NJ Department of Environmental Protection
Water Monitoring and Standards

New Jersey Integrated Water Quality Monitoring and Assessment Report 2006

December 2006

State of New Jersey
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Executive Summary

The New Jersey 2006 Integrated Water Quality Monitoring and Assessment Report (Integrated Report) is intended to provide an effective tool for maintaining high quality waters and improving the quality of waters that do not attain their designated uses. The Integrated Report describes attainment of the designated uses specified in New Jersey's Surface Water Quality Standards (N.J.A.C. 7:9B), which include: aquatic life, recreation, drinking water, fish consumption, shellfish consumption, industrial and agricultural. The Integrated Report provides water resource managers and citizens with information regarding:

- the use attainment status for all assessed waters of the State,
- the methods used to assess use attainment,
- the pollutants causing water quality impairment(s) and their sources, and
- management strategies, including total maximum daily loads (TMDLs), under development to achieve surface water quality standards and attain the designated uses of the waters.

The Integrated Report also identifies ongoing and planned strategies to maintain and improve water quality statewide, improve and expand water quality monitoring and improve water quality assessment methods.

Federal Reporting Requirements:

The Federal Clean Water Act (Act) mandates that states submit biennial reports to the U.S. Environmental Protection Agency (USEPA) describing the quality of their waters. The biennial *Water Quality Inventory Report* or “305(b) Report” must include the status of principal waters in terms of overall water quality and support of designated uses, as well as strategies to maintain and improve water quality. The 305(b) reports are used by Congress and USEPA to establish program priorities and funding for federal and state water resource management programs. The Act also requires states to biennially submit to USEPA a list of waterbodies that are not attaining water quality standards, despite the implementation of technology-based effluent limits. All such impaired waterbodies must be identified on this *List of Water Quality Limited Waters* or “303(d) List.” States must prioritize 303(d)-listed waterbodies for Total Maximum Daily Load (TMDL) analyses and identify those high priority waterbodies for which they anticipate establishing TMDLs in the next two years.

The Integrated Report satisfies the reporting requirements of sections 303(d), 305(b) and 314 and, in doing so, also satisfies the 305(b) reporting requirement for section 106 grant funds. For states to be eligible for section 106 grant funds, section 106(e)(1) requires that states must have the means to monitor water quality (including “navigable waters and to the extent practicable, ground waters”) and annually update water quality data and include it in their section 305(b) submittals. As per the 2006 Integrated Reporting Guidance, USEPA will not award any section 106 funding under a section 106 grant or a performance partnership grant (PPG) to any state that has not annually updated its monitoring data and submitted the most recent report required under section 305(b). By April 1 of all even numbered years, states must submit to USEPA the description of the water quality of all waters in the State and the extent to which the quality of waters provides for the protection and propagation of a balanced population of shellfish, fish, and wildlife and allows recreational activities in and on the water.

USEPA began issuing guidance (USEPA 2001) for the development of an Integrated Water Quality Monitoring and Assessment Report (Integrated Report) by the states beginning with the Year 2002 submittal. The Integrated Report improves overall water quality reporting by providing detailed descriptions of data sources and assessment methods as a basis for sound, technical assessment decisions not included in earlier 305(b) Reports. In addition, assessment results are represented in a spatial context, presenting a clearer picture of water quality across the State. Monitoring needs and schedules are described, facilitating the articulation of monitoring priorities and identifying opportunities for cooperation with other agencies and watershed partners. TMDL needs and schedules, as well as other management strategies, are defined to convey plans for water quality improvements. Finally, the public participation aspects provide opportunities for data submittal and open discussion of water quality assessment methods and results. The Department’s 2006 Integrated Report was developed based on USEPA guidance for the preparation of 2006 Integrated Lists.

About This Report:

The 2006 Integrated Report is organized into two components, the Main Report, which serves as a summary document explaining each aspect of the water quality assessment process and the overall results; and an Appendix, which includes the reports, findings, methods, and other documentation supporting the results of the statewide use attainment assessment.

