FIRST FIVE-YEAR REVIEW REPORT FOR HORSESHOE ROAD AND ATLANTIC RESOURCES SUPERFUND SITES MIDDLESEX COUNTY, NEW JERSEY

Prepared by

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Date

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LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
ARC	Atlantic Resources Corporation
CEA	Classification Exception Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
HR	Horseshoe Road
ICs	Institutional Controls
LTM	Long-term Monitoring
MCUA	Middlesex County Utilities Authority
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NJDEP	New Jersey Department of Environmental Protection
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable unit
PRP	Potentially Responsible Party
RAO	Remedial Action Objectives
ROD	Record of Decision
RPM	Remedial Project Manager
TBC	To be considered
TI waiver	Technical Impractability waiver

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP)(40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the first FYR for the Horseshoe Road and Atlantic Resources Superfund Sites. The triggering action for this statutory review is February 19, 2008, the on-site construction start date of the Horseshoe Road Operable Unit 2 (OU2) remedial action. The FYR has been prepared due to the fact that hazardous substances, pollutants or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE)

Both Superfund Sites consist of three operable units (OUs). Two OUs will be addressed in this FYR. OU1, which is not covered in this FYR, addresses building demolition. OU2 addresses on-site soil and groundwater. OU3 addresses contaminated sediments in the marsh adjacent to the OU2 areas, and sediments in the Raritan River.

The FYR for the Horseshoe Road and Atlantic Resources Superfund Sites was led by John Osolin, Remedial Project Manager (RPM) for the EPA. Participants included Kathryn Flynn - EPA Hydrologist, Charles Nace - EPA Risk Assessor, Michael Clemetson - EPA Ecological Risk Assessor, Sophia Rini - EPA Community Involvement Coordinator (CIC), Michael Burlingame - NJPEP representative. The PRPs, and town of Sayreville, were notified of the initiation of the FYR. The review began on 7/17/2017.

Site Background

The Horseshoe Road (HR) site is a 12-acre property located in Sayreville, Middlesex County, New Jersey. The site includes three areas: (1) the Sayreville Pesticide Dump (SPD); (2) the former Atlantic Development Corporation facility (ADC); and (3) the Horseshoe Road Drum Dump (HRDD) (Figures 1 and 2). The Atlantic Development Facility contained three buildings and associated process equipment which were leased by several companies. These companies produced roofing materials, sealants, polymers, urethane and epoxy resins, epoxy pigments, wetting agents and pesticide intermediates among other products. The two dump sites were associated with the ADC facility and the adjacent Atlantic Resources Corporation facility.

The adjacent Atlantic Resources Corporation (ARC) site is a 4.5-acre property also located on Horseshoe Road. It was the location of a precious metals recovery facility, operated by several companies, the last of which was the Atlantic Resources Corporation.

Both sites are located on the south shore of the Raritan River, and are bordered to the east by railroad tracks belonging to Conrail, with Middlesex County Utilities Authority (MCUA) property bordering the

east side of the railroad tracks. The property to the west of the sites, on the shore of the Raritan River, is currently undeveloped. Portions of this property were previously used to dispose of dredge spoils from local shipping channels. The marsh that is a component of the OU3 cleanup is bounded on the east and south by the upland portions of the two sites and on the west by remnants of a dock used by the Crossman Company. The Crossman Company mined clays for brick manufacturing, and built a rail line from its clay pits in Sayreville to the Raritan River. Remnants of the rail line and the former Crossman Dock bound the western edge of the Marsh. To the southwest lies the Sayreville facility of Gerdau Ameristeel, and to the southeast, approximately one-half mile away, lies a residential neighborhood containing approximately 47 homes. The areas described above are served by municipal water; about 14,000 people obtain drinking water from public wells within four miles of the sites.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Horseshoe Road and Atlantic Resources		
EPA ID: NJD980663678 (HR) and NJD981558430		
Region: 2	**State:** NJ	**City/County:** Sayreville/Middlesex

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes	**Has the site achieved construction completion?** No

REVIEW STATUS
Lead agency: EPA
Author name (Federal Project Manager): John Osolin
Author affiliation: U.S. Environmental Protection Agency
Review period: 2/19/2008 - 10/2/2017
Site inspection 8/21/2017
Type of review: Statutory
Review number: 1
Triggering action date: 2/19/2008
Due date *(five years after triggering action date)*: 2/19/2013

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

Building Materials on the site contained polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and antimony which pose both a cancer and non-cancer risks.

