Sustainable Raritan River Initiative

November 2009

Hazardous Sites and Sediment Cleanup

Introduction

The Hazardous Sites and Sediment Cleanup Working Group of the Raritan River Collaborative recognizes the links between contamination in the Raritan River and achieving USEPA designation as "fishable and swimmable" in accordance with the 1982 Clean Water Act. Our efforts to restore the Raritan lie in a dual approach: to encourage remediation of contaminated sites, including the sediments of the river, and a concerted effort to effect a significant reduction in contributions from the municipal, industrial, commercial, transportation and residential sources that continue to degrade the waters, sediments and wetlands of the Raritan.

We cite current the New Jersey Department of Environmental Protection fish consumption studies on the Raritan River (http://www.state.nj.us/dep/dsr/year3-rps.pdf and the resulting advisories (http://www.state.nj.us/dep/dsr/fishadvisories/statewide.htm) as evidence that there are concerns, particularly for bottom-feeding species, suggesting possible links to sediments, which merit further investigation. The absence of any formal swimming beaches on the Raritan River is evidence that the Raritan River has much progress to make in order to meet the Clean Water Act requirements (see attachment for specific consumption advisories that apply to the Raritan River).

Remediation of Contaminated Sites

The Raritan Basin covers over 1,000 square miles, and is home to over twenty Superfund site, more than 200 complex sites and several thousand total contaminated sites. Largely unremediated, these sites continue to affect groundwater and surface water supplies throughout the region, although to what degree is unknown, largely due to a lack of sufficient data on the sites which is not easily accessible by the general public. While water treatment systems provide safe and plentiful drinking water to most of the region, ecological damage to wildlife and fisheries, continues unabated.

There are programs that provide incentives to those interested in remediation with redevelopment (e.g., see http://www.state.nj.us/dep/srp/ for information on Brownfield Development Areas and the Hazardous Discharge Site Remediation Fund). The cost and time required for remediation obliges those wishing to stem the ongoing toxic contaminant contribution from these sites to prioritize efforts by highest and best value to the community. This requires access to sufficient information in the form of data, and participation by key stakeholders to inform decision-making and to establish and pursue those priorities. Municipal and county efforts to pursue remediation are constrained by economic factors, limits on state budgets and lack of community awareness or demand for a broad-based restoration of the resource.

In addition to encouraging enhancements of the ongoing regulatory programs, the Working Group recommends two large areas where interventions are needed, listed here as *Data Collection, Analysis and Distribution* and *Municipal Outreach*.

Data Collection, Analysis and Distribution

Background: To focus on achieving a fishable and swimmable Raritan River, adequate and targeted data is essential. For municipal and county decision-makers to plan effectively to address remediation issues, they need to understand the overall context of the impacts. Data currently available on the Raritan is widely scattered, inconsistent, oftentimes insufficient, and frequently difficult to extract from website databases or unpublished reports filed at NJDEP. Without meaningful and scientific data, the compelling case for action is limited.

Data provided by the New Jersey Department of Environmental Protection through the Data Miner system, still complicates access and understanding. Some sources referenced are not complete; in some cases (e.g., the Passaic River Honeywell project), significant data (active and historical) resides only with consultants and appointed officials, or due to sensitivity, may not be part of the NJDEP or USEPA files. Filling such data gaps can be costly in terms of finding, organizing, and presenting for general public use. State and federal regulatory entities that oversee studies of the degree and extent of contamination and potential health risks evaluate proposed cleanup scenarios, but there are long records and constant exchanges and adaptations that make these difficult to track.

The Working Group recognizes that there are four significant known and potential sources of contamination of the Raritan River. These are:

1. Known Contaminated Sites generally defined as any sites not in active industrial use [USEPA, NJDEP, and U.S. Army Corps of Engineers listed contaminated sites]
2. Active sources (e.g., RCRA sites)
3. Point Sources – any permitted discharges; existing industries, sewerage authorities, landfills, etc.
4. Non-point Sources, including surface water runoff, stormwater discharges from municipal systems, agriculture and home use (such as fertilizers), along with combined sewer overflows and roadway runoff.

