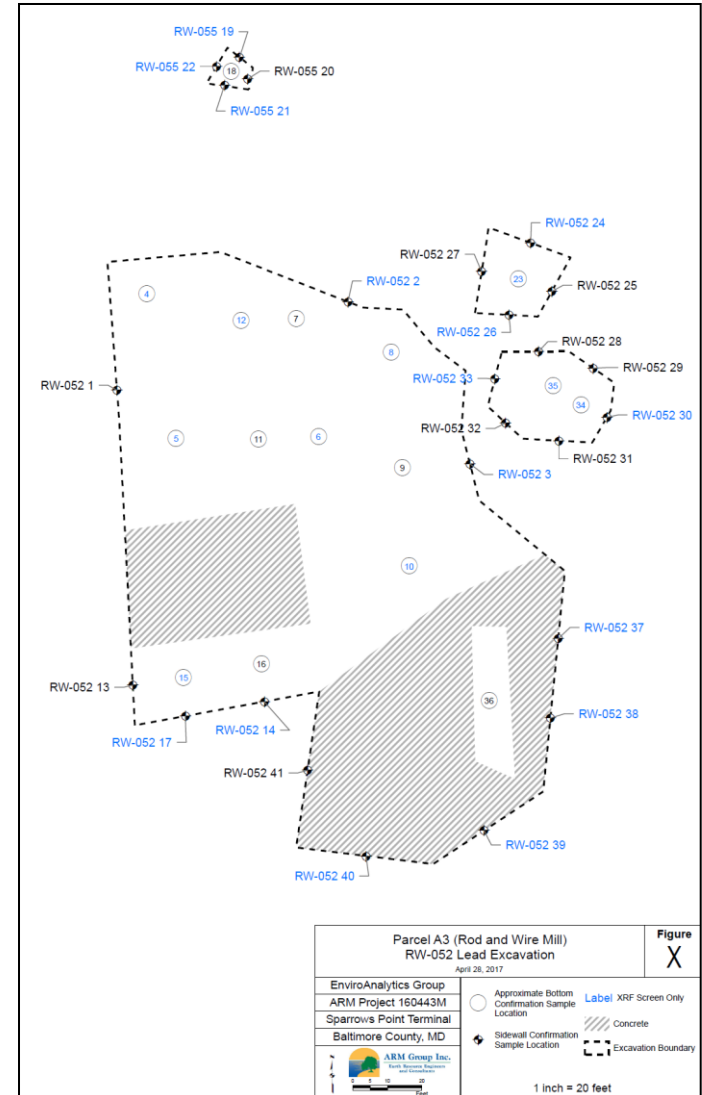


Response and Development Work Plan Parcel A3-1

Former Rod and Wire Mill
Parcel A3-1 is 54 Acres of 64 Acre Parcel A3

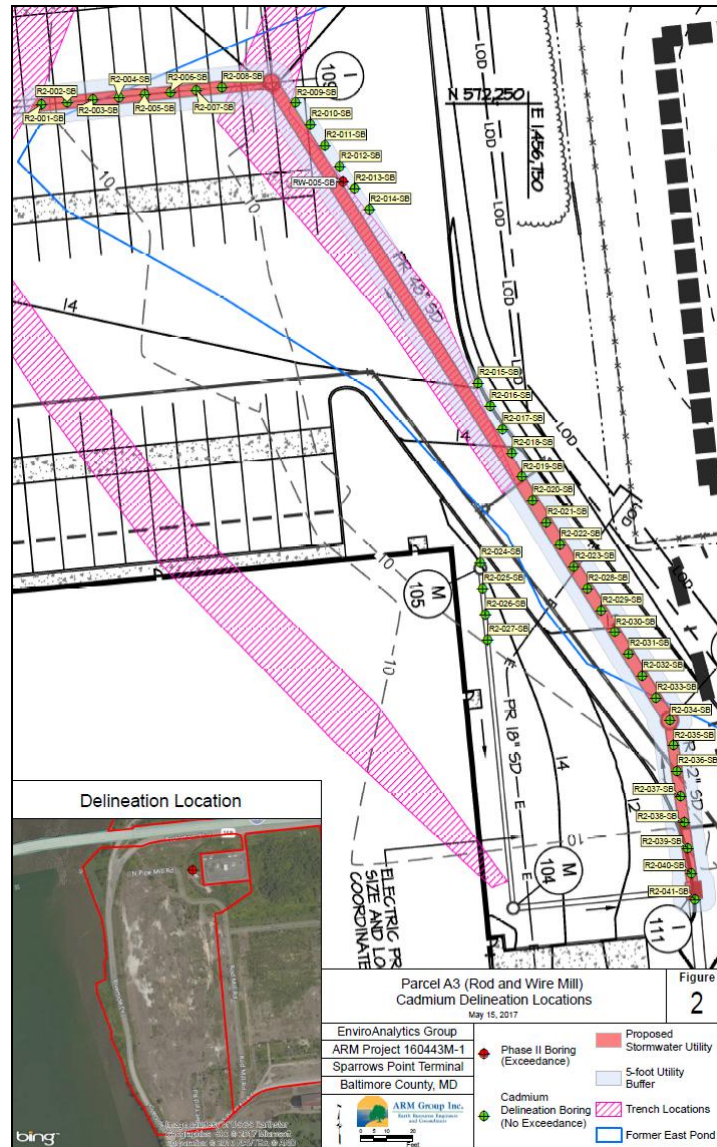


Delineation and Removal of Petroleum and Lead Contaminated Soil



Response and Development Work Plan Parcel A3-1

Delineation of Potentially Cadmium Contaminated Soil Along Future Utility Lines



Response and Development Work Plan Parcel B5-1

Approximately 124 Acres Total
80.7 Acres on B-5
43.3 Acres on B-13

Proposed Development of Six Bulk Storage Buildings and an Associated Truck Scale, along with Lighting Improvements and a Marine Access Road

Development activities will generally include grading, construction of slab on-grade bulk material storage buildings (including three 200,000 square foot buildings and three 150,000 square foot buildings), hot mix asphalt (HMA) paving surrounding the bulk storage buildings totaling 1,050,000 