Surface Soil on these sites contain methoxychlor, PCBs, benzo(a)pyrene, benzo(b)flouranthene, ideno(1,2,3-cd)pyrene, antimony at concentrations that pose a cancer risk due to incidental ingestion and dermal contact. The ecological risk assessment showed that site surface soils contaminated with PCBs, arsenic, chromium, lead , zinc and cyanide pose potential risk to short tailed shrews and red-tailed hawks.

Subsurface Soil on these sites contain 1,2-dichloroethane, PCBs, and arsenic at concentrations that pose a cancer risk due to incidental ingestion and dermal contact and act as a source of groundwater contamination.

Groundwater on these sites contain; benzene, 1,2-dichloroethane, and trichloroethylene (TCE) at concentrations that pose a cancer risk due to ingestion and vapor inhalation.

River and Marsh Sediment contain elevated levels of arsenic that pose a risk to future resident receptors due to contact with surface water, sediment and consumption of shellfish. In addition, ecological receptors such as osprey, huring gulls, and mammalian species are at risk due to food chain exposures to arsenic, mercury, and PCBs contained in the marsh and river sediments.

Response Actions

The sites first came to EPA's attention in 1981, when a brush fire at the HRDD area exposed approximately 70 partially filled drums containing acetonitrile, silver cyanide and ethyl acetate. At that time the State took the lead role in addressing both sites. Shortly thereafter, the commercial operations at both facilities ended.

In 1985, the New Jersey Department of Environmental Protection (NJDEP) requested that EPA take the lead role in the cleanup of the sites. Since that time EPA has performed 10 removal actions at both sites. These removals stabilized the sites by removing more than 3,000 drums, cleaning up dioxin and mercury spills, emptying and disposing of materials found in numerous tanks and vats on both sites, and excavating and disposing of contaminated soil and debris. The Horseshoe Road site was placed on the National Priorities List (NPL) in 1995; the ARC site was placed on the NPL in 2002.

The OU1 Record of Decision (ROD) was signed on September 1, 2000, and called for the demolition of buildings and process equipment at both sites. In the OU1 ROD, EPA stated the following remedial action objectives for contaminated buildings and process equipment at the Horseshoe Road and ARC sites:

1. Prevent or minimize human exposure to contaminants in building materials.
2. Prevent or minimize uptake of contaminants in building materials by biota.
3. Prevent or minimize migration of contaminants in building materials via windblown dust and surface runoff.

The major components of the selected response measure for OU1 include:

- demolition of buildings and structures;
- surface cleaning and recycling of metal/concrete/brick;
- decontamination of concrete slabs as necessary; and
- off-site disposal of remaining demolition debris.

The OU2 ROD was signed on September 30, 2004, and called for removal of contaminated on-site soil for disposal off-site, with backfilling of excavated areas, and restoration of wetlands. The OU2 ROD also included a technical impractability waiver (TI waiver) for groundwater, which recognized that complete restoration of the groundwater was not feasible due to the clay rich soils. As part of the waiver the OU2 ROD required removal of contaminated soils that acted as a source to groundwater to the extent practical. The OU2 remedy requires institutional controls in the form of a deed notice because contamination left behind does not allow for unrestricted use. In the OU2 ROD, EPA stated the following remedial action objectives for contaminated soil and Groundwater at the Horseshoe Road and ARC sites:

1. Reduce or eliminate the direct contact threat associated with contaminated soil to levels protective of a commercial or industrial use, and protective of the environment;
2. Prevent public exposure to contaminated groundwater that presents a significant risk to human health and the environment;
3. Minimize or eliminate contaminant migration to the groundwater and surface waters;
4. Minimize or eliminate organic vapor migration from groundwater into future indoor environments that may be built on the sites.