The <u>Main Report</u> includes the following chapters:
1. Overview of New Jersey’s Water Resources
2. Water Quality Monitoring
3. Water Quality Assessment (Includes assessment methods, data used and trends)
4. Results of 2006 Water Quality Assessment
5. Water Quality Management (Includes program descriptions)
6. Public Health Concerns
7. Cost/Benefit Analysis
8. Public Participation, and
9. Next Steps: Preparing for 2008 and Beyond

The Appendix includes:

- Appendix A: **The Integrated List** organized by designated uses
- Appendix B: **303(d) List*** of Water Quality Limited Waters (or "List of Impaired Waters"), including priority ranking for TMDLs
- Appendix C: **Delisted Waters**, indicating where waters previously listed on Sublist 5 of the 2004 Integrated List are currently identified on the 2006 Integrated List.
- Appendix D: **The Two-Year TMDL Schedule**
- Appendix E: **Response to Comments Document** containing all Department responses to public and USEPA comments on the Methods Document and Integrated List, as mandated by the public participation process.
- Appendix F: **Data sources** used for the water quality assessment
- Appendix G: *Integrated Water Quality Monitoring and Assessment Methods* (**Methods Document**) detailing the Department's assessment methods as applied to the Integrated List.
- Appendix H: New Jersey's **Water Quality Monitoring and Assessment Strategy**
- Appendix I: New Jersey's Ambient **Ground Water Monitoring Network**, including an assessment of ground water quality data generated by this network, and its application/relationship to surface water quality
- Appendix J: **Surface Water Quality Standards**, N.J.A.C. 7:9B
- Appendix K: **Status of TMDLs** From The 2004 Integrated Report's Two-Year TMDL Schedule
- Appendix L: **Section 319(h) Grant Projects** Funded SFY '03-'05

The Integrated Report was developed in four discrete phases. The first phase began with the solicitation of water quality related data to support the development of the Integrated List. The Department provided notice in the New Jersey Register and on the Department's Web site. A minimum of six months was provided for the submittal of data (see Chapter 8: Public Participation).

During the second phase, the Department updated the Integrated Water Quality Monitoring and Assessment Methods Document. This document includes a description of the quality assurance requirements as well as the rationale for the placement of waterbodies on Sublists 1 through 5. A draft Methods Document was announced by public notice and a thirty-day comment period was provided. After review and consideration of comments received on the proposed Methods Document, the Department finalized the Methods Document (see Chapter 3: Water Quality Assessment, Appendix F: Response to Comments, and Appendix G: Methods Document).

The third phase was the preparation of the Integrated List. The proposed Integrated List of Waterbodies was announced by public notice and made available for review and comment. After consideration of comments, the Integrated List was finalized (see Chapter 4: Results and Appendix A: Integrated List). Once the Integrated List was

* USEPA approval is required for the 303(d) List. If any revisions are required based on USEPA review, the Department will publish an addendum to the 303(d) List and other appendices as appropriate.

completed, Sublist 5, with priority ranking, and the 2-year TMDL schedule were developed (See Appendix B: 303(d) List and Appendix D: Two-Year Schedule).

Finally, the Department prepared the Integrated Report, including assessment results represented in a spatial context, detailed descriptions of data sources, monitoring needs and schedules, and TMDL schedules. The Department also prepared a summary description of the various water quality-related programs that serve or could serve as management strategies to maintain, enhance, and restore water quality in the State's waters.

Assessing New Jersey's Waters:

New Jersey is the fifth smallest state in the nation and is one of the most geologically and hydrogeologically diverse. New Jersey contains a wide variety of land use types, water resources, geologic characteristics, and natural biota and fauna. Within the State's 7,788 square miles are 127 miles of coastline, 7,840 miles of rivers and streams and 109 square miles (69,920 acres) of lakes and ponds larger than two acres, using the traditional 1:100,000 scale stream coverage. In addition, there are 1,482 square miles of fresh and saline marshes and wetlands, and 1,069 square miles of coastal waters. The 2006 Integrated Report used a more detailed stream coverage (1:24,000 scale) than previous reports**.** Using this scale increases the total number of stream miles in New Jersey to 18,126.

