

# FINAL DRAFT

## EPA Rutgers Raritan River Project Data Compilation and Integration Report

U.S. Environmental Protection Agency Cooperative Agreement: X7-96298012-0

Project Period: 07/01/2012 – 06/30/2015

**Compiled by:**

Christopher C. Obropta, Ph.D., P.E., Associate Extension Specialist in Water Resources;  
[obropta@envsci.rutgers.edu](mailto:obropta@envsci.rutgers.edu)

Beth Ravit, Ph.D., Director, Center for Urban Environmental Sustainability;  
[ravit@envsci.rutgers.edu](mailto:ravit@envsci.rutgers.edu)

Lisa Rodenburg, Ph.D., Associate Professor, Department of Environmental Sciences;  
[rodenburg@envsci.rutgers.edu](mailto:rodenburg@envsci.rutgers.edu)

Judith Shaw, Ph.D., PP/AICP, Senior Research Associate, Edward J. Bloustein School of Planning and Public Policy; [jashaw@ejb.rutgers.edu](mailto:jashaw@ejb.rutgers.edu)

Steven Yergeau, Ph.D., Environmental & Resource Management Agent, Ocean & Atlantic Counties; [vergeau@njaes.rutgers.edu](mailto:vergeau@njaes.rutgers.edu)

**With Assistance from:**

Lisa Galloway, Senior Program Coordinator, Water Resources Program; [evrard@rci.rutgers.edu](mailto:evrard@rci.rutgers.edu)

Sara Malone, Senior Research Specialist, Edward J. Bloustein School of Planning and Public Policy; [simalone@ejb.Rutgers.edu](mailto:simalone@ejb.Rutgers.edu)

## **Introduction**

Data related to known Superfund, brownfield and contaminated sites, point source and nonpoint source pollution have been collected by various parties within the Raritan River watershed. However, these data were fragmented, inconsistent, and difficult for the general public to access and place into the context of specific community concerns and actions. The *EPA Rutgers Raritan River Project* was conducted to compile these data into a comprehensive database and to develop an interactive tool that could assist federal, state, and local stakeholders in making decisions related to environmental cleanup and site reuse, identify pollution data gaps, and provide recommendations for future research needed to fill these gaps. An improved understanding of pollution sources impacting the Raritan River will lead to the identification of polluted sites of greatest concern. Results will be used by regulators, local officials, and the environmental advocacy community to prioritize actions for specific site cleanup and restoration activities.

## **Purpose**

The purpose of this report is to describe the process that the Project Team undertook to fulfill the objectives and deliverables outlined in the *EPA Rutgers Raritan River Project* funded by the U.S. Environmental Protection Agency (EPA), Region 2. The project objectives were to provide a comprehensive understanding of the sources of pollution in the Raritan River Basin, develop and build watershed partnerships, and provide benefits to community and interested organizations. The deliverables included a series of Excel files containing the final datasets compiled, online interactive maps displaying potential pollution sources, a Raritan River Advisory Group to provide project oversight and a contact list of its members, and a website containing all of the aforementioned in either an interactive or downloadable form. All of this can be found online at: [http://water.rutgers.edu/Projects/EPA\\_Raritan\\_River\\_Project/Default.html](http://water.rutgers.edu/Projects/EPA_Raritan_River_Project/Default.html).

## **Project Area**

The project area was defined as those municipalities that included a portion of the mainstem of the Lower Raritan River (Figure 1). The Lower Raritan River is the section of the Raritan River within the state's Watershed Management Area #9 (WMA09).

Data from the following 22 municipalities was compiled for the *EPA Rutgers Raritan River Project*.

1. Bound Brook Borough
2. Branchburg Township
3. Bridgewater Township
4. East Brunswick Township
5. Edison Township
6. Franklin Township
7. Highland Park Borough
8. Hillsborough Township
9. Manville Borough
10. Metuchen Borough
11. Middlesex Borough

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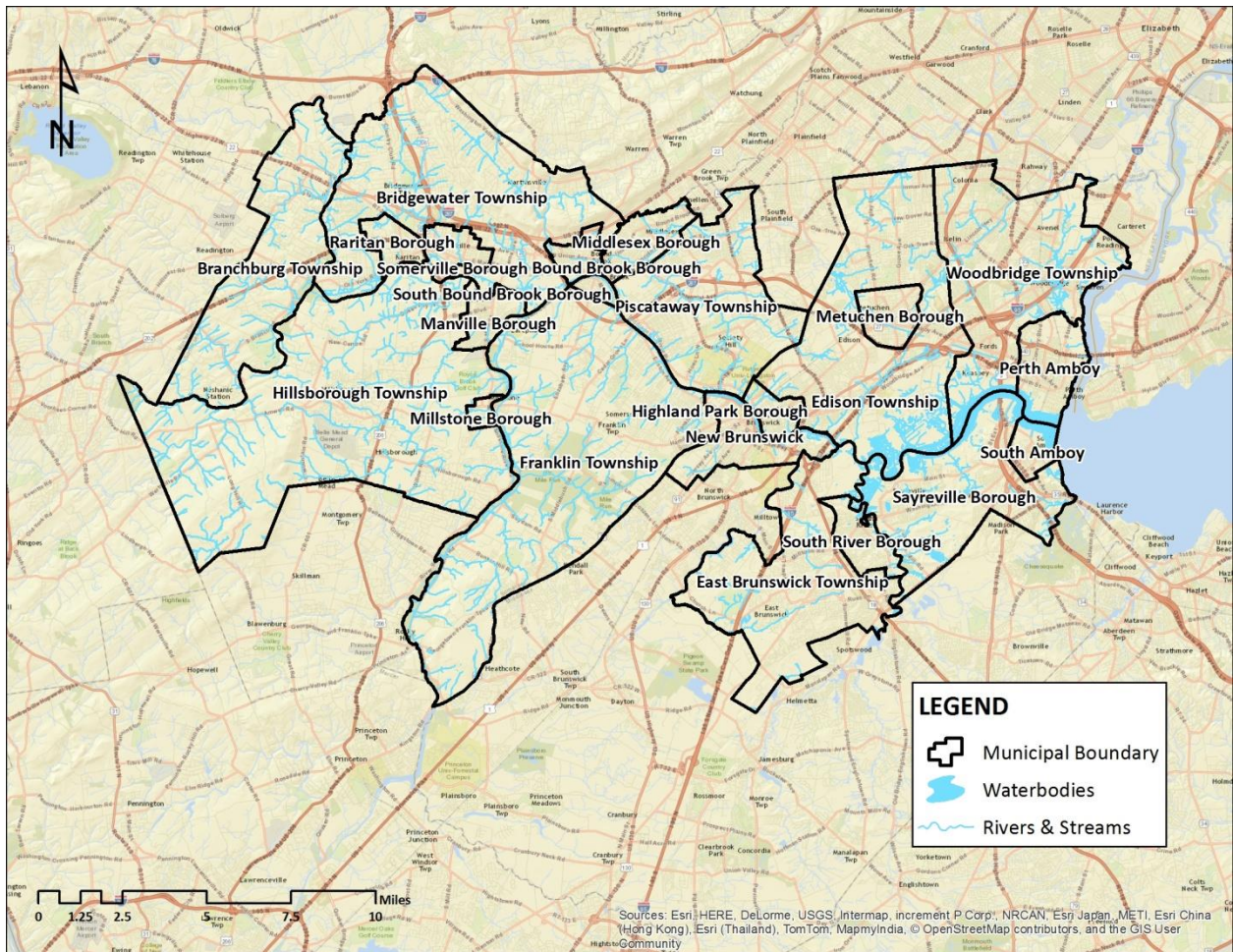


Figure 1: The EPA Rutgers Raritan River Project area

12. Millstone Borough
13. New Brunswick City
14. Perth Amboy City
15. Piscataway Township
16. Raritan Borough
17. Sayreville Borough
18. Somerville Borough
19. South Amboy City
20. South Bound Brook Borough
21. South River Borough
22. Woodbridge Township

### **List of Reviewed Datasets**

Both data in the form of actual databases/raw data and reports generated from monitoring and research efforts were reviewed and evaluated in developing the *EPA Rutgers Raritan River Project* database. The following sources were assessed for inclusion in the *EPA Rutgers Raritan River Project* database.

#### ***National/Federal Sources:***

##### **Environmental Protection Agency (EPA)**

Envirofacts: <http://www.epa.gov/enviro/>

Storage & Retrieval (STORET) Data Warehouse: <http://www.epa.gov/storet/>

Surf Your Watershed: <http://cfpub.epa.gov/surf/locate/index.cfm>

Superfund Site Information: <http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm>

Brownfields & Land Revitalization 'Where You Live' Database:

<http://www.epa.gov/swerosps/bf/bfwhere.htm>

My Environment: <http://www.epa.gov/myenvironment/>

##### **National Oceanic & Atmospheric Administration (NOAA)**

Office of Response & Restoration:

<http://response.restoration.noaa.gov/environmental-restoration/environmental-assessment-tools/query-manager-marplot-data-maps.html>

National Oceanographic Data Center (NODC): <http://www.nodc.noaa.gov/>

Mussel Watch: <http://ccma.nos.noaa.gov/about/coast/nsandt/musselwatch.aspx>

##### **United States Geological Survey (USGS)**

National Water Information System: <http://waterdata.usgs.gov/nwis>

##### **National Water Quality Monitoring Council (NWQMC)**

Water Quality Portal: <http://www.waterqualitydata.us/>

**Regional Sources:**

**New York State Department of Environmental Conservation (NYDEC)**

NY/NJ Contaminant Assessment & Reduction Program (CARP):

<http://www.dec.ny.gov/chemical/23839.html>

<http://carpweb.org/main.html>

**State Sources:**

**New Jersey Department of Environmental Protection (NJDEP)**

Water Quality Monitoring & Standards: <http://www.nj.gov/dep/wms/>

Site Remediation Program: <http://www.nj.gov/dep/srp/>

NJ Geological Survey: <http://www.nj.gov/dep/njgs/>

Bureau of Geographic Information Systems: <http://nj.gov/dep/gis/stateshp.html>

**Other Sources:**

**Journal Articles**

Rutgers University Web of Science:

[http://www.libraries.rutgers.edu/cms/indexes/descriptions/web\\_of\\_science](http://www.libraries.rutgers.edu/cms/indexes/descriptions/web_of_science)

JSTOR: <http://www.jstor.org/>

Google Scholar: <http://scholar.google.com/>

The initial review resulted in over 2,000 locations and over 75,000 data points (i.e., individual samples/measurements or reports) (Table 1). After compilation of the datasets, the data review was conducted following the guideline established in the EPA-approved *Rutgers University Raritan River Initiative Quality Assurance Project Plan (QAPP) for Secondary Data Collection* (see Appendix A) and resulted in a smaller dataset of quality data for inclusion in the final work products of the website, maps, and downloadable data files.

**Raritan River Project Advisory Group**

A volunteer Raritan River Advisory Group, modeled on the NJDEP TMDL Advisory Panel, was formed and includes university researchers, municipal officials, and representatives from the nongovernmental organization (NGO) and regulatory communities. The Advisory Group's role was to review the study database, provide suggestions regarding existing data gaps, and advise in the setting of priorities for collecting additional research data. The following groups had representatives on the Raritan River Project Advisory Group.

- Association of New Jersey Environmental Commissions
- Center for Urban Environmental Sustainability
- Middlesex County Improvement Authority
- National Oceanic and Atmospheric Administration (NOAA)
- NJDEP, Bureau of Environmental Analysis & Restoration
- New Jersey Water Supply Authority
- NY/NJ Baykeeper
- Raritan Headwaters Association

Table 1: Sources of data, and number of sampling sites and data points reviewed for inclusion in the EPA Rutgers Raritan River Project database

<b>Agency/Description</b>	<b>Number of Sites (Location)</b>	<b>Number of Data Points</b>
Storage & Retrieval (STORET) Data Warehouse	450 (River & Tributaries)	50,371 (Water Quality)
<i>NOTE: STORET covers multiple agencies and monitoring groups, and multiple parameters.</i>		3,999 (Habitat)
		7,322 (Biological)
Mussel Watch – East Coast (Organics, Trace Elements, PBDE, Dioxins/Furans)	3 (Bay)	6,499
Mussel Watch – HRE (Bio-Effects) (Organics, Trace Metals, Sediment Toxicity)	117 (River/Bay)	3,365
Mussel Watch – RAR (BS) (Organics, Trace Metals)	5 (Bay)	1,384 (Benthic Surveillance)
USGS Water Quality Gages	27	
USGS Flow Monitoring/Gages	16	
NY/NJ Contaminant Assessment & Reduction Program (CARP) (Organics, Metals)	3 (River)	~2,000
NJ Department of Environmental Protection (NJDEP)		
Aquatic Pesticides (Permits & Active Ingredients)	35	51
Combined Sewer Overflows	13	N/A (Location Only)
Known Contaminated Sites (2012)	1,048 (Watershed)	1,048
Surface Water Dischargers (NJPDES)	363	363 (Type of Discharge)
Journal Articles, Reports & Dissertations	N/A	84 (Documents)

- Raritan Riverkeeper
- Rutgers Cooperative Extension, Water Resources Program
- Rutgers University, Department of Environmental Sciences
- Rutgers University, Edward J. Bloustein School for Planning & Public Policy
- Rutgers University, Grant F. Walton Center for Remote Sensing & Spatial Analysis
- Rutgers University, Human Ecology
- Rutgers University, Institute of Marine & Coastal Sciences
- US EPA Region 2, Division of Environmental Planning and Protection
- United States Geological Survey (USGS)
- Woodbridge Township

For a complete list of Advisory Group members, their affiliations, and their contact information, please visit [http://water.rutgers.edu/Projects/EPA\\_Raritan\\_River\\_Project/AdvisoryGroup.html](http://water.rutgers.edu/Projects/EPA_Raritan_River_Project/AdvisoryGroup.html).