square feet, connections to existing stormwater systems, lighting improvements, and a marine access road totaling approximately 376,000 square feet.



Response and Development Work Plan Parcel B5-1



Formerly Occupied by Portions of the Blast Furnace Area and Ore Yard Material Handling Area

67 Boring Locations from Parcel B5 and 13 Boring Locations from Parcel B13 were included in the assessment of Sub-Parcel B5-1

Response and Development Work Plan Parcel B5-1



Based on Risk Assessment Capping Proposed as a Remedy for B5-1 Building Area (59.2 acres) since the Total Cancer Risk for Composite Workers exceeded the $1E-5$ Total Cancer Risk threshold

Construction Workers risk evaluated for proposed Construction durations did not exceed risk thresholds.

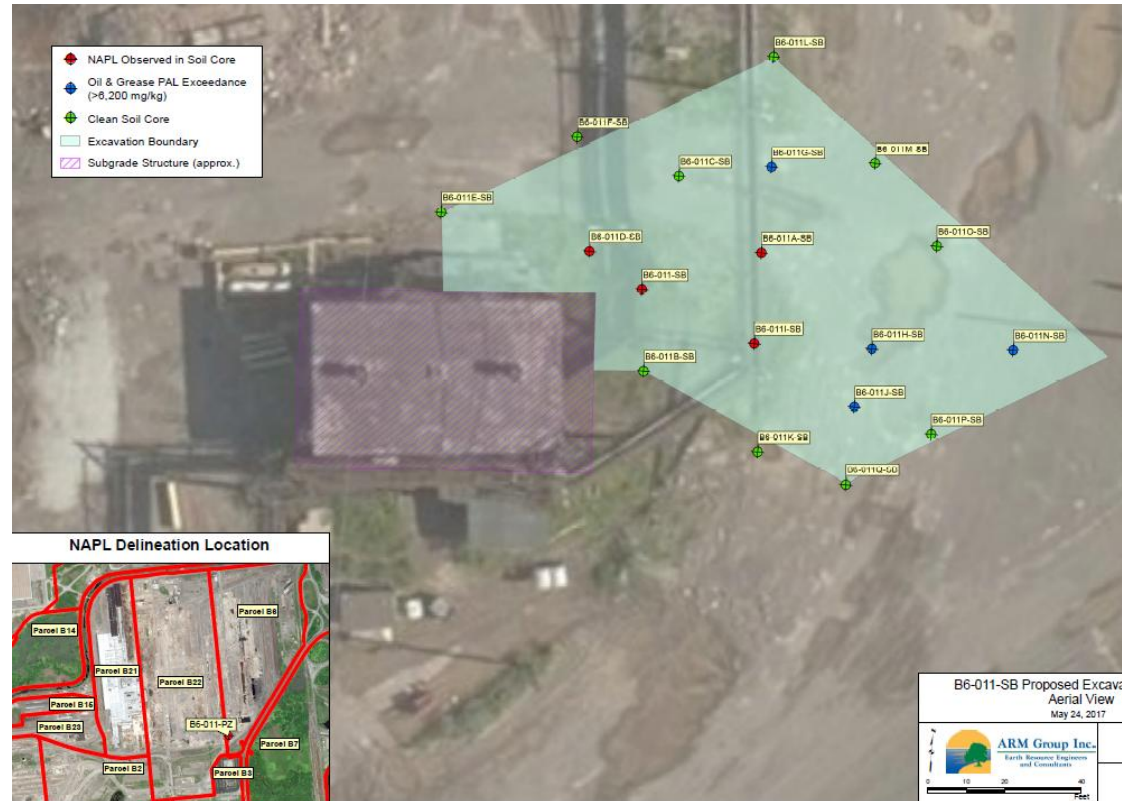
Response and Development Work Plan Parcel B6-1

Formerly occupied by portions of the Finishing Mills Area including the Hot Strip Mill Area.