The major components of the selected response measure for OU2 include:

- excavation of approximately 52,000 and 10,000 cubic yards of contaminated soil and debris on the Horseshoe Road and Atlantic Resources Corporation sites, respectively, including an estimated 10,000 and 6,000 cubic yards of deeper soils that act as a continuing source of groundwater contamination on the Horseshoe Road and the Atlantic Resources Corporation sites, respectively;
- off-site transportation and disposal of contaminated soil and debris, with treatment as necessary;
- off-site treatment of all RCRA-hazardous wastes prior to land disposal;
- backfilling and grading of all excavated areas with clean fill, with the exception of the HRDD area, which would be graded to become part of the neighboring marsh;
- institutional controls, such as a deed notice or covenant, to prevent exposure to residual soils that may exceed levels that would allow for unrestricted use;
- institutional controls, including a Classification Exception Area (CEA), to restrict the installation of wells and the use of groundwater in the area of groundwater contamination; and
- implementation of a long-term groundwater sampling and analysis program to monitor the nature and extent of groundwater contamination at the sites, in order to assess the migration and possible attenuation of the groundwater contamination over time.

Table 1: Operable Unit 2 Remediation Goals

Analyte	Surface Soil Remediation Goals (mg/kg)	Subsurface soil Remediation Goals (mg/kg)
Benzene	1	1
Chlorobenzene		1

Analyte	Surface Soil Remediation Goals (mg/kg)	Subsurface soil Remediation Goals (mg/kg)
Chloroform		1
1,2-Dichloroethane		1
Methylene Chloride	1	1
Tetrachloroethene	1	1
Toluene	500	
Trichloroethene	1	1
Xylenes	67	67
Benzo(a)Anthracene	0.5	
Benzo(b)Fluoranthene	0.5	
Benzo(k)Fluoranthene	5	
Benzo(a)Pyrene	0.05	
Chrysene	50	
Hexachloroethane		100
Indeno(1,2,3-c,d)Pyrene	0.5	
Dibenz(a,h)Anthracene	0.05	
1,2,4-Trichlorobenzene		100
Aldrin	0.03	
Dieldrin	0.03	
Methoxyclor	50	50
PCBs (Total)	1	
Antimony	300	
Arsenic	20	

The OU3 ROD was signed on June 22, 2009, and called for the excavation and off-site disposal of marsh sediments, and dredging and disposal of river sediments. In the OU3 ROD, EPA stated the following remedial action objectives for contaminated sediments at the Horseshoe Road and ARC sites:

Marsh Sediments

1. Reduce human health risks from exposure, including ingestion, inhalation and dermal contact, to contaminants in the surface and sub-surface sediments to acceptable levels.
2. Reduce risks to environmental receptors from exposure to contaminants in the sediments to acceptable levels.
3. Minimize the migration of contaminated sediments to the Raritan River through surface water runoff or flooding.

River Sediments

1. Reduce the potential for human health risks from exposure to river sediments within the low-tide mudflat in front of the sites, through ingestion or dermal contact, to acceptable levels.

2. Reduce exposure to sediments deposited in the River adjacent to the sites with highly elevated contaminant concentrations that contribute to the degradation of the Raritan River Estuary, and result in risks to ecological receptors, including benthic aquatic organisms, shellfish, fish, birds and mammals.