## **Data Gap Analysis**

After an initial review of the data, data gaps were identified within the selected datasets to provide a clear understanding of the scientific questions that need to be answered for a specific site rehabilitation to proceed. The gaps were compiled, categorized, and submitted to the Project Advisory Group for review and comment (see list below).

### ***Project-Defined Missing Data:***

- As outlined in the EPA-approved QAPP, the following data criteria were established for inclusion in the *EPA Rutgers Raritan River Project* database and subsequent analyses:
  - Data have been generated under an approved QAPP or other sampling document
  - Data have been generated by a reliable source (i.e., the data generator is generally trusted and respected [federal, state, and local agencies or research institutions])
  - Data have been published in peer-reviewed articles or publications
  - Data have been widely used and/or are trusted by scientists and professionals
  - Data have been collected for similar purposes (i.e., to assess environmental health) to describe pollution sources and sites
  - Data have been collected along the Lower Raritan main stem and along the main tributaries in Watershed Management Area 9 (WMA09)
  - Analytical methods were sufficiently sensitive to support data reporting to regulatory criteria
  - Reported data include laboratory qualifiers and qualifier definitions

If data did not meet this set of criteria, they were not included within the final database and analyses.

- It was established by the Project Team (the PI and Co-PIs) that the data collection efforts would focus on the surface waters of the Lower Raritan River and the Raritan Bay, where available. This excluded groundwater and drinking water from the data collection.

**Data Gaps:**

- Data collection was carried out until June 2014, and all data are believed to be accurate up to that point in time when obtained from their sources. Data created or updated after June 2014 are not included in the project database. However, some programs administered by state or federal agencies included in the database have ongoing programs that update the information obtained by said agencies. The schedules for these updates may be either as the information comes in, or on a set schedule that may be on an interval of months or years.
- There is a lack as to the current 'status' of sites associated with the point sources of pollution (known contaminated sites, brownfields, Superfund, etc.). Therefore it is difficult to determine if a site is closed after remediation has occurred, part of an open/active investigation, or if the remediation efforts are pending.
- Data on the levels and/or concentrations of pollutants and contaminants was lacking for point source pollution sites (i.e., brownfields, known contaminated sites, etc.). The data indicating what caused the location to be listed as such a site is missing from the database.
- There is a paucity of data related to any of the biological or ecological communities in the project area (excluding bacteria and aquatic macroinvertebrates). Populations of commercially and recreationally important species (fish, shell fish, mammals, and birds) are available in few publications with only summary data reported.
- There is a lack of complete spatial coverage for some areas for some sets of data, most likely due to the time and funding needed to provide comprehensive coverage. More sites are located in the lower portion (Middlesex County) of the Raritan River Project Area than in the upper portion (Somerset County). In addition, there are few sites that are consistently monitored in the Raritan Bay.
- While the Lower Raritan River and the Raritan Bay have undergone dredging in the past, data on dredging activities are missing from data searches conducted for the project database. Information regarding timing, cost, reason, and size of dredging projects is not included in the project database.
- While there is a large amount of data available through the EPA's Storage and Retrieval Data Warehouse (STORET), the data files and location/site files are separate downloads and present a challenge in linking data to particular sites. There is a lack of consistency in naming sites or agencies responsible for including data in STORET which made associating the data to the sites difficult and time consuming.
- In addition, STORET does not include metadata important to researchers, such as detection limits and surrogate recoveries. The reporting of concentrations that are below detection limit in STORET is inconsistent. At times the detection limit is reported in the measured



concentration field, which can make it difficult to know whether the stated concentration is a non-detect or not.

***Recommendations for Filling Data Gaps:***

The New Jersey Water Resources Research Institute (NJWRRI) is committed to conducting the research needed to address water problems in New Jersey. The NJWRRI provides over \$75,000 per year in grants to researchers in New Jersey. Some of these funds can be targeted for Raritan River research to fill data gaps identified in the study. Each year priority issue(s) for the current year's funding are established, and research proposals are asked to briefly describe how the research will contribute to the understanding and/or solution of the problem identified as a priority issue and why it is important to New Jersey. The Project Team will work with the NJWRRI to include research that fills the identified data gaps as a priority issue in future requests for proposals. Additionally, other grant funding and university funding could be requested to further assist in collecting needed data.

While the NJWRRI might be able to fund targeted studies to fill some data gaps, a more comprehensive monitoring program needs to be completed on the lower Raritan River to collect water and sediment samples and analyze these samples for priority pollutants and contaminants. A component of this monitoring program should collect long-term data on dissolved oxygen, pH, temperature, nutrients, and total suspended solids. This monitoring effort needs to be similar in nature to the New York State Department of Environmental Conservation (NYSDEC) Contamination Assessment and Reduction Project (CARP). These data are needed for a better understanding of the hot spots in the region so targeted remediation actions can be taken. EPA and NJDEP need to work together to design this monitoring program. Since the entire bay should be included in this monitoring program, New York and New Jersey must join forces on this effort. Local citizen groups need to be provided the opportunity to review proposed sampling locations and recommend locations based upon their intimate knowledge of the watershed.

The Project Team initiated conversations with staff from the NJDEP to address the data gap issues particular to STORET that were encountered during this project. Members of the Project Team met with staff from the NJDEP on April 24, 2015 to develop solutions to these issues. NJDEP acknowledged that some of the points raised by the Project Team are issues that need to be addressed; they explained some of the reasons behind the inconsistencies with possible solutions, and they noted which problems need to be addressed by the EPA. A list of the issues brought to NJDEP and the results from this meeting can be found in Appendix B.

Finally, one of the most significant data gaps was the status of known contaminated sites (brownfields, combined sewer overflows [CSOs], Superfund sites, and contaminated sites) as delineated by NJDEP. Some of these sites have been remediated and/or redeveloped but are still listed in the database. The NJDEP data needs to be updated, and all data should be field verified.

The Project Team will continue to work with NJDEP and EPA on tackling these issues, as well as working with funding opportunities like the NJWRRRI to create partnerships that can help to fill these data gaps.

### **Site Prioritization Methods – Initial Options**

A site selection/prioritization methodology was developed which included input from EPA, NJDEP, and the Raritan River Project Advisory Group designed to help stakeholders identify and prioritize sites for cleanup. The various prioritization options considered are described below.

#### ***Methods Presented to Project Team and Advisory Group:***

1. Rank the municipalities in order of number of data points (both sources of pollution); from highest number of sites to least number; and add up rankings in each category  
The municipalities with the highest number of sites to remediate are the highest priority.
2. Same as #1, but first normalize numbers of sites by size of municipalities; instead of simple number of sites, it sets up the rankings by density of sites per square mile

*Both of these (#1 and #2) prioritize the most developed municipalities.*

3. Use proximity to Raritan River and other waterways (Figure 2); set up a ‘waterfront buffer’ along the Raritan River and major tributaries of 1,500 feet, map those sites that fall within this buffer

*Those sites closest to waterways are a priority since they have the most potential to directly pollute the Raritan River.*

4. Rank sites by number of water quality violations of monitoring data

*Those sites with the most violations of an accepted standard are the priority.*

5. Base priority on areas where potential point sources are found in the highest density (Figure 3)

*Those locations with the highest density of sites for potential rehabilitation would be the priority.*

6. Some combination of methods #1 through #5 outlined above

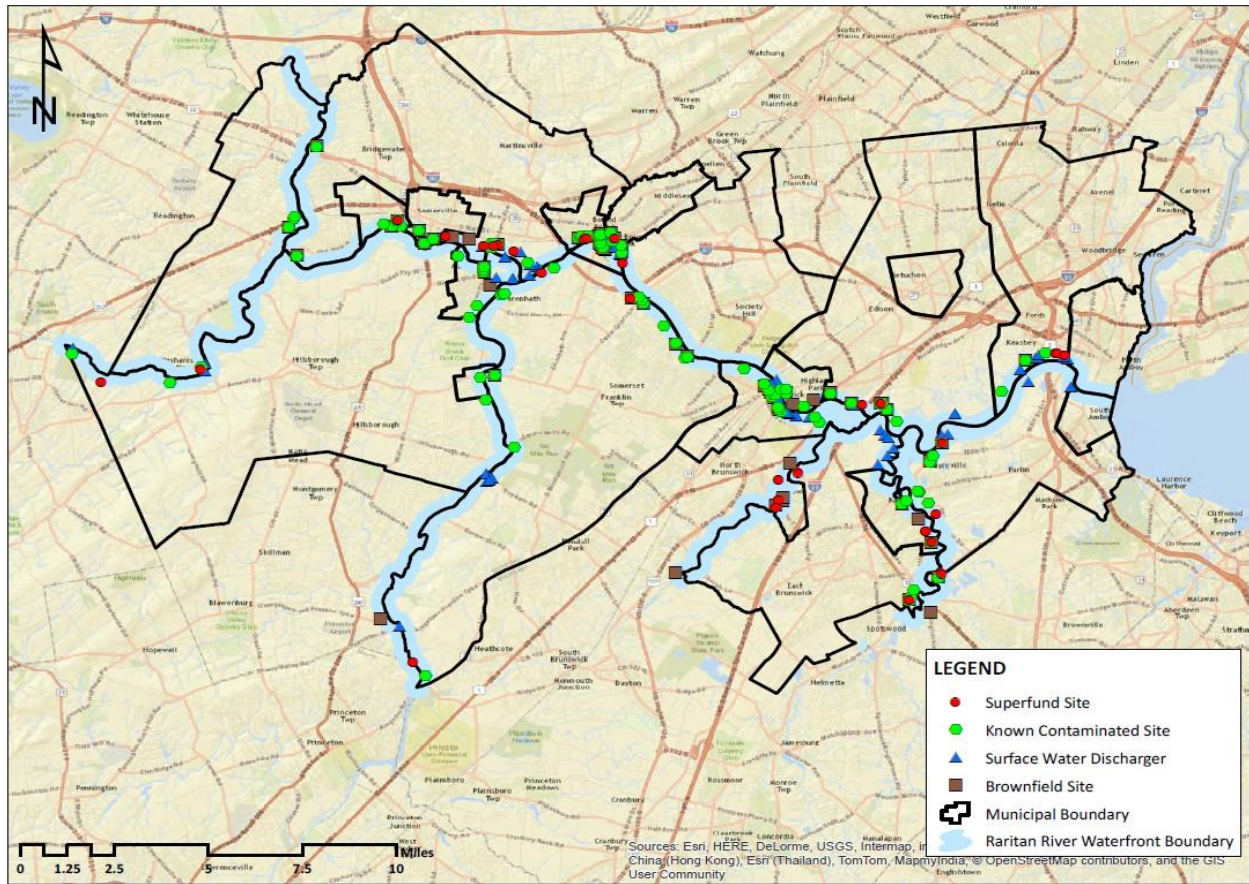


Figure 2: Priority sites located within the 'waterfront' along the Raritan River within the Project Area (Prioritization Method #3)