Pre-Construction Activities Include:

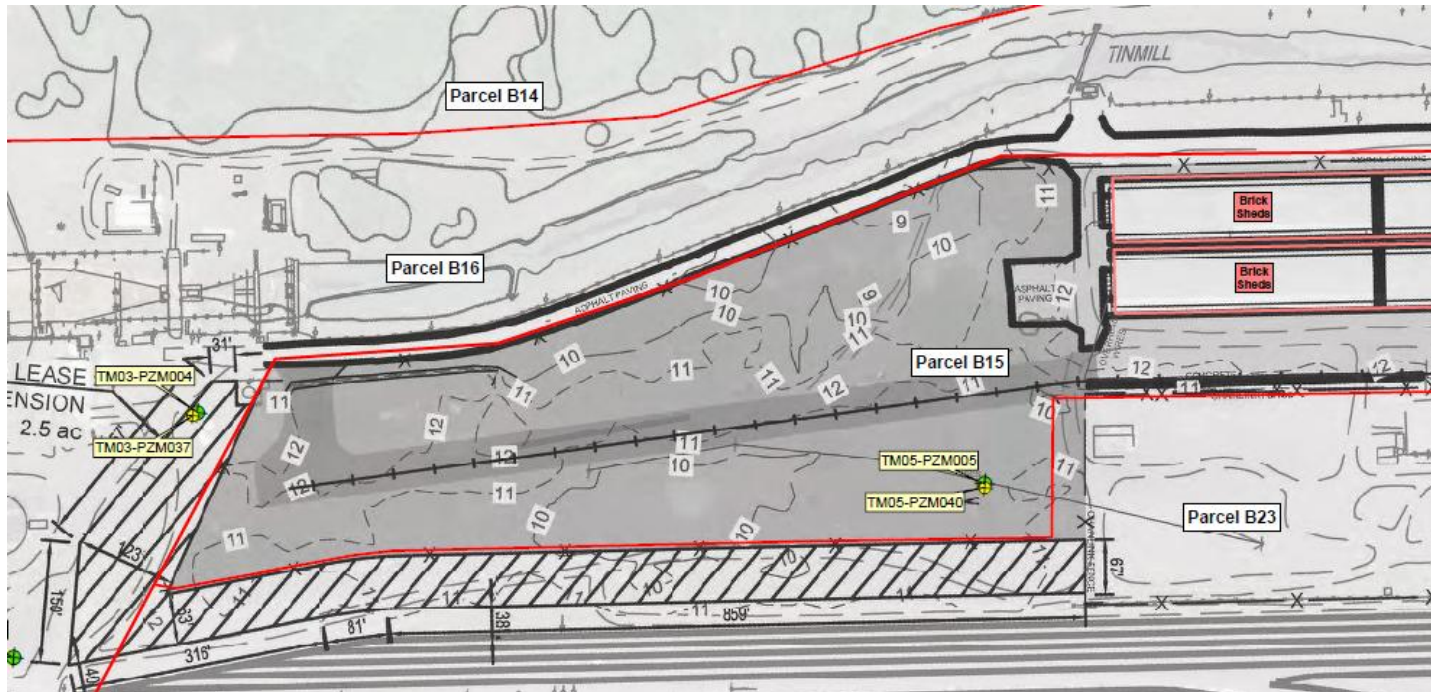
- Removal of Petroleum Contaminated Soil
- Delineation of Soil Sampling location with Elevated Lead Detection
- Sampling and Engineered Closure of Scale Pits



Based on the Risk Assessment prepared for Parcel B6-1 Capping is not Required as a Remedy at Parcel B6-1

Response and Development Work Plan Parcel B15

Former Brick Sheds
Originally 16.5 Acres Expanded to 19 Acres
Reuse of Existing Buildings and Placement of Paving
21 Borings Completed



Response and Development Work Plan Parcel B15



B15 Before Response and Development Plan was Implemented



B15 After Response and Development Work Plan Implemented



Formerly Occupied by
Maryland Pig Plant

3.25 Acres to be Developed As
A Concrete Plant

A total of 38 of the Phase II
Investigation samples from 15
boring locations were
selected for a representative
evaluation of Sub-Parcel B19-1

Based on the Risk Assessment
Capping is not proposed as a
Remedy at Parcel B19-1

Response and Development Work Plan Parcel B22-1

71.6 Acres on Southern Portion of 130.0 Acre B22 Parcel
Proposed Development as Warehouse/ E-Commerce Distribution Center