The major components of the selected response measure for OU3 include:

- Excavation, transportation and disposal of approximately 21,000 cubic yards of contaminated sediments from the Horseshoe Road/ARC Marsh;
- Dredging of approximately 14,000 cubic yards of contaminated sediments from the Raritan River;
- Dewatering and off-site disposal of excavated/dredged sediments in an appropriate land disposal facility;
- Backfilling and grading of all excavated marsh areas with clean cover material to allow for reestablishment of wetland habitat;
- Filling of the dredged river area with clean cover material that will support the reestablishment of-a benthic community in surface sediments
- Institutional controls in the Marsh, such as a deed notice or covenant, to prevent exposure to residual soils that may exceed levels that would allow for unrestricted use that may remain at the completion of the remedial action;
- Institutional controls for the river sediments such as a restricted navigation area, to prevent disruption of cover in the event contaminated sediments are left at depth; and
- On-site restoration of approximately six acres of wetlands disturbed during implementation of the remedy.

Table 2: Operable Unit 3 Remediation Goals

Media	Arsenic (mg/kg)	Mercury (mg/kg)
River Sediments	100	2
Marsh Surface Sediments	32	2
Marsh Sediments (below 1 foot)	160	not applicable

Status of Implementation

- EPA completed the OU1 remedy on the HR site in 2001, and the PRP group completed the OU1 remedy on the ARC site in 2003.
- In August 2010, EPA completed the OU2 soil remediation for the HR site, removing approximately 190,000 tons of contaminated soil from the site. In May 2014, the PRP group for the ARC site completed the OU2 soil remediation for the ARC site and the HR Drum Dump area of the HR site, removing approximately 120,000 tons of contaminated soil from the site. The institutional controls called for in the ROD have not been implemented.
- In August of 2015, EPA began the OU3 sediment remediation for both sites. In January 2017, EPA completed the removal and backfill of approximately 70,000 tons of contaminated sediment from both the marsh and river. EPA is currently restoring the marsh wetland.

Table 3: IC Summary Table

Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Soil (OU2)	Yes	Yes	On-site Soil	Prevent disruption of the soil cap	Planned deed notice, CEA
Groundwater (OU2)	Yes	Yes	On-site Groundwater	Prevent installation of groundwater wells	Planned deed notice, CEA
Sediments (OU3)	Yes	Yes	Marsh and River Sediments	Prevent disruption of cap materials in both the marsh and river	Planned deed notice for marsh, the IC for the river sediments is yet to be determined

Institutional Controls and Monitoring

Upon completion of the OU3, remedy EPA will initiate efforts to place a CEA on the OU2 area, to prevent disruption of the soil cover and to prohibit drilling of groundwater wells. In addition, EPA will initiate efforts to place deed and/or use restrictions on the OU3 dredged areas in both the marsh and river. A groundwater monitoring program will also be initiated in 2018 to monitor groundwater on both sites to ensure stabilization of the contaminant plume.

Climate Change Assessment

Potential impacts from climate change have been assessed, including an assessment of impacts caused by Hurricane Sandy during the design phase of the project. EPA has determined that the performance of remedies is currently not at risk due to the expected effects of climate change in the region and near the sites. EPA however, will continue to monitor the sites, to ensure that the site remedies are not affected by storms or flooding.

III. PROGRESS SINCE THE LAST REVIEW

This is the first FYR for this site so this section is not applicable.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification & Involvement

On October 2, 2017, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at 31 Superfund sites in New York and New Jersey, including Horseshoe Road and Atlantic Resources sites. The announcement can be found at the following web address: https://wcms.epa.gov/sites/production/files/2017-10/documents/five_year_reviews_fy2018_final.pdf.

In addition to this notification, a public notice was made available via email to the Town of Sayreville, New Jersey, on October 10, 2017, with a request that the notice be posted to the town's website and in appropriate municipal offices. The purpose of the public notice was to inform the community about the FYR and to list where the final report will be posted. The notice also included the RPM's and the CIC's addresses and telephone numbers for questions or comments related to the FYR process or the site. Once the FYR is completed, the results will be made available on EPA's webpages for Horseshoe Road (https://www.epa.gov/superfund/horseshoe-road) and Atlantic Resources (https://www.epa.gov/superfund/atlantic-resources) sites and at the local site repositories located at the Sayreville Public Library, 1050 Washington Road, Parlin, New Jersey.