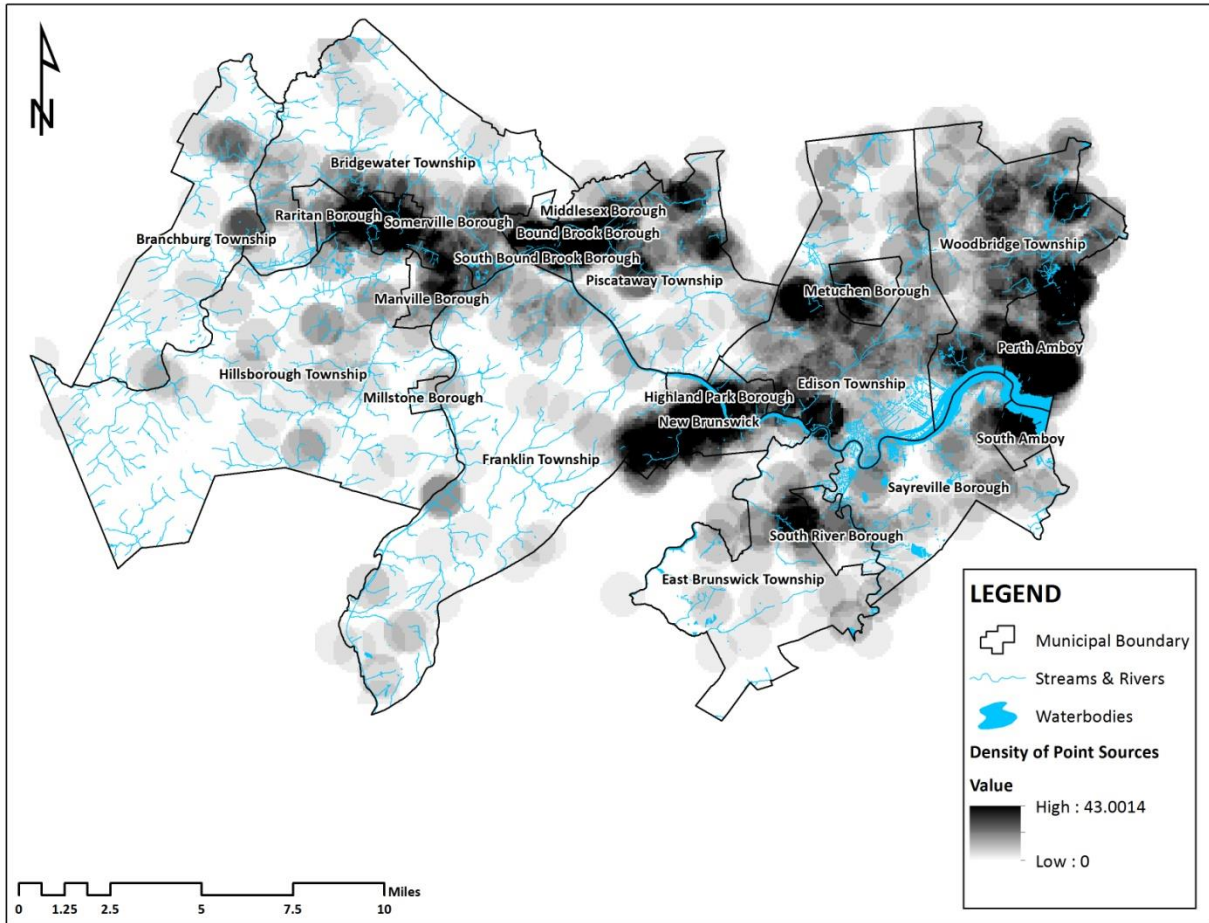


Figure 3: Priority sites based upon density of potential point sources within the Project Area (Prioritization Method #5)

### **Comments on Prioritization Methods Suggested by Members of the Advisory Group:**

- “I would very much like to create a weighted prioritization system that considers more than one criterion.”
- “Not a fan of option #4 at all given the age of the data. My preference is a hybrid of option #2 with a buffer overlay of Raritan River, tributaries and other environmentally sensitive areas (e.g., wetlands). It would be good to see a few maps of the hybrids.”
- “Regarding the prioritization methods, I like the # of sites/square mile strategy, which tells the intensity of pollution level relative for each municipality. I will recommend try considering adding the integrated list as another criterion which will tell people the pollution level for each subwatershed. Combining the number of polluted sites per square mile together with subwatershed integrated list might give us a better perspective to prioritize, for example, the most polluted sites per square mile within a “not meeting drinking water standard” subwatershed might be a top target for site remediation.”
- “One thought on prioritization, perhaps we look at receptors. For example, where is sensitive habitat or vulnerable populations and then see the impacts (discharges, etc.) around them. This is kind of #3, but looping in vulnerable populations or populations on local drinking water supplies (wells). I think without a scale of understanding the relevance of each data point to the other and how much of an impact each one has, prioritizing them will be a challenge (as you already know).”

### **Selected Site Prioritization Method**

A combination of criteria was used to determine which sites are considered a priority for further investigation and field documentation. These sites are viewed as those whose potential sources of contamination should be considered for future cleanup efforts. The following steps and assumptions were taken into account in determining the priority sites.

1. Priority Watersheds: To determine the watershed(s) in which to locate the priority sites, the GIS layer from the 2012 integrated report from the NJDEP was downloaded, and a map showing the impaired watersheds within the *EPA Rutgers Raritan River Project* area was created (Figure 4). Waterways were considered impaired if they were included on Sublist 5 for their designated uses (i.e., “the water quality standard is not attained. The waterway is impaired or threatened for one or more designated uses by a pollutant(s), and requires a TMDL.”).

The designated uses that were included in this step were chosen because of their potential impact to people who choose to use the rivers and streams either for recreation, for fishing as a source of food, or because the waterways provide a public supply of water for the local population. The watershed within which the water quality was impaired for all three of these uses was considered the priority watershed (designated as 'A' in Figure 4). The watershed that is directly upstream and the watershed directly downstream of this priority watershed are also considered priority watersheds. This is to account for the possible sources upstream that may also need to be addressed to improve water quality in watershed A, and to address any impacts that the water quality of watershed A is having downstream.

2. Waterfront Buffer: The 1,500 foot waterfront buffer (method #3, Figure 2) was clipped to the priority watersheds (Figure 5). The buffer was created in GIS and extends 1,500 feet from each bank of the Raritan River. The waterfront buffer was chosen since sites in closest proximity to the Raritan may have the highest potential to contaminate the river.
3. Priority Sites: Sites that had the potential to contaminate the river (brownfields, CSOs, Superfund sites, and contaminated sites that are pending NJDEP action) were then clipped in GIS to the newly created priority waterfront buffer (Figure 6). This resulted in 21 brownfields, two (2) CSOs, and four (4) contaminated sites (see Appendix C). There were no Superfund sites within the priority waterfront.

Surface water dischargers (both minor and major) were excluded from the priority listing because it was assumed that these licensed facilities are either in compliance with their permits or, if in violation, are undergoing regulatory action to address the violation. The level of monitoring at these permitted facilities was assumed be sufficient to trigger a response prior to major contamination of any waterways. Although CSOs have permitted discharges, the NJDEP is currently working to reduce or eliminate these outfalls in the state. CSO permittees will need to reduce flooding, ensure proper operation, maintenance, and management of existing infrastructure, and provide opportunities for green infrastructure to improve water quality and the recreational use and enjoyment of affected waterways. Since this process is still not complete at the time of this prioritization, they were included in the list of priority sites as potential sources of contamination still in need of cleaning up.

Known contaminated sites classified as “**Active**” were also excluded from this list of priority sites. The active status, as defined by the NJDEP Site Remediation Program (<http://www.nj.gov/dep/srp/kcsni/>), is that one or more active cases with any number of pending and closed cases status are associated with these sites. These sites were not included because it was assumed that these sites are in various stages of the remediation process and could possibly be currently undergoing cleanup.

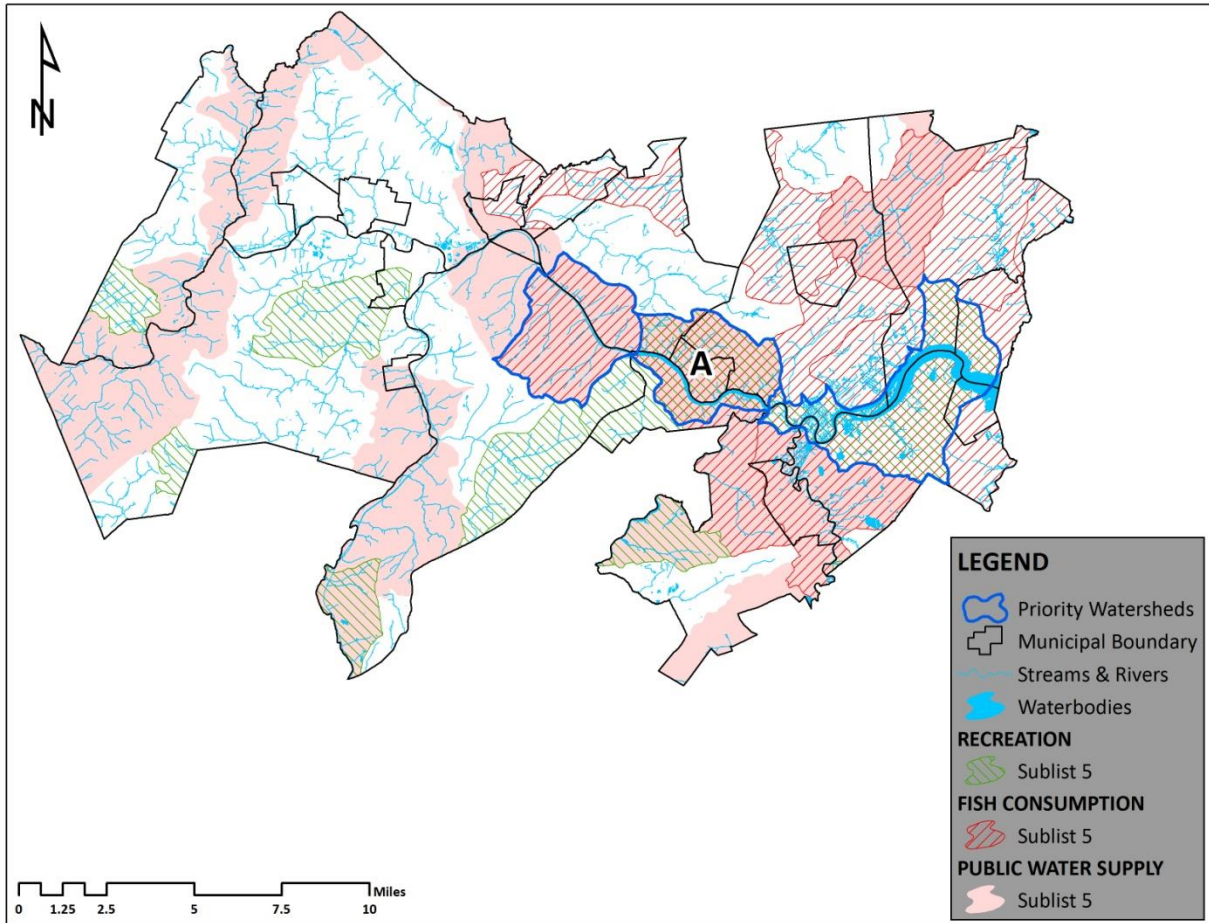


Figure 4: Impaired waterways within the Project Area based on the 2012 Integrated Report, with priority watersheds highlighted