Improvements To Assessment, Listing and Reporting Methods:

- HUC-14 subwatersheds were chosen as the assessment unit and listings were made on a subwatershed basis (except for lakes).
- Sublist 1 is used to identify all assessment units that are in "full attainment".
- 90% of freshwater river miles were assessed for at least one designated use.
- 99.8% acres of tidal waters were assessed for at least one designated use.
- 25% of assessment units were fully assessed for all designated uses (not including fish consumption).

The primary deliverable of the statewide water quality assessment process is the Integrated List, which identifies the use attainment and assessment status of all waters of the State. The Integrated List is generated by placing all of the State's waterbodies into one of five possible categories or lists (New Jersey uses the term Sublists*) based upon the following considerations: 1) the degree of attainment of the designated uses, 2) how much information is available to determine use attainment, and 3) the cause(s) and source(s) of non-attainment. For the 2006 Integrated List, the Department assessed use attainment in accordance with the *2006 Integrated Water Quality Monitoring and*

*The Department has chosen to use the term "Sublist" rather than the term "category" used by USEPA in the federal guidance, to eliminate confusion with New Jersey's Category 1 waters designated and defined under Surface Water Quality Standards rules at N.J.A.C. 7:9B.

Assessment Methods (see Appendix G). HUC-14 subwatersheds were chosen as the assessment unit and listings were made on a subwatershed basis, except for lakes. Placement on the Integrated List is by designated use within each assessment unit (HUC-14 subwatersheds and lakes). Placement conditions for each Sublist are described below:

Sublist	Placement Conditions
Sublist 1	The designated use is assessed and attained AND all other designated uses in the assessment unit are assessed and attained. (Note: The fish consumption use is not used for this determination based on USEPA guidance).
Sublist 2	The designated use is assessed and attained BUT one or more designated uses in the assessment unit are not attained and/or there is insufficient information to make a determination.
Sublist 3	Insufficient data is available to determine if the designated use is attained.
Sublist 4	The designated use is not attained or is threatened; however, development of a TMDL is not required for one of the following reasons:
	A. A TMDL has been completed for the pollutant causing non-attainment.
	B. Other enforceable pollution control requirements are reasonably expected to result in the conformance with the applicable water quality standard(s) in the near future and the designated use will be attained.
	C. Non-attainment is caused by something other than a pollutant (e.g., "pollution").
Sublist 5	The designated use is not attained or is threatened by a pollutant(s) and a TMDL is required.

The change to the assessment unit delineation and the sublist categories on the Integrated List reflects the latest phase of the Department's transition to a fully integrated water quality monitoring and assessment report. The 2002 Integrated Report initiated the combination of 305(b) and 303(d) reporting requirements into one document. For the 2004 Integrated Report, the Integrated List was based on waterbody/pollutant combinations. In this 2006 Integrated Report, the Integrated List is based on assessment subwatersheds and lakes, the results of which are reported on two separate Integrated Lists (see Appendix A-1 and A-2). For the 2008 Integrated Report, the Department intends to integrate assessment results for most lakes with their respective HUC-14 subwatersheds. Lakes of significant size will be assessed individually and will comprise their own assessment unit but will be reported along with subwatersheds on one comprehensive Integrated List.

The change in assessment unit delineation directly affects the listing process as well as the composition of the individual lists. The 2004 Integrated List had only one list to reflect "attainment" – Sublist 1. In 2004, if a pollutant was attaining the surface water quality standards for a pollutant, that waterbody/pollutant combination was placed on Sublist 1; however, the same waterbody could be identified on another list if another pollutant was exceeding surface water quality standards. For example, in 2004, Assiscunk Creek at Cedar Lane was placed on Sublist 1 for temperature and also on Sublist 5 for lead.