Data Review

The long-term monitoring (LTM) well network has not been installed at this time due to the large footprint of the OU3 remedy construction in the area of OU2. Therefore, no site monitoring data has been collected since the completion of the OU2 remedy. EPA intends to install a monitoring well network at the completion of the OU3 remedy to ensure that contaminant levels in the groundwater do not increase over time. Data from the LTM network, and wetland monitoring will be included in the next FYR.

Site Inspection

The inspection of the Site was conducted on August 21, 2017 . In attendance were John Osolin the RPM for EPA, Mike Burlingame Project Manager for NJDEP, Kathryn Flynn, Hydrologist for EPA, Chuck Nace, Risk Assessor for EPA, and Michael Clemetson, Ecological Risk Assessor for EPA. The purpose of the inspection was to assess the protectiveness of the remedies. The implementation of the OU3 remedy was in progress during the site inspection. The river and marsh dredging and capping were completed, along with most of the wetland restoration. All the contaminated sediment from both the river and marsh areas had been shipped off-site. Most of the OU2 area was covered with healthy vegetation including two wetland areas that appeared to be established with adequate density and vigor. At the time of the site visit, the area used to place the dewatering pad for OU2 had been regraded but needed to be hydroseeded. In September, after the site inspection, this area was hydroseeded to provide a grass cover that would prevent erosion. Also in place during the inspection were all the long term monitoring wells for the Atlantic Resources site, and the marsh wells for the Horseshoe Road site. The upland wells will be installed after the OU3 remedy is complete. The site fencing (Deer, goose, and hurricane fencing) was all in place and appeared well maintained.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

The OU2 remedy removed contaminated surface soils and deeper soil that acted as a source of groundwater contamination. The excavated areas were then filled with clean fill that acts as a cap. The OU3 remedy removed contaminated sediment from the Raritan River, and placed a sand cap to prevent ecological exposures to deeper contaminated sediment left in place. OU3 also addressed contaminated sediments in the marsh by mechanical excavation. The excavation was backfilled, forming a cap which has been revegetated with wetland plant species. The selected remedy for each media included removal of the contaminated material from the property, with the exception of groundwater which was associated with a TI waiver. Given that the remedies removed the contaminated materials from the sites, the exposure pathways associated surface soil, subsurface soil, and sediment have been eliminated. Although the groundwater did not have an active remedy, soils that acted as source areas to groundwater were removed as part of the OU2 remedy. In addition, there are no private wells on the property or within the plume area, thus there is no complete pathway for groundwater exposure. Thus, from a human health and ecological exposure perspective, the remedial actions have eliminated the exposure pathways and are functioning as intended. EPA plans to perform monitoring of the OU2 groundwater to ensure that contaminated soils remaining on site do not increase contaminant levels in site groundwater, and site conditions that provided justification for the TI waiver are still valid.

Implementation of Institutional Controls and Other Measures

The ROD for OU2 called for a deed notice for soils and a Classification Exception Area for the on-site groundwater. Neither of these have been completed. EPA plans to implement them at the completion of the OU3 remedy, which is targeted to be completed in December 2017 .

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Question B Summary:

Human Health - This is the first FYR since the human health risk assessments (HHRA) were completed. Each HHRA evaluated exposure to on-site trespassers/recreators, commercial/industrial workers and construction workers for exposure through ingestion, inhalation and dermal contact with surface soil, subsurface soil, groundwater, surface water and sediment. Additionally the vapor intrusion pathway was evaluated. The exposure assumptions that were used for the receptors and exposure pathways were the standard default values that were valid at the time. The standard exposure default values have changed for several parameters including: body weight, water ingestion rate and skin surface area since the HHRA was completed; however, the changes result in only a marginal change in risk and hazard estimates (i.e., slightly lower). The use of the new values would not impact the decision that was made for the site, therefore the exposure assumptions used at the time would still be considered to be valid.