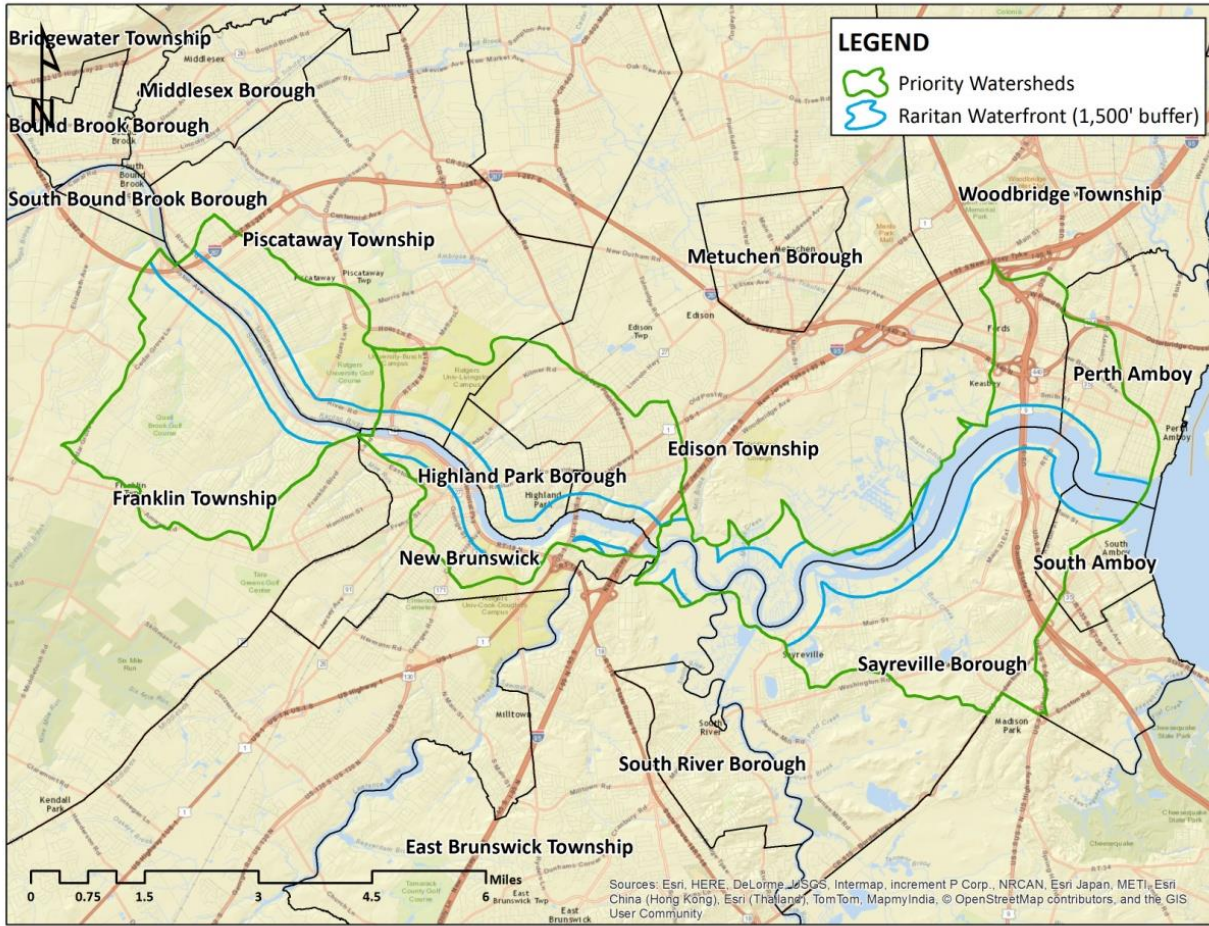


Figure 5: Raritan waterfront within the priority watersheds



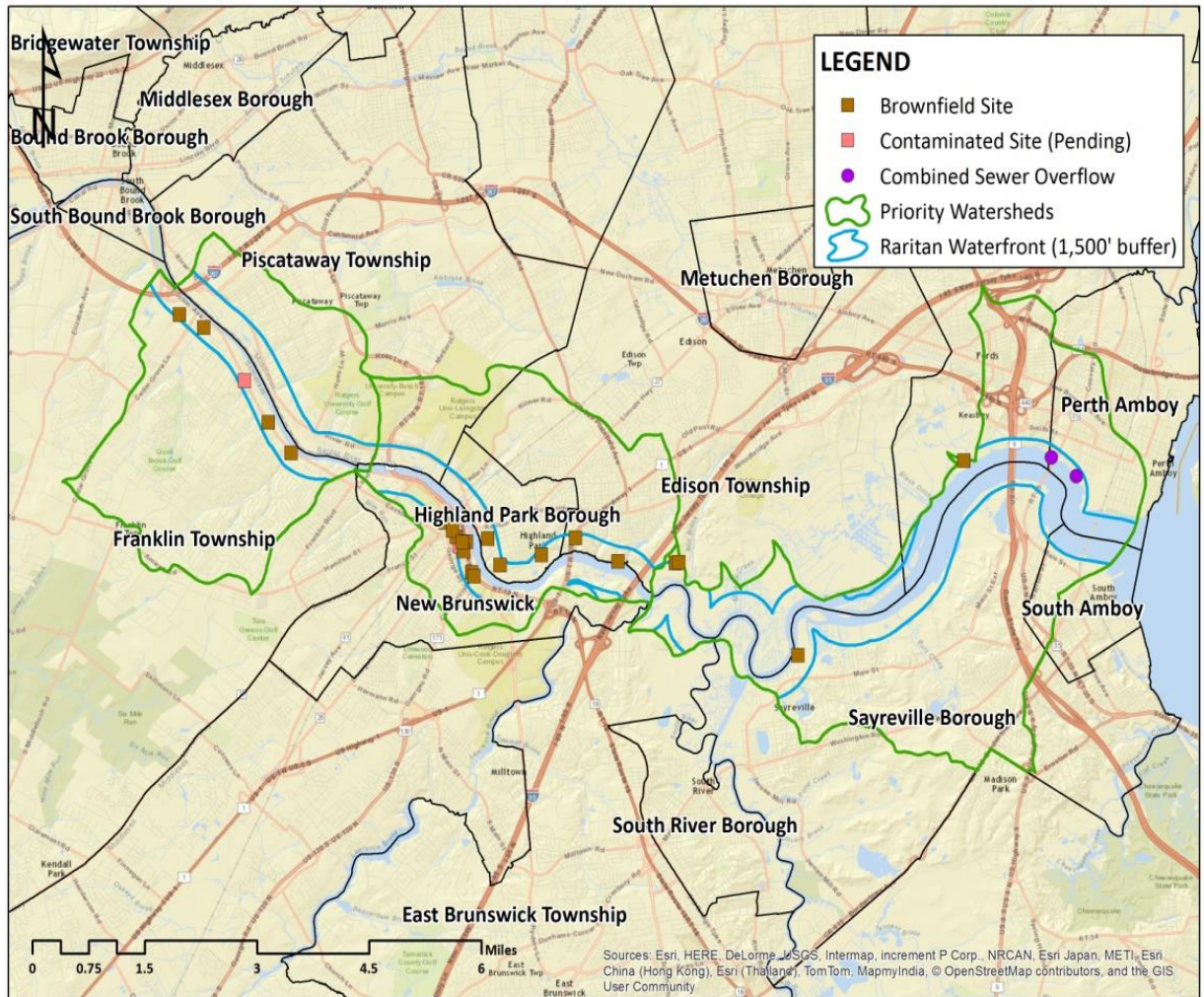


Figure 6: Priority sites for cleanup as determined by the EPA Rutgers Raritan River Project

Closed contaminated sites were also not included in the list of priority sites since their closed status indicates that the case against the responsible party(s) is no longer being pursued due to cleanup of the contamination, remediation of the sites, or other action that would stop further contamination of the property.

Due to the lack of data on their status, all brownfields are included in the priority list regardless of their status. Field photo documentation of these sites may allow for the project partners to update the status of the 21 brownfields included on the list of priority sites.

These multi-factor prioritization criteria were chosen since they incorporate the water quality of the Raritan River through the use of the integrated report data, with sites that are not currently licensed, permitted, undergoing investigation/remediation, or are monitored by the state and need to be further examined as to the extent, type, and duration of potential contamination.

*While we believe the selected criteria can identify Raritan River Watershed Priority Sites to target for cleanup, when ground-truthing the properties identified using the existing data, it became apparent that the NJDEP database has not been updated to reflect brownfields closure activity (see Appendix C for examples). We then contacted NJDEP, and the staff acknowledged that their SiteMart data is in need of updating. Since the project master database links to the data sources, when NJDEP completes the needed updates, the project database can then be accurately used to identify Priority Sites. Until the data has been updated, we cannot recommend using the current database to identify Priority Sites.*

### **Field Verification of Identified Priority Sites**

Using the methodology described above, 21 sites were prioritized for cleanup. These sites are listed in Appendix C. Field visits were made to each site to collect visual information and confirm the status of the site. Surprisingly many of the 21 sites that were identified using the available data appear to already be remediated and/or redeveloped. Photographs of each site are provided in Appendix C. This calls into question the age of the data in the NJDEP Data Miner database. It is apparent that these data need to be updated and field verified.

### **Summary**

Available data were compiled into a comprehensive database, and an interactive tool was developed that could assist federal, state, and local stakeholders in making decisions related to environmental cleanup and site reuse, identify pollution data gaps, and provide recommendations for future research needed to fill these gaps. A prioritization protocol was developed and applied to identify priority sites for cleanup. When the database and prioritization protocols were used, 21 sites were identified. Field visits to each of these sites indicate that some of these sites have already been remediated and/or redeveloped, clearly illustrating the need for the brownfields, CSO, superfund sites, and contaminated sites of the NJDEP database to be updated.

The Raritan River is an important economic driver for New Jersey. It is a recreational resource that is underutilized. Efforts need to be put forth to address the pollution in the river and bay. The first step is to clearly document the problems. The majority of the Raritan River data that are available were collected by various agencies to satisfy a specific regulatory or permit requirement. However, a comprehensive data plan needs to be developed that supports data collection required to assess and improve the environmental health of the system.

***The first recommendation of this project is to implement a comprehensive monitoring program on the lower Raritan River and Bay*** to collect water and sediment samples and analyze these samples for priority pollutants and contaminants. There are two components of this monitoring program: 1) collection of long-term water quality data on dissolved oxygen, pH, temperature, nutrients, chlorophyll *a*, salinity, coliform bacteria, and total suspended solids and 2) collection of sediment contaminant data. This monitoring effort needs to be similar in nature to the New York State Department of Environmental Conservation (NYSDEC) Contamination Assessment and Reduction Project (CARP). EPA and NJDEP need to work together to design and implement this monitoring program for the entire Raritan system (New York and New Jersey portions of the waterway). Local citizen groups need to be provided the opportunity to review proposed sampling locations and recommend locations based upon their intimate knowledge of the watershed.

***The second recommendation is to update the status of known contaminated sites*** (brownfields, CSOs, superfund sites, and contaminated sites). The NJDEP data needs to be updated, and all data should be field verified. This is critically important for local stakeholders that are looking to restore the Raritan River. There are over 1,000 known contaminated sites in the study area according to the NJDEP database. The status of each one needs to be confirmed.

The Project Team is eager to continue to work with EPA, NJDEP, and other partners to restore the Raritan River.

*EPA Rutgers Raritan River Project*

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**Appendix A: Rutgers University Raritan River Initiative Quality Assurance Project Plan (QAPP) for Secondary Data Collection**

**1.0 PROJECT MANAGEMENT – ORGANIZATION AND RESPONSIBILITIES**

**1.1 Title and Approval Page**

**RUTGERS UNIVERSITY RARITAN RIVER INITIATIVE  
QUALITY ASSURANCE PROJECT PLAN (QAPP)  
FOR SECONDARY DATA COLLECTION  
U.S. Environmental Protection Agency Cooperative Agreement: X7-96298012-0**

April 29, 2013  
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Rutgers Project Manager: Christopher C. Obropta

Date: 8/21/2013

**Christopher C. Obropta, Ph.D., P.E.**, Principal Investigator  
Associate Extension Specialist in Water Resources  
Associate Professor Department of Environmental Sciences  
Rutgers Cooperative Extension Water Resources Program  
14 College Farm Road, New Brunswick, NJ 08901  
Phone: (848) 932-5711, Fax: (732) 932-4988, [obropta@envsci.rutgers.edu](mailto:obropta@envsci.rutgers.edu)

Rutgers Co-PI: Beth Ravit

Date: 8/26/13

**Beth Ravit, Ph.D.**, Director Center for Urban Environmental Sustainability (CUES)  
14 College Farm Road, New Brunswick, NJ 08901  
Phone: (848) 932-5752, Fax: (732) 932-4988, [ravit@envsci.rutgers.edu](mailto:ravit@envsci.rutgers.edu)

Rutgers Co-PI: Lisa Rodenburg

Date: 8/29/13

**Lisa Rodenburg, Ph.D.**, Associate Professor Department of Environmental Sciences  
14 College Farm Road, New Brunswick, NJ 08901  
Phone: (848) 932-5774, Fax: (732) 932-4988, [rodenburg@envsci.rutgers.edu](mailto:rodenburg@envsci.rutgers.edu)

Rutgers Co-PI: Judith Shaw

Date: 9/3/13

**Judith Shaw, Ph.D., PP/AICP**, Senior Research Associate  
Edward J. Bloustein School of Planning and Public Policy  
33 Livingston Avenue, Room 174, New Brunswick, NJ 08901  
Phone: (848) 932-2711, Fax: (732) 932-0934, [jashaw@ejb.rutgers.edu](mailto:jashaw@ejb.rutgers.edu)

Rutgers Project Officer:

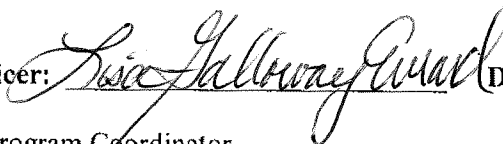


Date:

8/21/13

**Steven Yergeau, Ph.D.**, Senior Program Coordinator  
Rutgers Cooperative Extension Water Resources Program  
14 College Farm Road, New Brunswick, NJ 08901  
Phone: (848) 932-6745, Fax: (732) 932-8644, [svergeau@envsci.rutgers.edu](mailto:svergeau@envsci.rutgers.edu)

Rutgers Quality Assurance Officer:

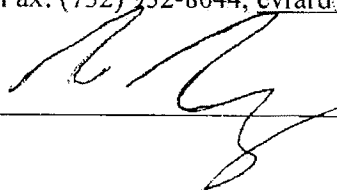


Date:

8/21/2013

**Lisa Galloway Evrard**, Senior Program Coordinator  
Rutgers Cooperative Extension Water Resources Program  
14 College Farm Road, New Brunswick, NJ 08901  
Phone: (848) 932-6726, Fax: (732) 932-8644, [evrard@rci.rutgers.edu](mailto:evrard@rci.rutgers.edu)

EPA Project Officer:



Date:

8/20/13

**Alyssa Arcaya**  
290 Broadway, CWD/DO  
New York, NY 10007-1866  
Phone: (212) 637-3730, [Arcaya.Alyssa@epa.gov](mailto:Arcaya.Alyssa@epa.gov)

EPA Region 2 Quality Assurance Officer: \_\_\_\_\_

Date: \_\_\_\_\_

*To Be Determined (TBD)*

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### 1.3 QAPP Distribution List

Signed copies of this Quality Assurance Project Plan (QAPP) and all subsequent revisions will be sent to the following individuals by electronic mail:

Alyssa Arcaya, EPA Project Officer, [Arcaya.Alyssa@epa.gov](mailto:Arcaya.Alyssa@epa.gov)

EPA Quality Assurance Officer, *TBD*

Christopher C. Obropta, Ph.D., P.E., Rutgers Project Manager, [obropta@envsci.rutgers.edu](mailto:obropta@envsci.rutgers.edu)

Beth Ravit, Ph.D., Rutgers Co-PI, [ravit@envsci.rutgers.edu](mailto:ravit@envsci.rutgers.edu)

Lisa Rodenburg, Ph.D., Rutgers Co-PI, [rodenburg@envsci.rutgers.edu](mailto:rodenburg@envsci.rutgers.edu)

Judith Shaw, Ph.D., PP/AICP, Rutgers Co-PI, [jashaw@ejb.rutgers.edu](mailto:jashaw@ejb.rutgers.edu)

Steven Yergeau, Ph.D., Rutgers Project Officer, [syergeau@envsci.rutgers.edu](mailto:syergeau@envsci.rutgers.edu)

Lisa Galloway Evrard, Rutgers Quality Assurance Officer, [evrard@rci.rutgers.edu](mailto:evrard@rci.rutgers.edu)

Jill Lipoti, Director, NJDEP Water Monitoring and Standards, [Jill.Lipoti@dep.state.nj.us](mailto:Jill.Lipoti@dep.state.nj.us)

Eric Stiles, President & CEO, New Jersey Audubon Society, [eric.stiles@njaudubon.org](mailto:eric.stiles@njaudubon.org)

Sandy Batty, Executive Director, Association of New Jersey Environmental Commissions, [sbatty@anjec.org](mailto:sbatty@anjec.org)

Michael Catania, Executive Director, Duke Farms, [mcatania@dukefarms.org](mailto:mcatania@dukefarms.org)

Debbie Mans, Baykeeper & Executive Director, NY/NJ Baykeeper, [debbie@nynjbaykeeper.org](mailto:debbie@nynjbaykeeper.org)

Richard Lathrop, Director, Grant F. Walton Center for Remote Sensing & Spatial Analysis, [lathrop@crssa.rutgers.edu](mailto:lathrop@crssa.rutgers.edu)



#### **1.4 Project Organization**

**EPA Project Officer:** Alyssa Arcaya

Responsible for general project management and reviewing project work products, to include the interim and final Raritan River Initiative reports

**EPA Region 2 Quality Assurance Officer:** *TBD*

Responsible for reviewing and approving the QAPP

**Rutgers Project Manager:** Christopher C. Obropta, Ph.D., P.E.

Responsible for overseeing implementation of the project with assistance from the Rutgers Co-PI's, reviewing and approving project work products, managing project budget, issuing contracts and agreements for any needed professional services, processing invoices

#### **Rutgers Co-PI's:**

Beth Ravit, Ph.D., will be responsible for compilation of the database, website development, and coordination of volunteer activities, including obtaining digital images for the website links.

Judith Shaw, Ph.D., PP/AICP will be responsible for engaging community leaders and municipal environmental commissions to help them place the study's database into a local context which can be employed to prioritize restoration and reuse actions and decision making. Bloustein School of Planning and Public Policy will be responsible for outreach and communication of the study results to elected officials in Watershed Management Area 9, which encompasses the 19 municipalities on the Raritan River main stem.

Lisa Rodenburg, Ph.D. will be responsible for advising on the development of the comprehensive database (i.e., validating the database and validating data entry) and advising on the development of the QAPP for secondary data collection.

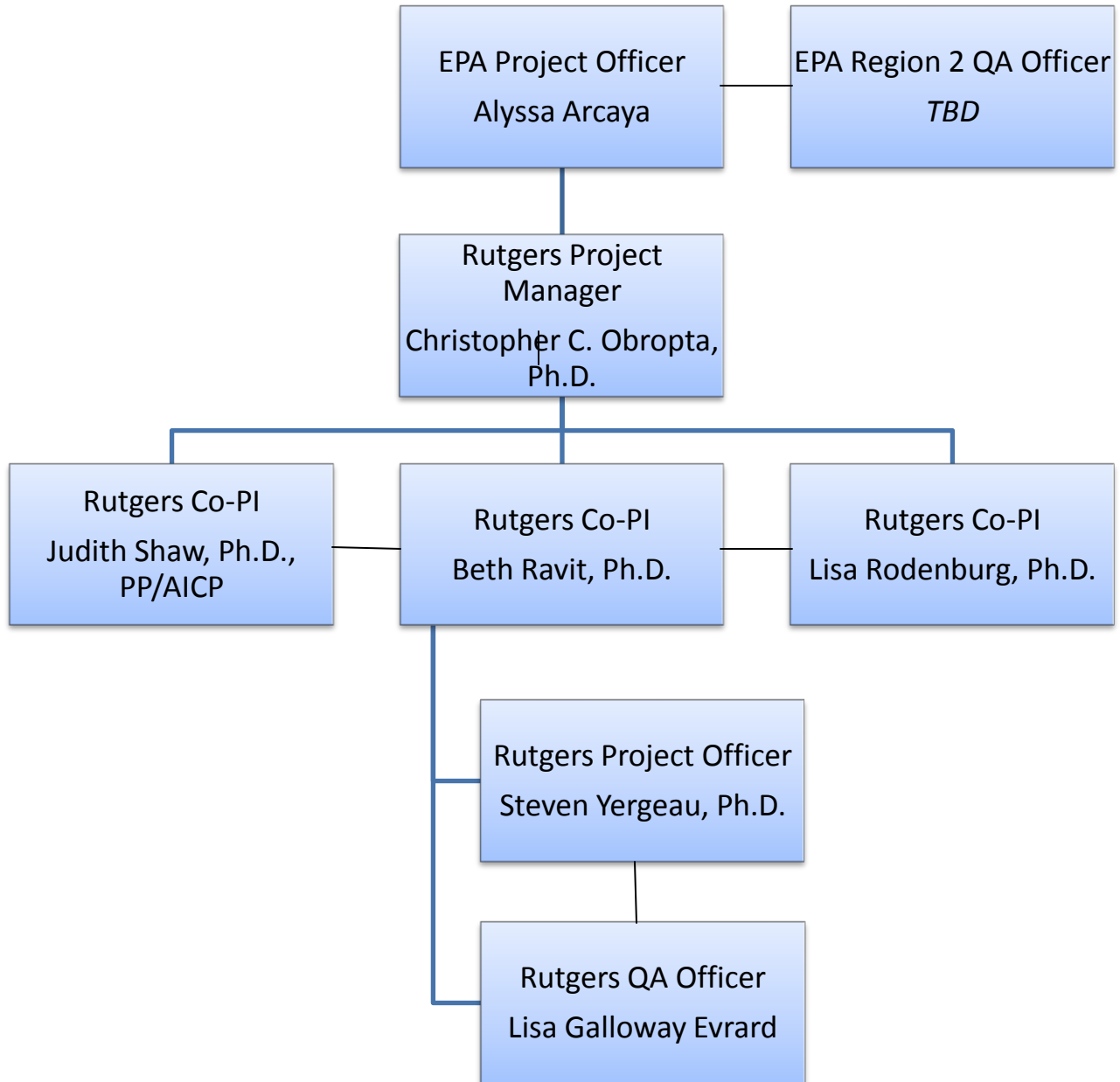
**Rutgers Project Officer:** Steven Yergeau, Ph.D.

Responsible for collecting existing environmental data, including collecting and compiling data in an Access database, performing data analyses where necessary and appropriate, creating interactive maps, and working with the web developer to design the project home page

**Rutgers Quality Assurance Officer:** Lisa Galloway Evrard

Responsible for QAPP development, assuring secondary data quality, and assisting with issuing contracts and agreements for any needed professional services and processing invoices, general grant administration

**Organizational Chart:**



## **1.5 Purpose of Study**

Data related to known Superfund, Brownfield and contaminated sites, point source and nonpoint source pollution have been collected by various parties within the Raritan River watershed, but these data are currently fragmented, inconsistent, and difficult for the general public to access and place into the context of specific community concerns and actions. The project team will compile these data into a comprehensive database and will develop an interactive tool that can assist federal, state, and local stakeholders in making decisions related to environmental cleanup and site reuse, identifying pollution data gaps, and providing recommendations for future research needed to fill these gaps. An improved understanding of pollution sources impacting the Raritan River will lead to the identification of polluted sites of greatest concern. Study results can be used by regulators, local officials, and the environmental advocacy community to prioritize actions for specific site cleanup and restoration activities.

## **1.6 Overview of Project Objectives**

### **#1: Provide comprehensive understanding of the sources of pollution in the Raritan River Basin**

Compilation of these data into a comprehensive database could assist federal, state, and local stakeholders in making decisions related to environmental cleanup and site reuse, identifying pollution data gaps, and providing recommendations for future research needed to fill these gaps. USEPA is seeking an interactive tool suitable for use by these multiple stakeholders to make informed decisions and target sites for remediation, restoration and redevelopment. An improved understanding of pollution sources impacting the Raritan River will lead to the identification of polluted sites of greatest concern. Study results can be used by regulators, local officials, and the environmental advocacy community to prioritize actions for specific site cleanup and restoration activities. The proposed database will also provide information needed to solicit federal and/or state funding to perform the needed remediation activities. Once the data is compiled and evaluated, it may be possible to assess the contaminant contribution(s) of various responsible parties, helping both USEPA and NJDEP to actively encourage these entities to provide financial support for site remediation.

### **#2: Develop and Build Watershed Partnerships**

The Co-PIs, through the Rutgers Sustainable Raritan Initiative, have coordinated with thirty six municipalities and three counties to encourage local participation in the overall Raritan River Action Plan, *Reclaiming the Raritan: a Restoration and Sustainable Reuse Plan*. After completing the compilation of the comprehensive database and the development of the interactive tool, the project team will continue to conduct outreach to engage the public and build local partnerships to support restoration and site reuse opportunities within the Raritan River Watershed. This outreach will build on the Rutgers Sustainable Raritan Initiative, which has been actively led and supported by the project Co-PIs in partnership with municipalities in WMA 9.

### **#3: Provide Benefits to Community and Interested Organizations**

The familiarity of Excel spreadsheets and the inclusion of digital images for the contaminated sites will provide the public with a free, user-friendly database. Having comprehensive data

available in one accessible location (Rutgers University server), with the ability to call up individual data layers will make the information easily available for a wide variety of end users. The Rutgers Cooperative Extension Water Resources Program, CUES, and the Sustainable Raritan River Initiative websites have been in operation for many years, and will provide a continuously accessible link to the project data beyond the two year time period of this study. In addition to the digital database and interactive maps, the study information will be made available in hard copy and distributed through outreach to Mayors and Environmental Commissions in the 19 WMA 9 municipalities.