In May of 2009, Rutgers used the data available from the United States Environmental Protection Agency (USEPA) and the New Jersey Department of Environmental Protection (NJDEP) to identify the universe of Known Contaminated Sites in the region, and has posted summary status reports on www.raritan.rutgers.edu.[1]

1. Approximately 215 major contaminated sites including Superfund and NJDEP supervised remediation projects, have directly affected soils, groundwater, surface waters and sediments in

[1] These site reports may not reflect most recent remediation progress. Current information can be obtained from NJDEP (www.state.nj.us/dep//opra/online.html).

the Raritan basin. Those sites under NJDEP oversight listed here alphabetically by municipality http://www.raritan.rutgers.edu/data/Sites_CandD.pdf.

2. A subset of the above mentioned list lists sites within one mile of the Raritan, including summaries for thirteen major sites with an additional forty-four sites for which record reviews are still needed http://www.raritan.rutgers.edu/data/NJDEPWithin1Mile.pdf.
3. Sites by contaminant of concern. http://www.raritan.rutgers.edu/data/SitesByCOC.pdf
4. The USEPA Superfund sites in the region (not including the Raritan Bay Slag site, which was proposed for listing in August 2009): http://www.raritan.rutgers.edu/data/index.php#Super.

To focus regional attention on these sites requires access to good quality data regarding both contaminated sites and on potential impacts on the Raritan River. The information needs to be applied in local planning and decision-making. The Working Group recommends the following action items:

1. Through a central Sustainable Raritan River website:
   - Provide GIS maps and GIS data layers to regional agencies
   - Develop data layers where needed
   - Foster use of geographic information systems by regional government agencies (e.g., municipalities, counties, redevelopment agencies, improvement authorities and utilities authorities)
2. Strengthen overall water quality and contamination tracking data through additional sampling and monitoring
3. Promote creation of contaminated site database through municipal websites
4. Track and address local sources of non-point pollution

The Sustainable Raritan River Website, hosted by Rutgers at www.raritan.rutgers.edu, provides data from NJDEP, United States Army Corps of Engineers, USEPA, National Oceanographic and Atmospheric Administration (NOAA) and major environmental organizations of the region. The website serves as a single central clearinghouse for existing data and as a repository for data collected in the course of the Raritan River Initiative. The data provided on the website will include the following:

1. Maps for each of the seven counties in the Raritan River watershed are available for download in their entirety or at smaller scale, as required by users (thanks to the Louis Berger Group, Inc.: http://www.raritan.rutgers.edu/data/index.php#maps. The following data are mapped and available for download:
   - Raritan Watershed Boundary
   - Municipal boundaries
   - County boundaries
   - Streams and Water Bodies
   - Landfills
   - Stormwater Discharges
   - Water Quality Sampling Sites (Water quality gauges)
   - Abandoned Mines
   - Surface Mines (quarries)
   - Superfund Sites
   - (FEMA) Floodplains
   - Vernal Pools
   - NJDEP-lead Remediation Sites (Known Contaminated Sites)
   - Public Access Locations

- Open Space (preserved land, both publicly-held and under ownership of non-profit land organizations)

2. Additional data, including the following, will be added as they become available: Permitted industrial discharges, combined sewer overflows, sewerage authority discharges, Mitigation Projects, classification exception areas, wetlands, fish advisories, abandoned vessels, hydric soils, agricultural lands, dams and Threatened and Endangered Species (from the NJWSA and the Landscape Project.
3. Additional maps have been provided by the New Jersey Water Supply Authority, NJDEP, the Conservation Foundation, East Coast Greenways , NOAA and USGS and are available here: http://www.raritan.rutgers.edu/data/index.php#maps.
4. Sites regulated under the federal Resource Conservation and Recovery Act (RCRA) are currently operating facilities that manage hazardous waste (known as TSDFs or treatment, storage or disposal facilities) are regulated under RCRA Subtitle C. These sites need to be made available in a separate database.
5. Links to the various data layers will be made available for use by local planners, interested citizens, environmental commissions and municipal staff.
6. Finally, develop a Google-Map API based system to present major data layers for access through an internet web browser.