Response and Development Work Plan Parcel B22 Phase 1



Warehouse Under Construction
Photo Credit FCL Builders

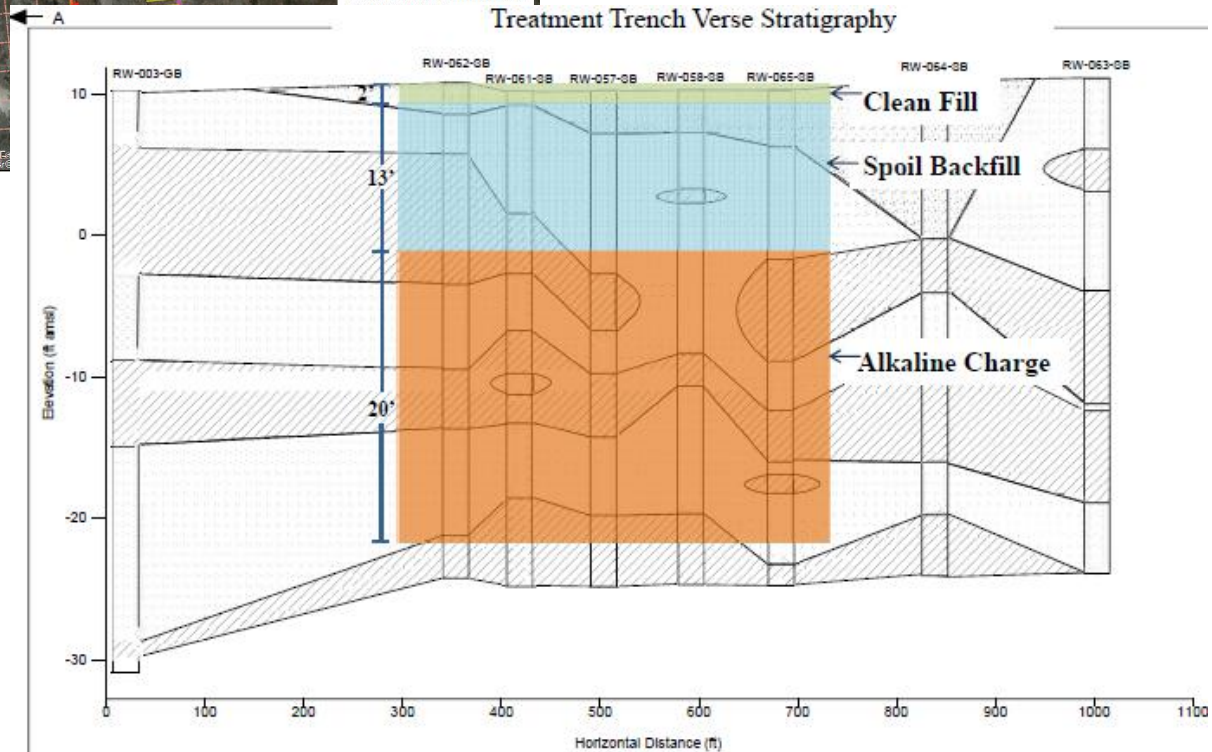
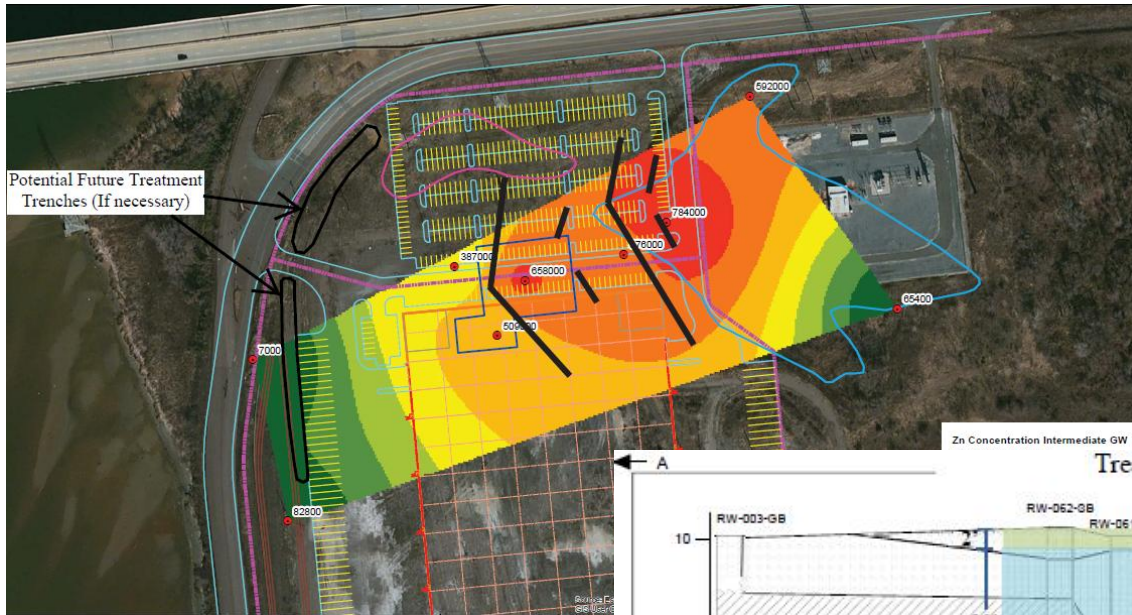