### **1.7 Quality Objectives and Criteria**

The secondary data needed are environmental data that serve as indicators of environmental health. These data will address the primary causes of water quality impairments to provide a comprehensive understanding of the sources of pollution in the Raritan River Basin. More specifically, the focus of the comprehensive database will be on data collected along the Lower Raritan main stem and along the main tributaries in Watershed Management Area 9 (WMA09) (See Figure 1). Secondary data from the following municipalities will be compiled:

1. East Brunswick Township
2. South Amboy City
3. New Brunswick City
4. Sayreville Borough
5. Highland Park Borough
6. Perth Amboy City
7. Franklin Township
8. Manville Borough
9. South Bound Brook Borough
10. Hillsborough Township
11. Somerville Borough
12. Bound Brook Borough
13. Raritan Borough
14. Middlesex Borough
15. Piscataway Township
16. Edison Township
17. Bridgewater Township
18. Branchburg Township
19. Woodbridge Township

These municipalities were selected for inclusion because they are located along the mainstem of the Lower Raritan River, defined as the section of the Raritan River within WMA09.

The data that will be used in this project have been collected for similar purposes (i.e., to assess environmental health) and have been studied in detail and assessed for trends by the data generator and/or other experts in the field. This project will rely on these available results and conclusions whenever possible. Data with deficiencies or gaps will not necessarily be excluded as these data may still be valuable for illustrating the state of knowledge and uncertainties in

water quality conditions within the Raritan River Basin, and these data can be used to make a case for additional monitoring programs.

## 2.0 DATA SELECTION AND MANAGEMENT

### 2.1 Sources of Existing Data

The Co-PIs (Drs. Obropta, Ravit, Shaw, and Rodenburg) have been actively involved in collecting and analyzing data related to the Raritan River Watershed and Estuary for a number of years. In support of the Rutgers Sustainable Raritan Initiative, the Rutgers Cooperative Extension Water Resources Program and the Center for Urban Environmental Sustainability (CUES) have already assembled a bibliography of peer-reviewed research conducted in the Raritan River Watershed through 2008. This bibliography will be updated and additional data sources such as USGS (freshwater – ground and surface), USEPA (TMDL, NPL), NJDEP (DMR, MS4, TMDL), NOAA (Mussel Watch) and other relevant agencies will be mined for new and/or other pertinent data. Data assembled by the Edward J. Bloustein School of Planning and Public Policy includes digitized maps of the region and resource information such as Brownfield site locations. Data that are available through the Americorps Watershed Ambassadors (RATS and BATS) and data collection efforts of local agencies, programs and NGOs such as the Contaminant Assessment & Reduction Program (CARP 2007) may also be included in the comprehensive database. NJDEP has committed to establishing an NJDEP Workgroup to assist the project team, particularly in accessing existing data (Jill Lipoti, Director, NJDEP Water Monitoring and Standards, *personal communication*). Efforts by the project team will ensure that this component of the project is not duplicative and builds upon existing research and available data sets.

#### *National/Federal Sources:*

##### Environmental Protection Agency (EPA)

MyEnvironment: <http://www.epa.gov/myenvironment/>

Envirofacts: <http://www.epa.gov/enviro/>

Storage & Retrieval (STORET) Data Warehouse: <http://www.epa.gov/storet/>

Surf Your Watershed: <http://cfpub.epa.gov/surf/locate/index.cfm>

Superfund Site Information: <http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm>

Brownfields & Land Revitalization ‘Where You Live’ Database:

<http://www.epa.gov/swerosps/bf/bfwhere.htm>

##### National Oceanic & Atmospheric Administration (NOAA)

Office of Response & Restoration: <http://response.restoration.noaa.gov/environmental-restoration/environmental-assessment-tools/query-manager-marplot-data-maps.html>

National Oceanographic Data Center (NODC): <http://www.nodc.noaa.gov/>

Mussel Watch: <http://ccma.nos.noaa.gov/about/coast/nsandt/musselwatch.aspx>

##### United States Geological Survey (USGS)

National Water Information System: <http://waterdata.usgs.gov/nwis>

National Water Quality Monitoring Council (NWQMC)  
Water Quality Portal: <http://www.waterqualitydata.us/>

***Regional Sources:***

New York State Department of Environmental Conservation (NYDEC)  
NY/NJ Contaminant Assessment & Reduction Program (CARP):  
<http://www.dec.ny.gov/chemical/23839.html>  
<http://carpweb.org/main.html>

***State Sources:***

New Jersey Department of Environmental Protection (NJDEP)  
Water Quality Monitoring & Standards: <http://www.nj.gov/dep/wms/>  
Site Remediation Program: <http://www.nj.gov/dep/srp/>  
NJ Geological Survey: <http://www.nj.gov/dep/njgs/>

***Other Sources:***

***Journal Articles***

Rutgers University Web of Science:  
[http://www.libraries.rutgers.edu/cms/indexes/descriptions/web\\_of\\_science](http://www.libraries.rutgers.edu/cms/indexes/descriptions/web_of_science)  
JSTOR: <http://www.jstor.org/>  
Google Scholar: <http://scholar.google.com/>  
Digital dissertations: <http://search.proquest.com/dissertations?accountid=13626>

## **2.2 Intended Use of Existing Data**

The secondary data collected that describe pollution sources and sites will be incorporated into a comprehensive database. This database will allow searches by municipality, by tributary name and location in different municipalities, by type of contamination, or by contamination data source. Each municipality will have a separate ‘home page,’ and when the user selects a municipality, a list of existing data/data source(s) will appear (See Figure 2). Some data layer examples could include: Sediment Quality Data, Surface Water Quality Data, Groundwater Quality Data, NJPDES Outfall Locations, Stormwater Outfall Locations, Brownfield Sites, Biological Data, Flow Data, Known Contaminated Sites, etc. The composite data will be in an Excel spreadsheet format that is understandable by the general public and that can be downloaded from a Rutgers maintained website for stakeholder use.

CUES has employed this model for digital format and access, housed on the Rutgers server. In addition to a database for each municipality, digital images of each site will be obtained and uploaded. Each municipality on the Lower Raritan main stem and along the main tributaries in WMA09 (See Figure 1) will each link to interactive maps. The maps will identify each location for which data is currently available. A digital picture(s) of each site, taken by ‘citizen-scientist’ volunteers under CUES supervision will be uploaded to the website, and pictures will be available in a separate window. These publically accessible maps will be modeled on the NY/NJ Baykeeper Oyster Restoration Mapping Project (see map example on the CUES website: <http://cues.rutgers.edu/benthic/index.html>). Additionally, the system will be organized so the data can easily be compared to federal and state standards. The first questions people often ask are "What do these data mean, and how do they compare to the regulatory standards?" The

downloadable database will be created by the Rutgers Cooperative Extension Water Resources Program and CUES. The Center for Remote Sensing and Spatial Analysis (CRSSA) will assist with the development of the interactive maps, and both will be linked to the CUES, the Rutgers Cooperative Extension Water Resources Program, and Sustainable Raritan websites.

The familiarity of the Excel spreadsheet format and the inclusion of digital images for the contaminated sites will provide the public with a free, user-friendly database. Introductory descriptions will frame each of the data categories in plain language that makes it easier to understand both the reason these data are collected and how to apply these data to local decision-making. Having comprehensive data available in one accessible location (Rutgers server), with the ability to call up individual data layers will make the information easily available for a wide variety of end users. The Rutgers Cooperative Extension Water Resources Program, CUES, and the Sustainable Raritan River Initiative websites have been in operation for many years, and will provide a continuously accessible link to the project data beyond the two year time period of this study. In addition to the digital database and interactive maps, the study information will be made available in hard copy and distributed through outreach to Mayors and Environmental Commissions in the 19 WMA09 municipalities.

### **2.3 Limitations on the Use of Existing Data**

Criteria for selecting existing data for the project will include, but are not limited to, the following:

- Data have been generated under an approved QAPP or other sampling document
- Data have been generated by a reliable source {i.e., the data generator is generally trusted and respected (federal, state, and local agencies or research institutions)}
- Data have been published in peer-reviewed articles or publications
- Data have been widely used and/or is trusted by scientists and professionals
- Data have been collected for similar purposes (i.e., to assess environmental health) to describe pollution sources and sites
- Data have been collected along the Lower Raritan main stem and along the main tributaries in Watershed Management Area 9 (WMA09)
- Analytical methods were sufficiently sensitive to support data reporting to regulatory criteria
- Reported data include laboratory qualifiers and qualifier definitions

If no known quality requirements were applied during the sampling and analysis of the existing data, then a disclaimer will be added as needed to project deliverables to indicate that the quality of the secondary data is unknown. The disclaimer will read: “These data are of unknown quality and presented here for illustrative purposes only. No inferences regarding the environmental health of the Lower Raritan River should be made based on these data until their quality can be determined.” Any limitations in data quality will be fully disclosed.

In addition, the following caveat or disclaimer will be incorporated into the database: “These data were not collected by Rutgers University, and Rutgers University will not provide interpretation or express any opinion of said data.”

### 3.0 ASSESSMENTS AND OVERSIGHTS

The Rutgers Project Manager, Christopher C. Obropta, Ph.D., P.E., is responsible for overseeing implementation of the project. Project oversight/progress will be documented in quarterly reports to the EPA Project Manager, Alyssa Arcaya.

### 4.0 DATA REVIEW – VERIFICATION, VALIDATION AND EVALUATION

The quality of the secondary data will be determined according to the decision tree shown in Figure 3 and based on the criteria defined in Section 2.3 above. The quality of the secondary data will be determined by the Rutgers QA Officer with assistance from the Rutgers Project Manager and Co-PI’s. Any limitations in data quality will be fully disclosed in the final report. The Co-PI, Lisa Rodenburg, will be responsible for validating the database and data entry.

### 5.0 PROJECT SCHEDULE

Raritan River Initiative	Winter 2013	Spring 2013	Summer 2013	Fall 2013	Winter 2014	Spring 2014	Summer 2014
Quality Assurance Project Plan	X	X					
Data Mining Activities		X	X	X			
Create & Update Project Website		X	X	X	X	X	X
Form Raritan River Advisory Group		X					
Evaluation of Existing Data		X	X	X			
Identification of Data Gaps			X	X	X	X	
Collect Digital Images			X	X	X	X	
Develop Site Selection Methodology				X	X		
Interim Report				X			
Interactive Mapping					X	X	X
Outreach to Local officials	X	X	X	X	X	X	X
Final Report							X

### 6.0 PROJECT REPORTING

This study will produce multiple work products that will support Raritan River decision-making by federal, state, and local users:



- **Access Database:** A Microsoft Access database will combine the currently available data. This data will be sorted so the user can access information related to a specific municipality, a tributary name and location in different municipalities, a specific type of contaminant, or a specific data source.
- **Website:** The database will be housed on the Rutgers University server. The project will have a home page (*Raritan River Initiative*), and this page will have links to access the database and the specific data layers. The Rutgers Cooperative Extension Water Resources Program, CUES, and the Sustainable Raritan Initiative websites will have links to the project's homepage.
- **Interactive Maps:** The data will be available for each sampled location via an interactive map, accessible through the free access ArcGIS Explorer, which will be linked to the project's website home page. The map will include links to the data available for a specific site/municipality plus digital images of the site obtained during the course of this study.
- **Raritan River Advisory Group:** Group participants will be included on the home webpage of the Raritan River Initiative and email contact links will be provided for all members.
- **Public Outreach Reports:** A report on initial and follow-up sessions with local officials will be produced to provide a context within which the project develops data in a way that is both useful and understandable by local decision-makers and stakeholders.
- **Study Reports:** An interim and final Raritan River Initiative Report will be produced that includes an appendix of all data collected, a prioritization of pollution sites/sources, a description of the site selection/prioritization methodology, and copies of the interactive maps created for each municipality.