These data will greatly facilitate planning because it can be used to:

- Identify potential sources of on-going contamination to encourage pollution prevention, enhance monitoring and focus enforcement as needed
- Identify lands most valuable for preservation, restoration and long-term health of the resource.
- Designate sites for volunteer water quality data gathering, and
- Identify lands appropriate for *sustainable* development and redevelopment

Water Quality: Monitoring and Sampling Data

Efforts to expand available data and to establish baselines for quality in all stretches of the Raritan will be promoted and encouraged. Training and management of data will be encouraged through outreach. Coordination will include environmental organizations, municipalities and environmental commissions as sponsors for student engagement in local monitoring and development of data for posting on organizational, municipal and county websites.

In addition to basic water quality data, the Working Group recommends the exploration of permitted dischargers including expired permitted dischargers, to build a report on any active or inactive sites that are contributing to groundwater contamination or discharging to the river through product seeps that continue to impact the river; discharges to ground and surface waters and sediments; complications of dredging and disposal are vast and need to be accounted for both now and in future activities.

The Working Group recommends the tracking of point and non-point sources of contamination. These would be assembled and shared with the public through websites.

Contaminated Site and Remediation Data

Data needs to be easily available and easy to understand to be useful to local planners and decision-makers. Readable database of basic information on contaminated sites along the Raritan River would help municipalities and interested citizens identify priorities for remediation. Local sources of contamination (including groundwater, soil, sediments, fish tissue studies, and other residue data and toxicity tests (for aquatic invertebrates) related to sediment studies, need to be gathered and listed on www.raritan.rutgers.edu.

The Rutgers team will work with partners to develop a review protocol for NJDEP groundwater data files to establish where information on contaminants is insufficient and to estimate the potential contribution from unremediated sites, including any information regarding contributions to sediments in the river. Many of these sites have been reviewed and are available by municipality at the www.raritan.rutgers.edu/data website. There are additional sites still require a data review. The NJDEP data on discharges is not currently available in a user-friendly format with groundwater data. There are other sites databases need to be reviewed and local reports need to be developed. Other sources of data will also be explored, e.g., municipal tax files and municipal Recreation and Open Space Inventories.

The Working Group recognizes the following Known Contaminated Sites as having local priority for gathering data. The Working Group will work with regulatory agencies to ensure any ongoing discharges are addressed and that cleanups are moving forward in a thorough and timely manner. To prevent cleanup from getting stalled, and to keep regulatory agencies actively engaged, the Working Group will work with environmental groups to inform and assist elected officials and other stakeholders in focusing attention on the full remediation of major sites, including the following (*Superfund sites are italicized*):

Akzo Nobel, Edison
American Cyanamid, Bound Brook
Cornell Dubilier, South Plainfield
Edison Landfill, Edison
El Paso Energy, Woodbridge
Factory Lane, Middlesex
Gulton, Metuchen
Hatco Chemical, Woodbridge
Horseshoe Road, Sayreville
Kin Buc Landfill, Edison
KTK Drums, Edison
Michelin Ford Avenue, Milltown
National Lead, Sayreville
Ortho Chemical, South Plainfield
Raritan Arsenal, Edison
Raritan Bay Slag, Old Bridge
Rhodia, New Brunswick
Somerset Tires Services, Bridgewater
Tingley Rubber, South Plainfield
Woodbrook Road, South Plainfield

Ongoing Contamination from Non-Brownfield Contributions

In addition to contamination from known sites, there are also a host of non-point sources of contamination to explore, characterize and reduce. On the issue of reducing contamination not associated with specific sites, the Working Group recommends:

- Work with NJDEP Compliance and Enforcement on compliance and settlements; encourage more participation by regulated industries in pollution prevention, compliance with stormwater regulations and adoption of sustainable practices
- Encourage additional businesses to participate and promote sustainability and "River Friendly" practices (on the order of work done by the Stoney Brook-Millstone Watershed Association and the NJ Water Supply Authority Work)
- Work with the Rutgers Center for Green Building on promoting zero-net energy infrastructure improvements and water conservation practices
- Engage the Rutgers Sustainable State Institute to foster remediation and pollution prevention related practices in their 'Sustainable Jersey' initaitive
- Work with colleagues at the School of Environmental and Biological Sciences (SEBS), Rutgers Cooperative Extension, the NJ Water Supply Authority and other Collaborator organizations to promote stormwater reduction and to promote water stewardship projects [e.g., rain gardens, green roofs, plantings of trees and other vegetation, porous pavement, etc.)
- Train students in "due diligence" to conduct OPRA reviews of NJDEP files to develop reports on contributions of point sources – any permitted industrial and stormwater discharges; existing industries, landfills, sewerage authorities, etc.
- Work with municipalities to establish strategies to reduce contributions to the river from applications of fertilizers, local agriculture and general maintenance practices.
- Work with environmental organizations to gather support and data.
- Develop and train 'Rutgers Raritan River Rangers' to monitor the river and all major tributaries and report any suspected pollution to the state and federal regulatory agencies.
- Work with other institutions of higher education to coordinate and strengthen efforts in all locations.

Municipal Outreach

Key to the restoration and future protection of the Raritan is awareness and appreciation of the value the river provides to each community in the watershed. To that end, the Working Group supports the efforts of the Public Access Team to promote use of the river, specifically the October 11, 2009, kayak and canoe float down the river. This will be the first of what the Working Group hopes are many events, hosted by various collaborators, to promote awareness and value of a clean and protected Raritan River.

In addition, once quality assured data are available, the next step is to work with municipalities to demonstrate the value of additional local data in achieving local goals. This will be accomplished through outreach meetings with community leaders throughout the region to share information and to spur better use of municipal websites. In addition to providing the GIS-based data to municipalities and interested parties, Rutgers will also be providing student interns to work with municipalities and environmental organization partners to further populate local data. To achieve this, the Working Group recommends the following actions:

1. Assess the current status of GIS-based data in each municipality in the region

2. Inform and advise municipalities on environmental impacts to the Raritan, such as landfill closure plans
3. Assist development of a contaminated sites database on community websites, (see (http://www.franklintownship.com/site_redemption/contaminated_sites_web_site)
4. Use the "Counties and Municipalities" section of www.raritan.rutgers.edu website to assist with use of linked contaminated site data
5. Encourage municipalities to incorporate greening and sustainability in planning and fiscal analyses; encouraging sustainable ratables and jobs; and enhance community name-recognition by enlisting in the "Sustainable Jersey" initiative.
6. Support the "Green Enterprise Zone" legislation through outreach efforts
7. Work with municipalities to identify projects that can achieve these goals and clearly add value locally
8. Coordinate a seminar at Rutgers with municipal teams to promote investigation of contaminated sites as a function of overall assessment of impacts to the Raritan River
9. Develop outreach materials on remediation, spanning the matters of remedy selection, funding, risk-based standards, local monitoring and how to include public benefits.
10. Host a Sustainable Raritan River planning studio course at the graduate level to provide a report on municipal progress on these issues, 2010: The Raritan River Corridor Visioning Project: Fishable, Swimmable and Sustainable. The assessments will report on the following areas:
    - Brownfield Inventories
    - Redevelopment goals
    - Job creation goals
    - Business and industry inventory
    - Infrastructure goals
    - Participation in Sustainable Jersey
    - New resource protection initiatives
    - Natural Resource Inventories
    - Master Plans

The first studio course will involve the eighteen municipalities from Bridgewater to Perth Amboy and will include community participation exercise to develop a coordinated vision for the future of the river corridor.