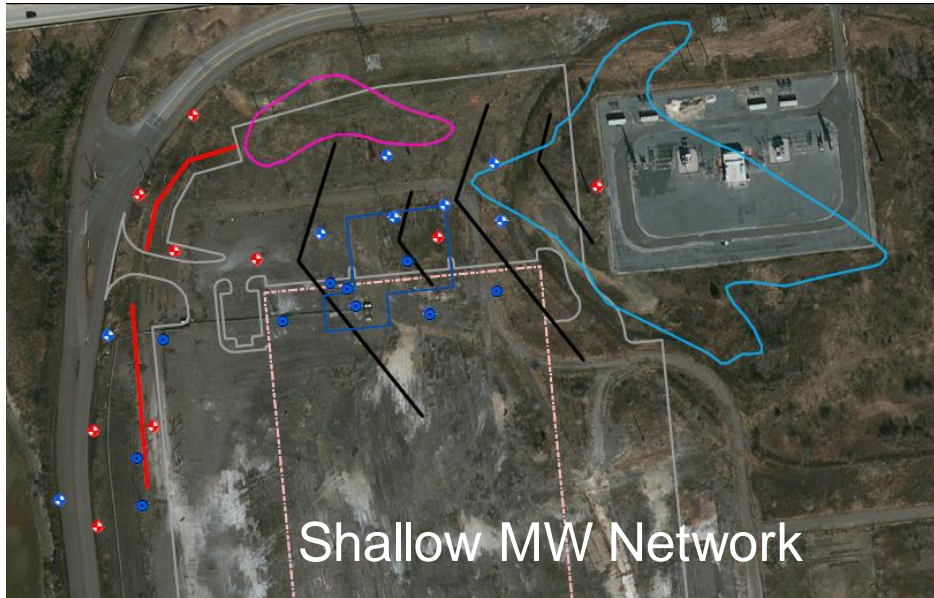
Parcel A-1
FedEx
Completed under a
Response Action Plan
(RAP) Approved
July 14, 2015

Parcel B4-1
Vehicle Parking
Completed under a
Response and Development
Work Plan Approved
June 1, 2016



Interim Measures Upgrade Installation Parcel A3





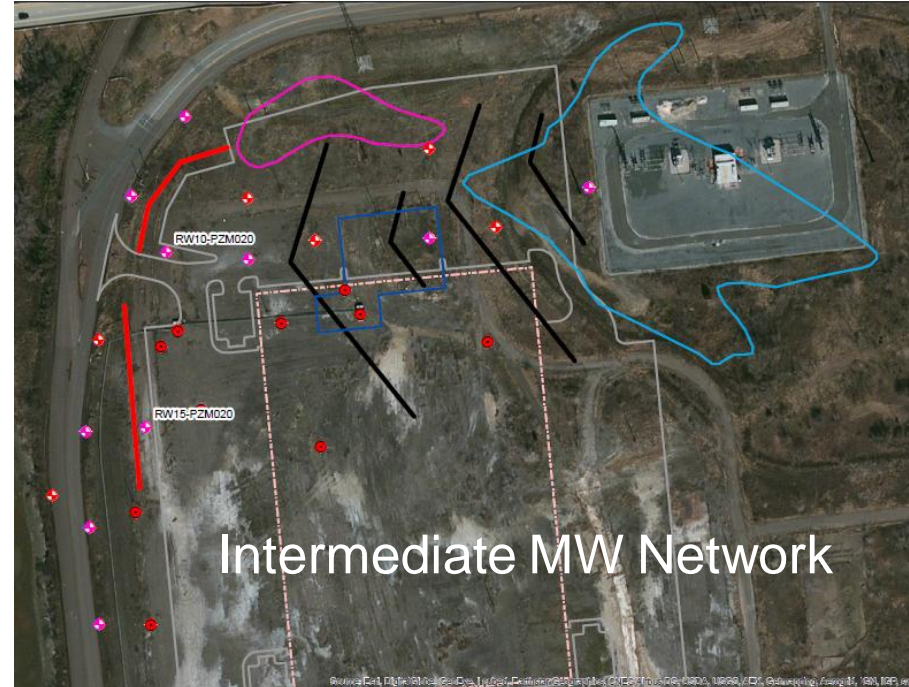
Shallow and Intermediate Monitoring Well Network Installation Completed

Will Provide Additional Monitoring Points to Determine Trench Effectiveness

Pumping Well RW-10 Relocated

Monthly and quarterly monitoring of pH, Zinc and Cadmium

Summary Report Anticipated July 2017



Interim Measures Upgrade Installation Parcel A3










Coke Oven Area Interim Measures



Coke Oven Area Interim Measures-Cell 6 Upgrade



Source: EnviroAnalytics, Inc. (EA), based on data provided by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE). EA is not responsible for the accuracy or completeness of the information provided by the U.S. Army Corps of Engineers (USACE).