Similar to the exposure assumptions, several toxicity values have changed since the HHRA was completed. In general, the toxicity values became more stringent, which would slightly increase the risk and hazard estimates. Although the former toxicity values would no longer be valid, as new values have replaced them, the decisions made based on the former values would still be valid. The cleanup goals that were selected were based on federal and state applicable or relevant and appropriate requirements or to be considered requirements and they remain valid for all compounds. Therefore, all the cleanup goals that were chosen remain protective of human health are still valid.

The remedial action objectives (RAOs) focused on preventing exposure to surface soil, subsurface soil, and sediment, and preventing exposure and migration of contaminants in groundwater. The RAOs are still valid.

Ecological Risk - Although the ecological risk assessment screening and toxicity values used to support the 2004 and 2009 RODs may not necessarily reflect the current values, the on-site soil areas, marsh, and river excavations and backfilling reduced the potential risk from the surface soil and sediment contaminants to ecological receptors.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

Question C Summary:
No other information has come to light which calls into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations				
OU(s) with Issues/Recommendations Identified in the Five-Year Review:				
Operable Unit 2	**Issue Category: Institutional Controls**			
	Issue: A deed notice for continued use of the former Horseshoe Road and Atlantic Resources properties as non-residential (commercial/light Industrial), identified in the OU2 ROD, has yet to be implemented.			
	Recommendation: Place deed notice on former Horseshoe Road and Atlantic Resources properties.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP - ARC EPA - HR	EPA	9/30/2022

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
Operable Unit 3 *Had no issues*

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
Operable Unit 2	*Protectiveness Determination:* Short-term Protective

Protectiveness Statement: The OU2 Remedy currently protects human health and the environment because there are no completed pathways to contaminated soil or groundwater and access to the site is controlled. However institutional controls intended to maintain the soil cover and prevent access to groundwater need to be placed in order for the OU2 remedy to remain protective in the long-term.	
Operable Unit 3	*Protectiveness Determination:* Will be Protective
Protectiveness Statement: The OU3 Remedy is expected to be protective of human health and the environment upon completion. In the interim, remedial activities completed to date have adequately addressed all exposure pathways that could result in unacceptable risks in these areas.	

VIII. NEXT REVIEW

The next FYR report for the Horseshoe Road and Atlantic Resources sites is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

- Record of Decision, Operable unit 1- Buldings and Structures, Horseshoe Road Site and The Atlantic Resources site, Sayreville, Middlesex County, New Jersey, **August 2000**

- Remedial Action Report – Operable Unit 1 Horseshoe Road Superfund Site, Sayreville, NJ **May 2001**

- Final Addendum to the Final Revised Feasibility Study for Soil and Groundwater Horseshoe Road and Atlantic Resources Sites Remedial Investigation/Feasibility Study, Sayreville, New Jersey, **July 23 2002**

- Building Demolition – Final Report, Atlantic Resources Corporation Site, Syreville, NJ, **July 2003**

- Record of Decision, Operable unit 2- Soil and Groundwater, Horseshoe Road Site and Atlantic Resources Sites, Sayreville, Middlesex County, New Jersey, **September 30, 2004**

- Record of Decision, Operable unit 3- Marsh and River Sediment, Horseshoe Road Site and Atlantic Resources Sites, Sayreville, Middlesex County, New Jersey, **June 22 2009**

- Final Remedial Action Report – Horseshoe Road Superfund Site, Operable Unit 2 -Soil and Groundwater Remediation, Sayreville, NJ, **August 2010**

- 100% Design Analysis Report – Horseshoe Road and Atlantic Resources Corporation Sites, Operable Unit 3, Sayreville NJ, **August 6, 2014**

- 100% Design Specifications Report – Horseshoe Road and Atlantic Resources Corporation Sites, Operable Unit 3, Sayreville NJ, **August 6, 2014**

- Final Remedial Action Report – Atlantic Resources Corporation site and the Horseshoe Rd. Drum Dump Portion of the Horseshoe Road Complex Sites – Operable Unit 2, Sayreville, NJ, **September 2014**

- Capping Core Photos – Cores taken in the river to ensure proper thickness of the cap implacement during OU3 Remedial Action .