Regional Outreach

The Working Group also acknowledges the importance of engaging key stakeholders in the future of the River. They recommend the following outreach initiatives:

- Legislators: provide regular updates
- Municipal and county leaders: engage directly and encourage links to www.raritan.rutgers.edu and key DEP databases
- Regional regulated businesses and responsible parties: sustainability, pollution prevention and risk reduction
- Environmental groups: broadening support
- Raritan River-related businesses, including sports and recreation businesses: to encourage their continued and expanded presence in the region

- Rutgers students: expand involvement with the River – WaterWatch, SEBS and Rutgers environmental clubs
- Engage other schools, encouraging campus wide-efforts throughout the region, e.g., Middlesex County College and others within the watershed
- Reach out as appropriate to media and communicate through local events

Through the auspices of the collaborators, the Working Group will continue to reach out and provide opportunities to engage these stakeholders in conversations geared toward the future protection of the river and the need for a regional approach to its protection into the future.

Natural Resource Damage Assessments

Natural Resource Damage (NRD) Assessments are exercises by both state and federal agencies. The New Jersey Department of Environmental Protection encourages NRD assessments to recover costs from past environmental harm and "lost use" of the resource and apply those compensatory damages to restoration and future protections of the river and the watershed. In partnership with the federal Natural Resource Trustees ((Commerce/NOAA, Interior/US Fish and Wildlife Service and USEPA) too few cases have been successful brought in the Raritan region (e.g., Combe Fill South landfill in Morris County) and there are many other sites that could be pursued. The Working Group recommends the following actions:

1. Identify potential NRD cases in the region and work with the NJDEP Office of Natural Resource Restoration (ONRR) to ensure viability of established restoration projects
2. Expand the list of projects in the watershed that would enhance environmental protection and restoration in the Raritan River region, including but not limited to dam removals, increased public access, preserved land, walkways, open space, habitat protection, reduction in stormwater discharges, and more aggressive pollution prevention plans
3. Encourage NJDEP to expand its review of sites on water bodies to include a more in-depth assessment of sediments
4. Develop a comprehensive report on successful NRD settlements (Kinbuc Landfill, Combe Fill, etc., including groundwater settlements for both coastal and upland sites)
5. Support federal trustees' pursuit of NRD in the region and encourage expanded review of sites through CERCLA, the Water Pollution Control Act and Spill Fund

Supplemental Environmental Projects

The NJDEP has two programs that tie into the overall goals of restoring and preserving the Raritan River. The NRD Program, mentioned above, is committed to obtaining compensation from previous environmental damages and, as a function of the resulting NRD settlements, subsequently perform habitat restoration, dam removal, public access sites, and land preservation projects.

Compliance and Enforcement Element assesses penalties against companies that violate conditions of their environmental permits. One avenue for settlement of a violation, or as a condition of a permit, is to provide a wide variety of local environmental enhancements from public access and development of public lands to environmental education programs and funding of field operations.

In negotiating with parties subject to NRD and Supplemental Environmental Projects (SEPs) in the region of the Raritan River, the Working Group recommends the following:

- Work with NJDEP to ensure consideration of these projects when entering into negotiations with violators

Next Steps

The Working Group will continue to pursue efforts to assemble and report data and identify opportunities to engage municipalities. Rutgers will continue to sponsor www.raritan.rutgers.edu, as a clearinghouse for information on the Raritan and work to engage students. Experienced environmental professionals will assist with the due diligence training as part of the upcoming studio course at the Bloustein School. As opportunities arise for students to work with collaborating partners, the team at Rutgers will respond with assistance.

Rutgers staff associated with the Sustainable Raritan River Initiative will continue to coordinate efforts on behalf of the Collaborative to implement these action plans.