	Date: 1/26/2016	<h2>Cell 6 IM System Upgrade</h2>	Legend		Figure 1-2
	0 25 50 100 Feet 		<ul style="list-style-type: none">  Existing Monitoring Wells to be used for Extraction  Existing Monitoring Wells Not to be Used  Proposed Extraction Wells  Proposed ReInjection Wells  Estimated Source Area Extent 		

Total of 53 Extraction Wells-Vacuum Pump Removes Liquid and Vapor
Upgraded System Operational October 2016



Coke Oven Interim Measures Progress As of March 2017

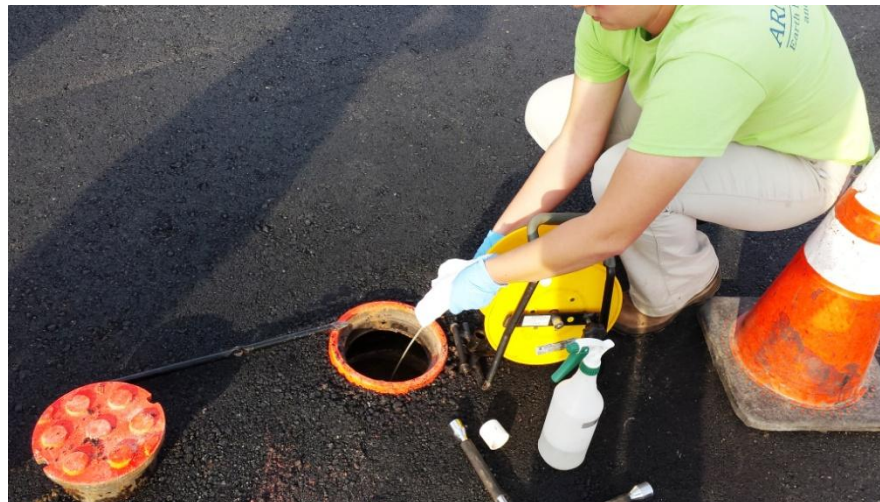


- **Cell 1- Shallow groundwater treatment with Air Sparging and Soil vapor extraction.**
Destroyed approximately 12,582 lbs of hydrocarbons with vapor treatment system
- **Cell 2-Groundwater Extraction Intermediate Aquifer and Air Sparging and Soil Vapor Extraction Shallow Groundwater**
Pumping and treatment of intermediate zone ground water averages 11.6 gallons per minute
- **Cell 3-Shallow Groundwater Treatment with Air Sparging and Soil vapor extraction.**
Destroyed approximately 1,714.8lbs of hydrocarbons with vapor treatment system
- **Cell 5 Shallow Groundwater pumping replaces bio-remediation augmentation to recover DNAPL**
Pumping began January 2016 and recovered 628 gallons of DNAPL
- **Cell 6 Recovery of carrier oil (LNAPL) from Coke Oven Area**
- **Cumulative recovery of 17, 648 gallons of free phase product**

Site Wide Groundwater Study

Groundwater Study Objectives and Goals:

- **Complete EPA's Groundwater Environmental Indicator form (CA750) in 2017 and identify the status of the EI regarding Migration of Contaminated Groundwater (Y,N or I);**
- **Propose a Conceptual Site Model for Groundwater Flow and Contaminant Migration;**
- **Characterize Groundwater Usage and**
- **Select Correct Action Objectives for Appropriate Usage of Groundwater.**



Tin Mill Canal



Site Map - Location of Tin Mill Canal

Tin Mill Canal Facts:

Approximately 7,500 feet in length.
30-50 feet wide and 15 feet below grade.

Constructed in 1960's from slag.

Conveyance for stormwater runoff and groundwater baseflow from 800 acres of Sparrows Point site.

Historically received wastewater discharges from numerous manufacturing facilities associated with steelmaking and steel finishing operations.

Average flow during dry weather 3,000 to 4,000 gallons per minute (gpm) but can increase to 50,000 gpm during storm events.

Water collected from Tin Mill Canal routed to Humphrey's Creek Waste Water Treatment Plant for treatment prior to discharge under NPDES permit to outfall 14.