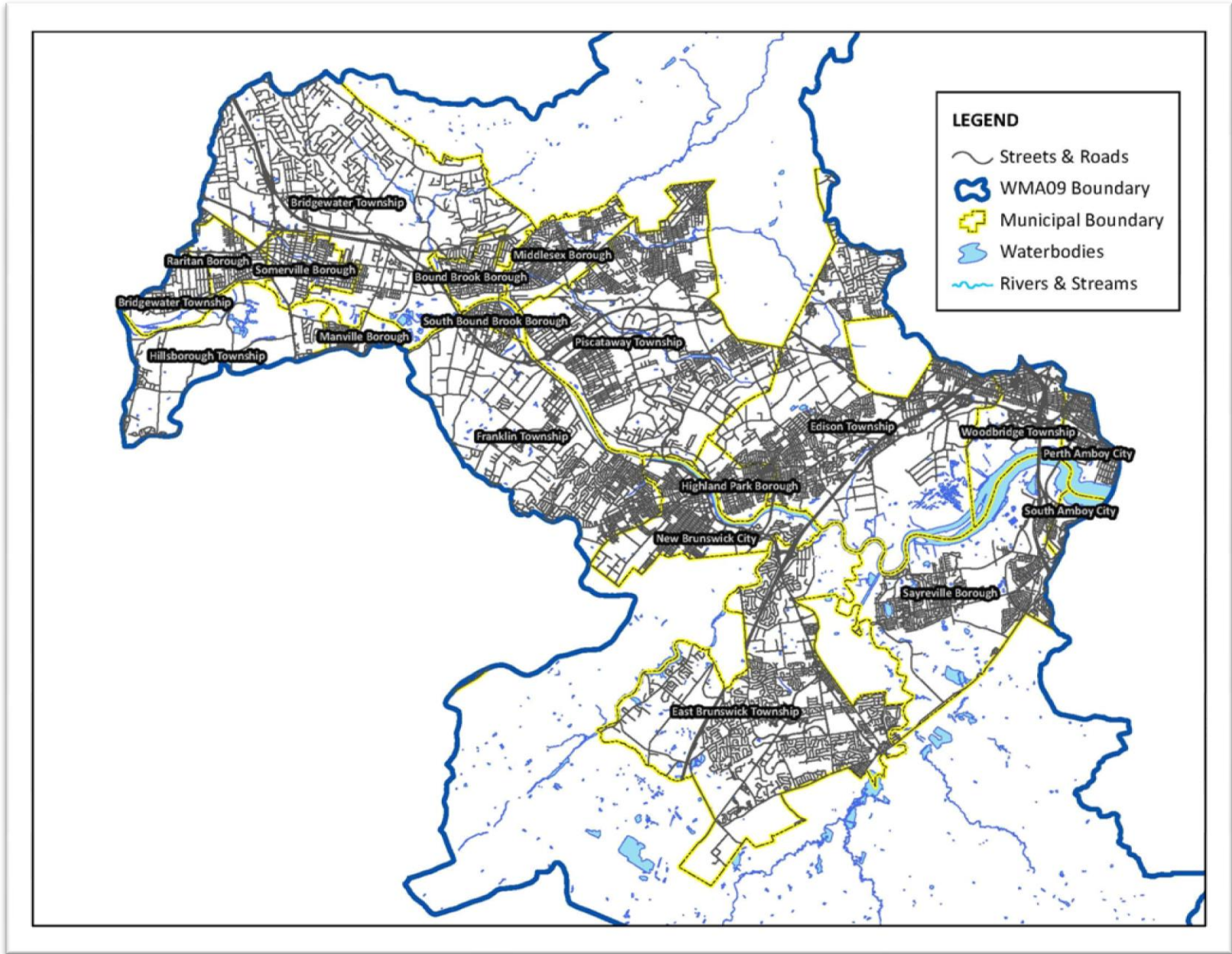
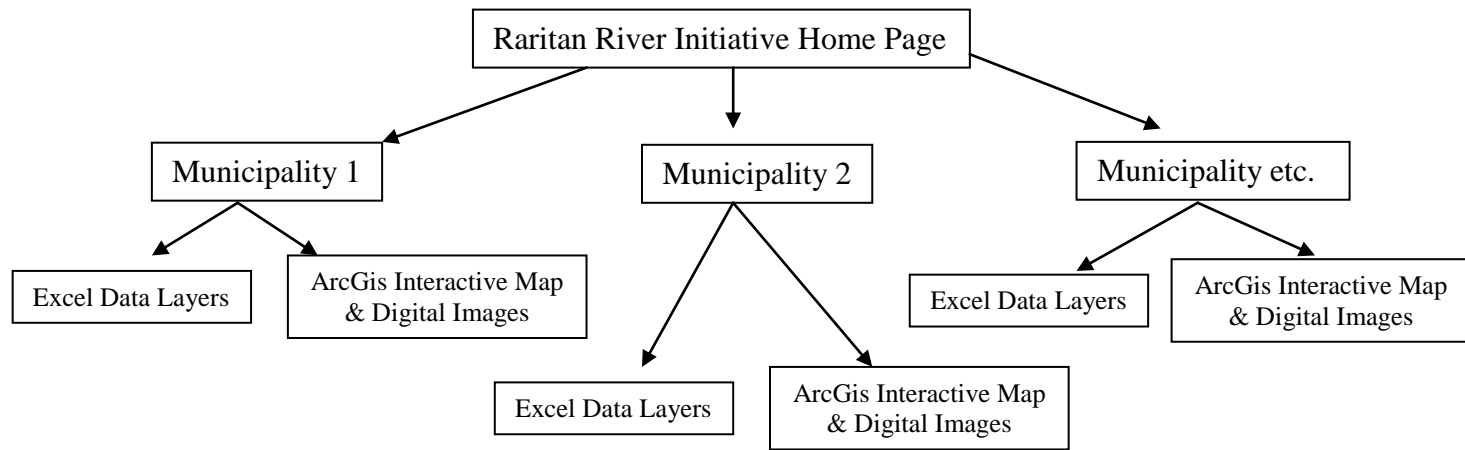
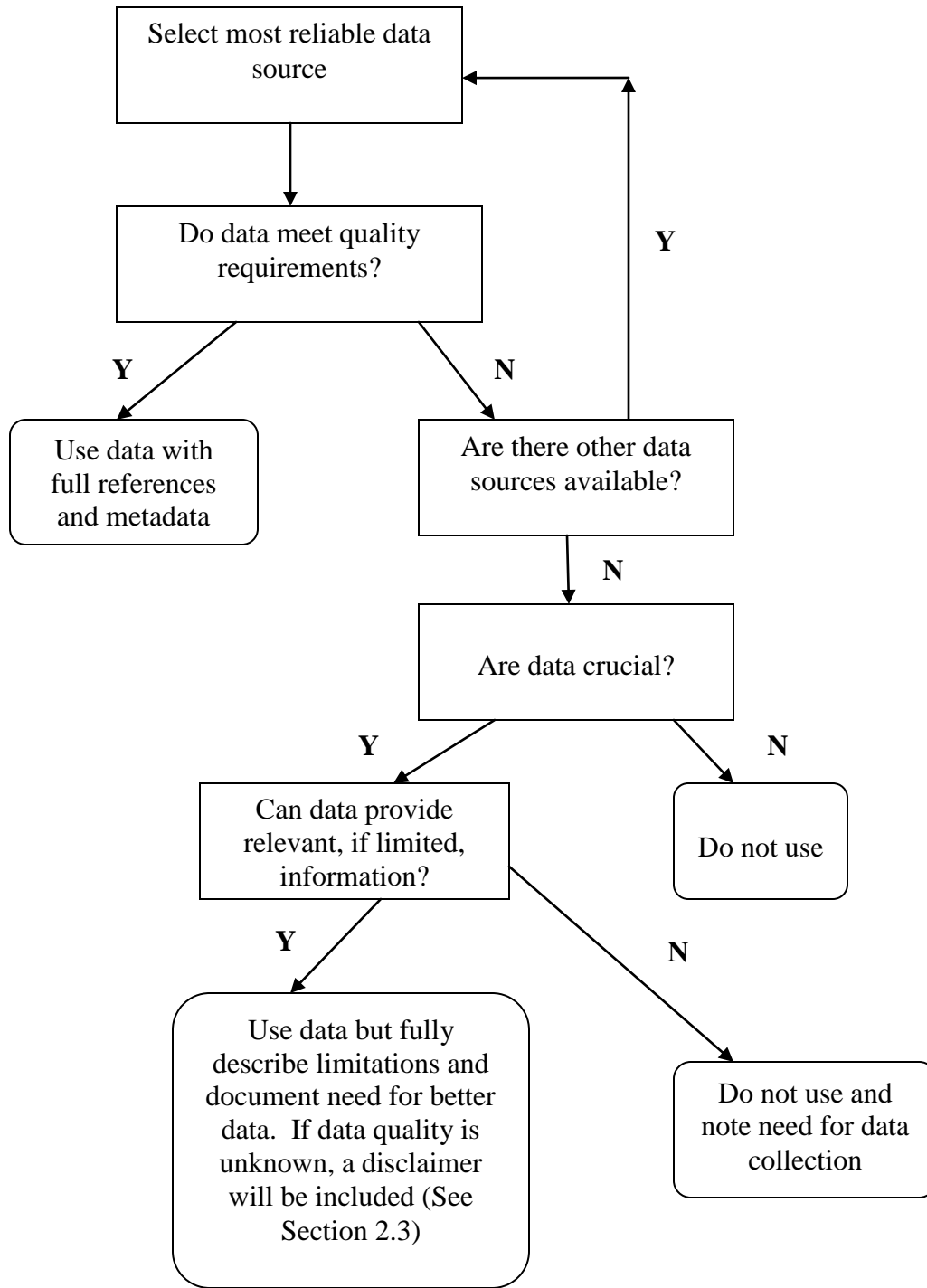


Fig. 1: Project Area, WMA09



**Fig. 2: Conceptual design of digital database layers**



**Fig. 3: Data decision tree**

*EPA Rutgers Raritan River Project*

*U.S. Environmental Protection Agency Cooperative Agreement: X7-96298012-0*

*Project Period: 07/01/2012 – 06/30/2015*

**Appendix B: Notes from STORET meeting with NJDEP on April 24, 2015**

## STORET

4/24/15

Conservation with Pat Gardner (Director of the NJDEP Division of Water Monitoring and Standards (DWM&S)) and Paul Morton (DWM&S IT Lead) – they WERE WONDERFUL AND HELPFUL!!

1. While there is a large amount of data available through STORET, the data files and location/site files are separate downloads and present a challenge in linking data to particular sites.

DWM&S IT lead – True. STORET has both location and results files. The location file contains the agency code, the station ID, the name of the station, the latitude and longitude, the type of station, etc. The results file also has the agency code, the station ID and the latitude and longitude. The reason there are two types of files is to make the station file smaller because there can be a lot of results per station. To include all the station information in the results file creates size issues when downloading files – DWM&S staff use Microsoft Access to create a relationship (join) between the station file with the results file. This is a “one to many” relationship (one station to many results) – **DWM&S will share an example file on how they do this.**

US EPA is the lead on STORET – but we can ask them about these issues.....

Are the end users obtaining their data from the STORET Data Warehouse (<http://www.epa.gov/storet/dbtop.htm>) or the National Water Monitoring Council’s Water Quality Portal (<http://www.waterqualitydata.us/portal.jsp>)? [The WQP is a new website built by USGS and US EPA which holds information from both the US EPA STORET and USGS NWIS databases – it is *much* easier to use than either the STORET or NWIS web pages and is much more user-friendly.] One of the issues we face here in DWM&S is combining data from both STORET and NWIS this system goes a long way in helping to normalize the data –

US EPA is putting their energy into enhancing the reporting features of the WQP, more so than the STORET Warehouse. Currently, the WQP only returns chemical results. USGS and US EPA are working on making biological data (taxa counts) available through the WQP and will then move on to habitat and biological metrics and indices.

2. There is a lack of consistency in naming sites or agencies responsible for including data in STORET which makes associating the data to the sites difficult and time consuming  
Regarding a) lack of consistency in naming sites – DWM&S absolutely agrees – every agency does their own “thing” so the lack of consistency is a great point to make. DWM&S tries to name sites in a way that describes their location (e.g., waterbody at location: “Raritan River, Route 9 Bridge) – other agencies may just use “Route 9 bridge’ or “Raritan River’ as the

station name and this can be an issue if you don't have GIS available. **WHAT WE NEED IS A 'REAL NAME'**

Regarding b) if the agencies do or don't enter their data into STORET– some agencies have tried STORET for a couple of years and then find it doesn't meet their needs or their funding (grant) runs out – so it's tough. DWM&S does it because we want to be transparent – and it's a requirement of our EPA 106 grant. When EPA reviews our biannual water quality assessment (Integrated Report) they check to make sure the data used for the assessment is in STORET (and if they don't find it they want to know why). Sometimes a personnel change within an agency can create a hiccup and we don't have an inducement (no grant funding, no legal requirement for parties to put their information into STORET). Agencies like the Monmouth County Health Department, the New Jersey Harbor Dischargers Group and the Brick Township MUA all put their data into STORET so their data can be included in the Integrated Report. However, STORET does allow quite a bit of flexibility in the information that can be entered in some of the data fields and this does sometimes cause challenges when it's time to assess the data (Data normalization). Now is a very good time to raise this issue because US EPA is revising the data standard they use with STORET (WQX <sup>1</sup>) in preparation for publishing version 3.0. Specifically, US EPA wants to know “what do you like and not like about WQX version 2.1?” It's an opportunity to say “station names should have this requirement” – The flexibility in the STORET system was designed to make the tech hurdle small for getting data into STORET, but it's still complicated.