- Host at least one meeting of the full body of Collaborators and working groups (February 2010)
- By May 2010, have a more robust store of data and maps that can be used by municipal and community-based organizations to encourage reductions in contamination and contributions of non-brownfield sites in their community
- Where possible, Rutgers will engage with municipalities to identify priority remediation and stormwater reduction goals and work with them to find funding to promote and encourage remediation efforts
- This effort will continue over the span of years, and will be assessed annually for progress
- A more extensive outreach to members of the Working Group will also ensure our common commitment to these action plans and incorporation of local elements that arise over the course of the coming year
- Support expansion of maps for threatened and endangered species in Middlesex County for the NJDEP Landscape Project
- Work with other agencies including NOAA and USEPA) to fund comprehensive sediment studies, including categorization of erosional and depositional sediments to understand show how sediments move and relocate throughout the River and

into Raritan Bay In the absence of sediment data, conduct modeling to determine the historic impacts to river sediments from the major sites[2]

- Pursue additional research funds to address other gaps in the science, including studies of:
    - Pathogens
    - Nitrogen
    - Toxin identification
    - Flood plain management
    - Shellfish and fisheries restoration
- Support research on policy and brownfield redevelopment
- Support efforts to track impacts of the top twenty priority sites listed previously in this report within the region.

Funding

The key to the success of restoring the Raritan River to swimmable and fishable lies in the advantageous application of resources. Historic sources of funds for county and municipal projects, such as recycling and other revenues, are increasingly unavailable or significantly reduced in the current economic downturn. The Working Group recommends the following under Rutgers leadership:

- Identify sources of federal and state funds to link local projects
- Work with regional legislators on a broader restoration initiative.
- Track efforts to reauthorize the Superfund tax and provide updates to the Collaborative for their action.
- Explore new and existing incentives for remediation and reduction of contaminants into the river and share such information via regular communiqués and via the website, www.raritan.rutgers.edu.
- Provide programs in the form of student engagement to assist with these efforts, and identify resources to support the policy work of the Initiative.
- Work with other departments (e.g. Biology, Chemistry and Engineering Departments), to find opportunities to monitor pollution on the river which includes gathering, sampling, analyzing, and disseminating data to the students, faculty and public.

[2] NRD is calculated by NJDEP through modeling to estimate sediment damages over time largely because contamination from activities in the early twentieth century has dispersed. Sediment sampling may thus vastly underestimate the true ecological damage caused by a particular industry, making modeling a preferred approach.

Hazardous Sites and Sediment Cleanup Working Group Members

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WATERBODY SPECIFIC FISH CONSUMPTION ADVISORIES[3]			
MARINE AND ESTUARINE WATERS			
WATERBODY	**SPECIES**	**GENERAL POPULATION EAT NO MORE THAN:**	**HIGH-RISK INDIVIDUALS EAT NO MORE THAN:**
RARITAN BAY COMPLEX Includes the Raritan Bay, tidal Raritan River (to the Rt.1 bridge), and the tidal portions of all Tributaries	American Lobster	One meal per week Do not eat green gland (hepatopancreas) Discard cooking liquid	
	Weakfish Striped Bass Do not eat Winter Flounder Porgy	One meal per month	Do not eat
			One meal per month
	American Eel	One meal per year	Do not eat
	Summer Flounder	**One meal per week**	
	White Perch (Raritan Bay)	One meal per year	Do not eat
	Blue Crab	**One meal of 7 crabs per month Do not eat green gland (hepatopancreas) Discard cooking liquid**	
Raritan River upstream of Route 35 Bridge and South river (tidal portion)	**White Catfish**	**Four meals per year**	**Do not eat**
	White Perch		

NOTE: To reduce your exposure, eat those fish with the lowest meal restrictions. Do not combine meal restrictions. (For example, If you eat multiple species or catch fish from more than one area, the recommended guidelines for different species and different locations should not be combined.)

[3] Excerpted from *Fish Smart, Eat Smart: A Guide to Health Advisories for Eating Fish and Crabs Caught in New Jersey Waters,* June 2009 , the New Jersey Department of Environmental Protection and New Jersey Department of Health and Senior Services. (http://www.state.nj.us/dep/dsr/fishadvisories/statewide.htm. Also see the 3-year study of the Region: http://www.state.nj.us/dep/dsr/year3-rps.pdf