CORRECTIVE MEASURES STUDY (CMS)

FOR THE TIN MILL CANAL

TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

Prepared For:



ENVIROANALYTICS GROUP
1650 Des Peres Road, Suite 230
Saint Louis, Missouri 63131

Prepared By:



ARM GROUP INC.
9175 Guilford Road
Suite 310
Columbia, Maryland 20146
ARM Project No. 170208M

Revision 0 – June 16, 2017

MAINTENANCE CLEANUP PLAN

FOR THE TIN MILL CANAL

TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

Prepared For:



ENVIROANALYTICS GROUP
1650 Des Peres Road, Suite 230
Saint Louis, Missouri 63131

Prepared By:



ARM GROUP INC.
9175 Guilford Road
Suite 310
Columbia, Maryland 20146
ARM Project No. 170208M

Revision 0 – May 5, 2017



Sparrows Point Offshore Sediments

June 20, 2017



Gregory Ham

On Scene Coordinator

Office of Preparedness and Response
Hazardous Site Cleanup Division
(Superfund Program)
Fort Meade, MD



Sparrows Point Offshore Contamination



- Superfund program (CERCLA) has taken on the offshore work as it has the authority to manage the funds set aside by the Settlement Agreement.
- Some funding by Settlement Agreement for investigation, cleanup, and oversight.
- Continuing to coordinate with the Maryland Department of the Environment.



Removal Process (Non-time Critical)

- Assessment of site
- Engineering Evaluation/Cost Analysis
 - Public Participation
- Action Memorandum
 - Identifies problem, describes work to be done, sets cost ceiling
 - Authority to do work



Engineering Evaluation/Cost Analysis



- Site Characterization
- Identification of Removal Action Objectives
- Identification and Analysis of Removal Action Alternatives
- Comparative Analysis of Removal Alternatives
- Recommended Removal Action Alternative



Public Participation



- Administrative Record File established
- Notice of Availability
- 30-day public comment period
- Written response to significant comments
- Community Involvement Plan



Offshore Areas



Northwest area (Phase 1)

Southeast Area (Phase 2)

Coke Point



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the Environment





North West Area



- Assessment completed
- Engineering Evaluation/Cost Analysis (EE/CA) under way using an EPA contractor (EA Eng., Science and Technology).
- Estimated completion end of CY 2017
- Recently conducted additional geotechnical sampling
- EE/CA will evaluate cleanup options/costs



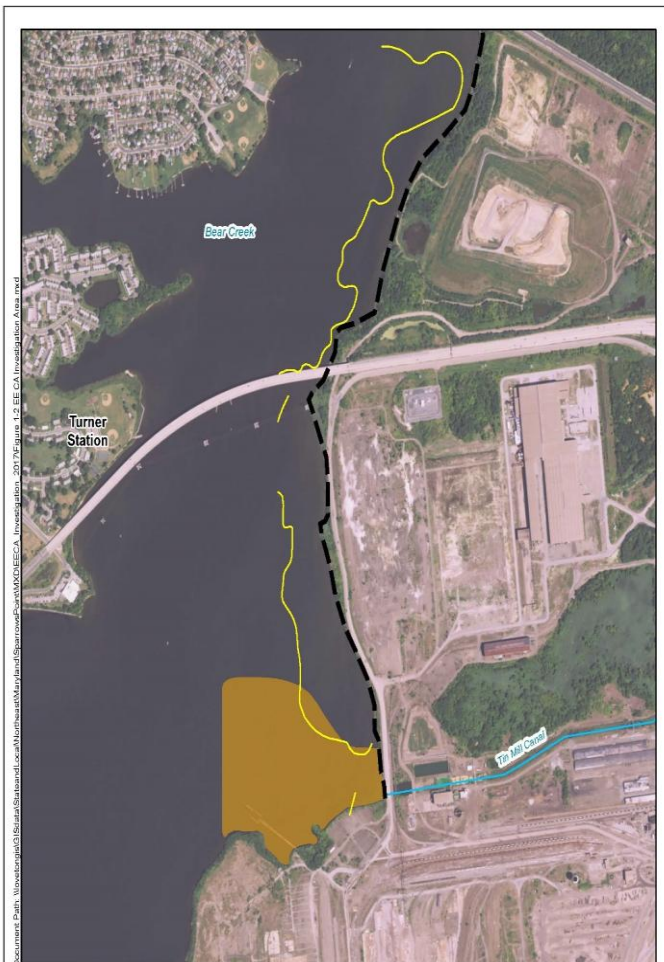
EE/CA – Northwest Area



- Site Characterization - Completed
- Identification of Removal Action Objectives - Completed
- Identification and Analysis of Removal Action Alternatives – under way
- Comparative Analysis of Removal Alternatives – new info from sampling
- Recommended Removal Action Alternative