APPENDIX B - Figures

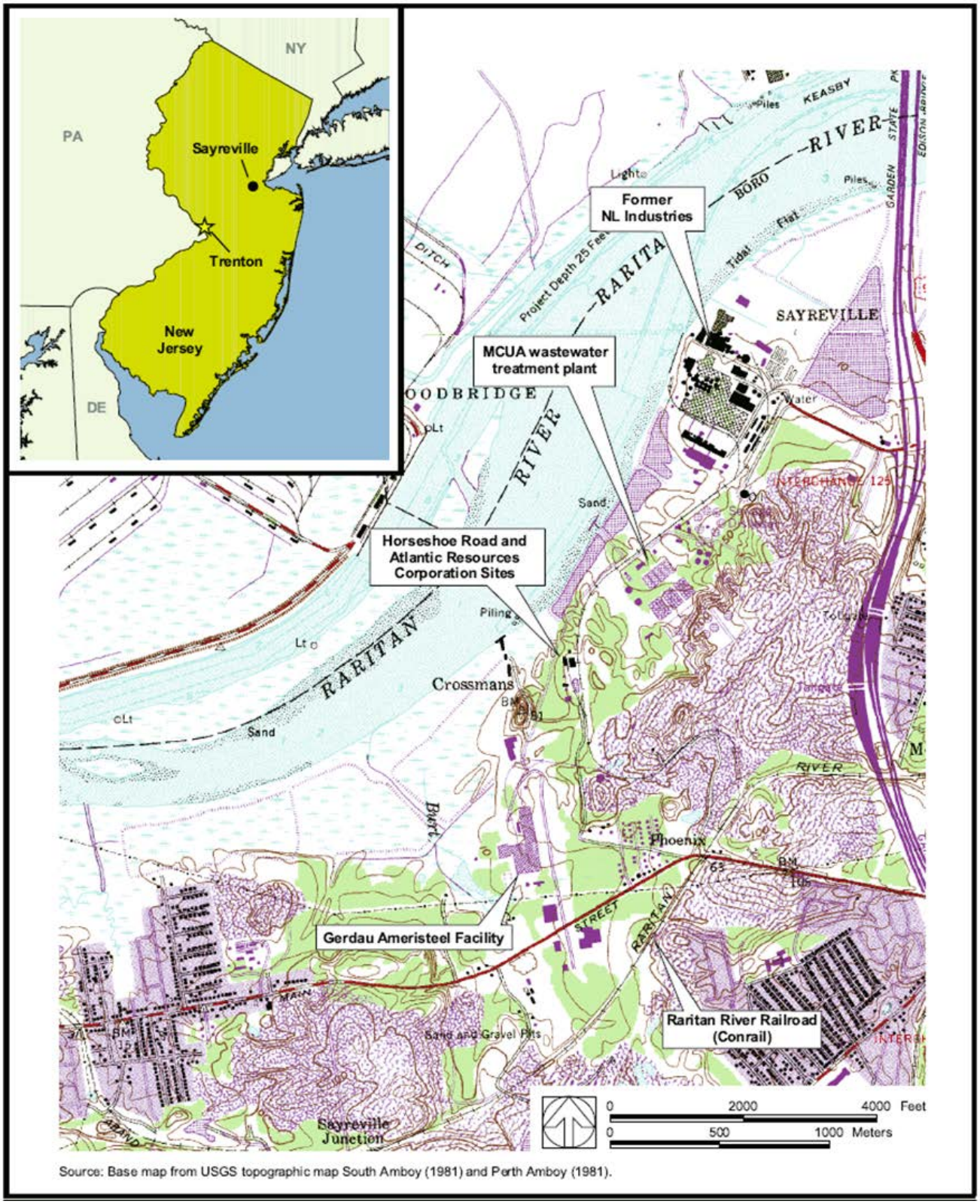