3. There is inconsistency in the latitude and longitude values given for many of the sites between the two files (sites files and data files)

DWM&S IT lead – Please give some specifics – Paul retrieved all the NJDEP stations and results from STORET this morning, compared the latitudes and longitudes between the tow and did not find that situation – It would be helpful if he had **some specifics** – NJDEP had different practices and a different station numbering system before 2000. Currently, in order to help DWM&S' assessment people, DWM&S staff uses USGS' station numbers from nearby sites. However, the USGS coordinates are usually for the flow gauge which can be some distance from the sampling station – **specific examples of inconsistency would help NJDEP!**

4. STORET does not include some metadata that is important to some researchers – e.g., detection limits and surrogate recoveries.

STORET does have the ability to enter detection limits – currently is it mandatory to include either the detection or reporting limit when a result is a non-detect. However, in earlier versions of STORET you could say the result was a non-detect and not have to supply the detection/reporting limit. Some laboratories will only report down to their reporting limits and some will go down to the detection limit. The data system that NJDEP uses to enter their data into STORET (NJDEP's Water Quality Data Exchange (WQDE) currently does not

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<sup>1</sup> “WQX” Water Quality Data Exchange

have the ability to enter both detection and reporting limits for the same result. Their practice is (generally) to report down to the detection limit, and to indicate (via a comment code) when a result is between the detection and reporting limit.

We went around and around on surrogate recoveries; field blanks, replicates, duplicates, spikes – NJDEP sees surrogates as a laboratory QC result. If a lab's recovery is supposed to be 85% (defined by the method) – and the lab only gets a 50% recovery – then it tells you something isn't right and suggests that the results for the target compounds (the substance you are actually trying to measure in the sample that respond like the surrogates) may have issues. The labs will then qualify their results, and if the recoveries are very poor, may not even report a result. This information is captured in two columns in the results file: the Results Measure Qualifier column and the Laboratory Comment Code column (for the latter, users need to look at metadata file that is included in the .zip file from the STORET Warehouse and which provides the meaning of the codes. The WQP has hyperlinks on their web pages to the code definitions

5. The reporting of concentrations that are below the detection limit is inconsistent; sometimes the detection limit is reported as the measured concentration field, which can make it difficult to know whether the stated concentration is non-detect or not...  
What should be happening - EPA has a qualitative field called Result Detection Condition - its either blank (meaning a numerical value was measured) or it will have a text (Not Detected, Detected but not Quantified, Present, Present below Quantitation Limit, Present above Quantitation Limit) – and if it is not blank, the result column should be blank – As noted above, the “rule” with STORET is that if the user supplies “Not Detected” then they need to supply both the type of limit (detection or reporting) the value of the limit and the units for the limit. With EPA's Web based data entry application (WQX-Web) it is possible (but not required) for the user to enter both the detection and reporting limits. **We need to ask EPA to require both the reporting and detection limits be entered** (NOTE: STORET does have Results Measure Qualifier Codes that indicate whether a result is below the reporting limit (K) or is not detected (U), but these codes get used interchangeably by the user community.

*NJDEP STAFF NOTED THAT IT'S ALWAYS HELPFUL IS TO KNOW THE KINDS OF QUESTIONS USER WILL BE ASKING OF THE DATA – THAT TELLS THEM IF THE SYSTEM CAN ANSWER THOSE QUESTIONS OR WHETHER IT NEEDS TO BE ADDRESSED – AND NJDEP IS WILLING TO EXPLORE WAYS TO MAKE DATA MORE USEFUL TO THE END USERS*



*EPA Rutgers Raritan River Project*

*U.S. Environmental Protection Agency Cooperative Agreement: X7-96298012-0*

*Project Period: 07/01/2012 – 06/30/2015*

## **Appendix C: Field Verification of Identified Priority Sites**

**Identified Priority Sites:**

Type	Site Name	Address	City	Zip Code
Brownfield	OPEN ROAD HONDA-BMW-ISUZU	50 RT 1	Edison	08817
Brownfield	CENTRAL GAS PLANT	410 SILVER LAKE AVE	Edison	08817
Brownfield	AKZO NOBEL CHEMICALS INC	340 MEADOW RD	Edison Twp	08817
Brownfield	RARITAN SUPPLY CO	301 MEADOW RD	Edison Twp	08817
Brownfield	HIGHLAND PARK DPW	444 VALENTINE ST	Highland Park	08904
Brownfield	55 ADELADE AVENUE S	55 S ADELAIDE AVE	Highland Park	08904
Brownfield	REDS MARINA	DONALDSON ST	Highland Park	08904
Brownfield	HYATT REGENCY NEW BRUNSWICK	2 ALBANY ST	New Brunswick	08901
Brownfield	NEW BRUNSWICK	225 MEMORIAL PKWY	New Brunswick	08901
Brownfield	GULF 60047	110 MEMORIAL PKWY	New Brunswick	08910
Brownfield	JOHNSON & JOHNSON CORPORATE	501 GEORGE ST	New Brunswick	08901
Brownfield	176 MEMORIAL PARKWAY	176 MEMORIAL PKWY	New Brunswick	08903
Brownfield	NEW BRUNSWICK COAL GAS (PSE&G)	ALBANY ST & NEILSON AVE	New Brunswick	08902
Brownfield	NEW RIVER WATCH COMMONS	BURNET ST & RICHMOND ST	New Brunswick	08902
Brownfield	NJ DOT ROUTE 18	MEMORIAL PKWY	New Brunswick	08901
Brownfield	SAYREVILLE GENERATING STATION	RIVER RD	Sayreville	08872
Brownfield	GALLO ASPHALT CO	CROWS MILL RD	Woodbridge	08832
Brownfield	FOXWOOD GULF 60633	908 EASTON AVE	Franklin	08773
Brownfield	ASPI	25 WORLDS FAIR DR	Franklin	08873
Brownfield	POLIZE INC	1045 EASTON AVE	Franklin	08873
Brownfield	RUKH DEVELOPMENT	1714 EASTON AVE	Franklin	08773
KCS - Pending	EQUISTAR CHEMICALS	340 MEADOW RD	Edison	08817
KCS - Pending	AKZO NOBEL CHEMICALS INC	MEADOW RD	Edison	08817
KCS - Pending	19 DENNIS STREET	19 DENNIS ST	New Brunswick	08902
KCS - Pending	SUAREZ PROPERTY	1228 EASTON AVE	Franklin	08873
CSO	Raritan River/Bay	Sheridan & Gordon Sts.	Perth Amboy	08861
CSO	Raritan River/Bay	Outer Smith St.	Perth Amboy	08861

Rutgers and Baykeeper staff visited the 27 sites listed above via land or were viewed from the NY/NJ Baykeeper boat from the Raritan River during August-September 2015. Digital images were obtained during these site visits. Based on this “ground truthing” of potential priority sites, we concluded that the current data have not been updated to reflect possible cleanup and/or site redevelopment. We also noted that using the selected criteria could result in inclusion of private residences in a priority cleanup list.

1. Open Road Honda, 50 Rt. 1, Edison Township:  
**-Actual address is 540 Route 1**  
**-Site still in use as auto dealership**  
**-Front and side face Route 1 and businesses**



2. Central Gas Plant, 410 Silver Lake Ave., Edison Township:  
**-Active PSE&G facility**  
**-Entire facility is fenced off and site construction ongoing**  
**-It appears that a large pit is being dug.**  
**-There is a solar panel on the east side and two buildings that appear to be in use.**



3. AKZO Nobel Chemicals Inc., 340 Meadow Rd., Edison Township:

**-Site is now Lyondell Basell/Equistar**

**-Active facility with four (4) main buildings, several sheds/storage type buildings, pipes connecting tanks of various chemicals**

**-Sign is posted stating that cleanup is in progress and contact for further information is given**



4. Raritan Supply Company, 301 Meadow Rd., Edison Township:

**-Company still present - active facility**

**-Two (2) medium warehouse type buildings**

**-Borders 340 Meadow Road facility**



5. Highland Park Department of Public Works (DPW), 444 Valentine St., Highland Park:  
**-DPW site appears to be in use**  
**-Small parking lot in front, machinery and storage units in back**  
**-Donaldson Park is south of facility; east of the facility is a wooded area called the Meadows, redeveloped by the town with walking trails**



6. 55 Adelaide Ave., So., Highland Park:  
**-Private home in residential neighborhood**



7. Red's Marina, Donaldson St., Highland Park:

**-Now an abandoned field behind residential development that borders the Raritan River**

**-Sparse density of trees, mostly tall grasses and shrubs**

**-There is a dirt road cutting through the site which is blocked by a gate at the end of Sullivan Way.**



8. Hyatt Regency, 2 Albany St., New Brunswick:

**-Hotel in use**

**-Property appears to have been redeveloped**

**-Not possible to evaluate contamination issues**



9. New Brunswick, 225 Memorial Parkway, New Brunswick:  
**-Appears to be Elmer Boyd Park**  
**-Borders river and D&R canal**  
**-Rutgers boathouse is on site, established 1914**



10. Gulf 60047, 110 Memorial Parkway, New Brunswick:  
**-Now Exxon station in operation**



11. Johnson & Johnson Corporate Offices, 501 George St., New Brunswick:  
**-Corporate office building campus**  
**-At least 2 office style buildings**  
**-Not possible to evaluate contamination issues**



**12. 176 Memorial Parkway, New Brunswick:**

***-Appears to be redeveloped as Riverside Apartments, with newer apartment buildings, townhouses, playground area***



**13. New Brunswick Coal & Gas (PSEG), Albany St. & Neilson Ave., New Brunswick:**

***-Hyatt hotel is at intersection provided in the database***  
***-Apartment buildings are next to site***  
***-No evidence of a coal/gas facility***



**14. New River Watch Commons, Burnet & Richmond Sts., New Brunswick:**

***-Now new apartment buildings***



**15. NJ DOT, Route 18, Memorial Parkway, New Brunswick:**

***-No specific address provided, could not find this site***



**16. Sayreville Generating Station, River Rd., Sayreville Borough:**

- Facility surrounded by a security fence with a locked gate**
- Directly on the Raritan River opposite Edgeboro landfill**
- Grounds appeared to be unused - no cars in sight and overgrown asphalt parking lot adjacent to facility**
- From west side of facility five (5) tanks were visible**
- From east side of facility six (6) tanks were visible**
- There is a small pond to the east of the facility**
- All appears unused, but there is a newer building to the south of the facility that appears to be occupied**



**17. Gallo Asphalt Co., Crows Mill Rd., Woodbridge Township:**

- Address point for Gallo appears to be the same as the US Post office facility**
- There was no sign for Gallo.**

**18. Foxwood Gulf 60633, 908 Easton Ave., Franklin Township:**

- Now Boston Market,**
- The back faces a shopping plaza**



**19. ASPI, 25 World's Fair Drive, Franklin Township:**

- Brick two (2) story building about 100 x 100 meters**
- Front faces World's Fair road; back faces thin pine tree line and open land with shrubs**
- New name on facility sign: Aditya Labs and MD Pharma**



**20. Polize, 1045 Easton Ave., Franklin Township:**

- Now Somerset Diner**
- Back of restaurant faces trees**



**21. Rukh Development, 1714 Easton Ave., Franklin Township:**

- Now Imperia Banquets and Conferences**
- Back faces Easton Ave.; front faces medium size parking lot**
- Stream runs to southeast of facility**



**22. Equistar Chemicals, 340 Meadow Road, Edison Township:**

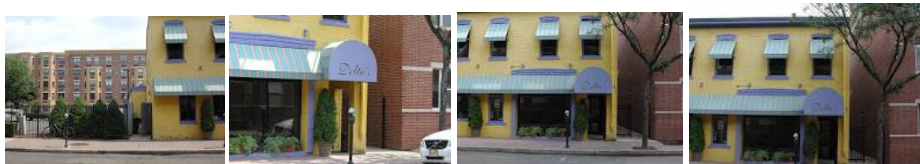
- Same address as AZKO Noble Chemicals (#3)**

**23. AZKO Noble Chemicals, Meadow Road, Edison Township:**

- This is another duplicate listing for #3 and #22 without a street address.**

**24. 19 Dennis St., New Brunswick:**

- Site now contains a restaurant; appears to be part of a development**



**25. Suarez property, 1228 Easton Ave., Franklin Township:**

- Site is a private home which does not appear to be a new development**



**26. CSO, Sheridan & Gordon Sts., discharging into Raritan Bay:**

- CSO located east of Route 35 Bridge
- There is a riprap shoreline with a fringing *Spartina* marsh area
- East of the CSO is an empty parking lot
- The Casino St. Charles boat is in the water opposite the CSO



**27. CSO, Outer Smith Street, discharging into Raritan Bay:**

- Not visible from landward side
- Site had 15-20 holding tanks, but could not see if they were connected to the CSO