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- Legend**
- Phase 1 Northwest Shoreline
 - ~ Perennial Creek/Stream
 - Boundary between Sand and Fine Grained Sediment
 - Approximate Area of Sediment Remediation to Meet Example PRGs

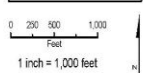
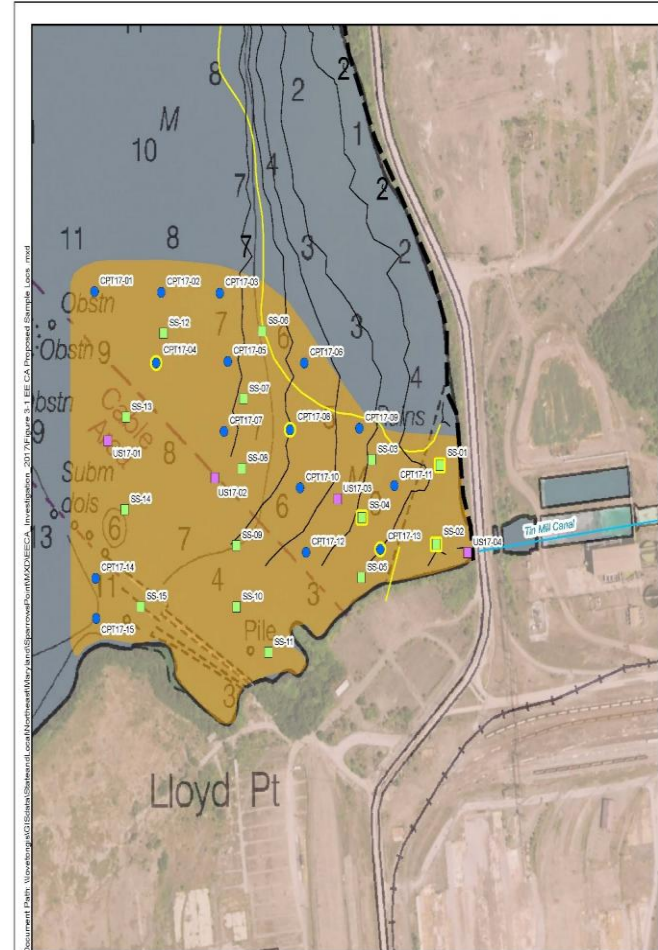
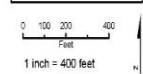


Figure 1-2
EEICA Investigation Area
Sparrows Point
Northwest Offshore Sediments
Baltimore, Maryland

Map Date: March 2017
Image Source: ESRI 2016
Projection: NAD 1983 StatePlane
Maryland FIPS 1800 (US Feet)



- Legend**
- Cone Penetrometer Test
 - Cone Penetrometer Test and Borings
 - Surface Sample
 - Surface Sample with Oil and Grease Ebulition
 - UltraSeep Meter (Upwelling Survey)
 - Phase 1 Northwest Shoreline
 - ~ Depth Contour (feet)
 - ~ Perennial Creek/Stream
 - Boundary between Sand and Fine Grained Sediment
 - Approximate Area of Sediment Remediation to Meet Example PRGs



Note: Depths are referenced to Mean Lower Low Water (MLLW)

Figure 3-1
Proposed Sample Locations
Sparrows Point Northwest
Offshore Sediments
Baltimore, Maryland

Map Date: March 2017
Image Source: ESRI 2016, NOAA 2016
Projection: NAD 1983 StatePlane
Maryland FIPS 1800 (US Feet)



North West Area – Bear Creek





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South East Area



First Round Sampling June 20 – 23, 2016

- 13 transects, 39 sampling locations for surface sediments
- Some elevated metals found
- Report available on the MDE website



Sample Ranges for Metals



Metal	Probable Effects Concentration	Range of Results above PEC
Chromium	111	114 - 382
Copper	149	166 - 233
Lead	128	131 - 612
Zinc	459	489 - 3180
All results in mg/kg		



Sample Ranges for Metals



Metal	Probable Effects Concentration	Range of Results above PEC
Chromium	111	114 - 382
Copper	149	166 - 233
Lead	128	131 - 612
Zinc	459	489 - 3180
All results in mg/kg		



Second Round of Sampling



Second round of sampling planned for July 2017

- Surface and subsurface sediment sampling
- Further up Jones Creek
- Analysis for bioavailability of metals
- Storm water samples from 7 outfalls



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the Environment



Round 2 Sampling Locations



Looking North into Jones Creek



Questions ?





For Additional Information From EPA On Shore Activities :

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Remedial Project Manager
U.S. Environmental Protection Agency Region 3
410-305-2779
Weissbart.erich@epa.gov**



For Additional Information From EPA On Off-Shore Activities :

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On Scene Coordinator
Eastern Response Branch
Office of Preparedness and Response
Hazardous Site Cleanup Division
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Visit the MDE Website!

<http://www.mde.maryland.gov>