Figure 1

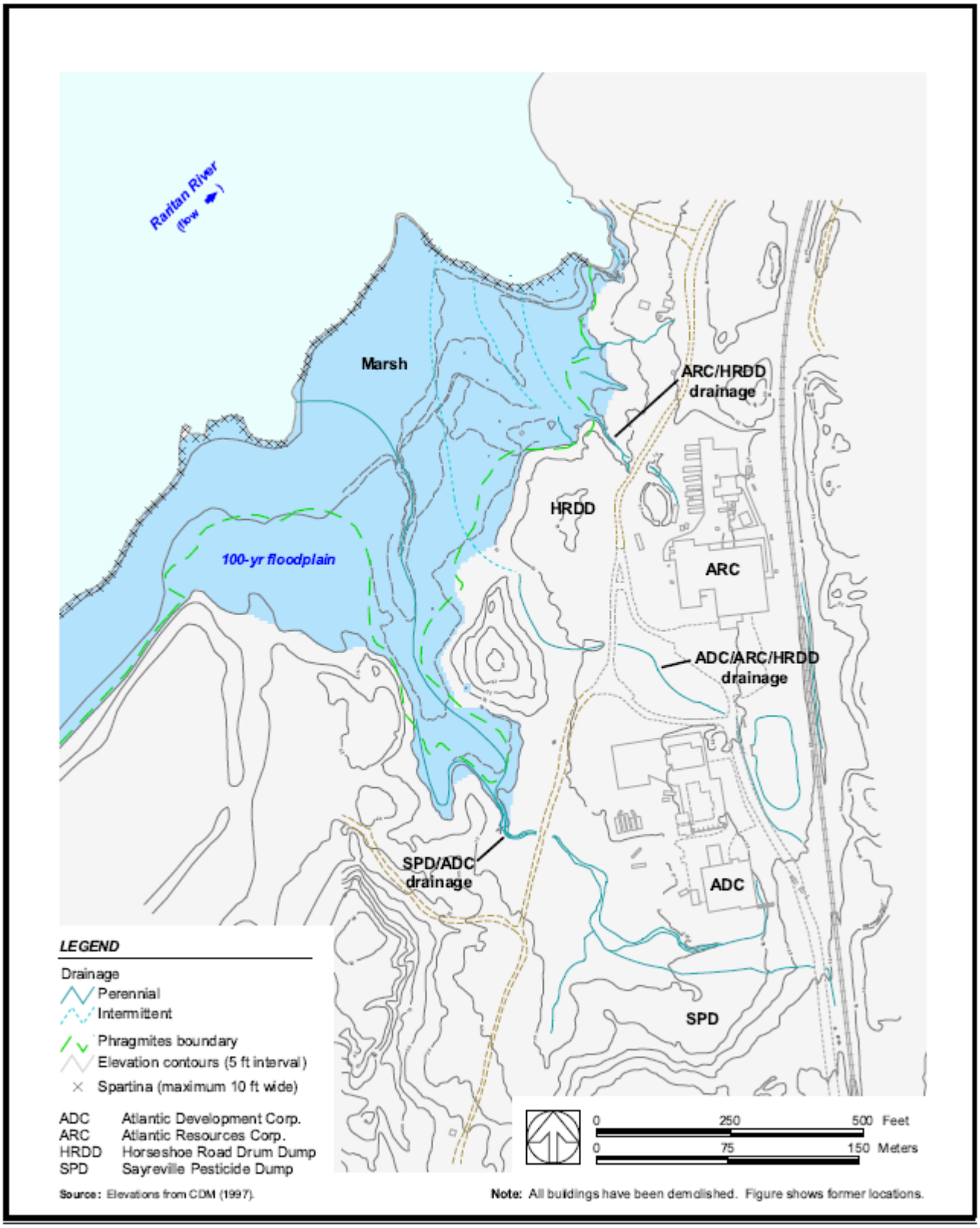

Figure 2 - Site Map