With the change to assessing designated uses rather than pollutants in 2006, both Sublist 1 and 2 are used in the assessment process. An extra step was added to the assessment process to generate Sublist 1, which is based on a collective assessment of use attainment for all designated uses in each assessment unit. Sublist 1 is used to identify assessment units for which all designated uses were assessed and are in attainment. By using Sublist 1 in this manner, the 2006 Integrated List identifies - at a glance – all subwatersheds that are in “full attainment”, i.e., every designated use is attained. (Fish consumption is not included in the overall assessment.)

In 2006, 24 subwatersheds were placed on Sublist 1. These assessment units are now distinguishable from those in which some of the uses are attained (Sublist 2) but others are “not attain” (Sublist 4 or 5) or have insufficient information to make a determination (Sublist 3). The term “full attainment” is thus used more conservatively in this report as it applies only to Sublist 1, where all uses in the HUC-14 subwatershed are assessed and meet the applicable surface water quality standards. Although nine different designated uses are assessed, not all uses are applicable to all assessment units. An individual assessment unit is assessed for between four and eight designated uses, depending on the stream classifications of the waters associated with the assessment unit. With 970 subwatersheds, 468 lakes, and multiple uses assessed within each assessment unit, the Department conducted a total of 6,488 individual designated use assessments to produce the 2006 Integrated List.

The ultimate goal for the Integrated Report is to assess 100% of the state’s waters (970 subwatersheds and 468 lakes in New Jersey) for all applicable designated uses and place every assessment unit on Sublist 1, indicating full attainment of all applicable designated uses in all waters of the State. This is consistent with the federal Clean Water Act’s goal of all waters being “fishable and swimmable.” The Department continues to make progress in both increasing the extent of waters assessed as well as assessing all designated uses for every waterbody assessed. This new approach should result in the identification of more waters in full attainment. For the 2006 Integrated Report, of the State’s 18,126 stream miles, a total of 16,410 stream miles (90%) were assessed for at least one designated use. Of the total 166,384 acres of estuaries, bays, and ocean waters, 166,133 (99.8%) acres were assessed for at least one designated use. There were 241 subwatersheds out of the 970 total (25%) that were fully assessed, not including fish consumption. There were 88 subwatersheds (9%) that were fully assessed for all applicable designated uses, including fish consumption. Shellfish consumption was assessed in 99% of applicable waters, and aquatic life was assessed in 80% of applicable waters. Twenty-four (10%) of the 241 fully assessed subwatersheds were in full attainment; i.e., all applicable designated uses were assessed AND attained in these subwatersheds.

Key Findings:

Based on this comprehensive assessment of the State of New Jersey's waters, the Integrated Report contains the following key findings:

- Approximately 25% of the State's HUC-14 subwatersheds could be fully assessed for all applicable designated uses (except fish consumption). Nine percent (9%) could be fully assessed including fish consumption.

- Ninety percent (90%) of the State's stream miles (16,410 of 18,126 stream miles) were assessed for at least one designated use; 99.8% of the total acres of estuaries, bays, and ocean waters (166,384 of 166,133 acres) were assessed for at least one designated use.

- Ten percent (10%) of the State's assessed subwatersheds attained all applicable designated uses (i.e., full attainment).

- Almost 100% of ocean beaches are fully swimmable.

- All freshwaters of the State are designated for drinking water supply use. Over 70% of assessed subwatersheds attained the drinking water supply use. (Note: this is not directly related to the safety of finished potable water supplies).

- Less than 20% of the State's waters attain the general aquatic life use; less than 20% of rivers and streams classified for trout production/trout maintenance attain this aquatic life use.

- Fish consumption advisories for mercury and PCBs resulted in the highest number of impairments. Wherever the fish consumption use was assessed, it was found to be non-attained.

- pH caused the second highest number of impairments but a large number of these are attributable to existing water quality standards that do not take into account waters adjacent to the Pinelands that have naturally occurring low pH levels.

- Phosphorus caused the third most frequent number of impairments based solely on the numeric criterion; narrative criteria for total phosphorus (TP) were not used in this assessment.

- Between 1985 and 2004, nutrient concentrations and dissolved oxygen (DO) levels improved or remained stable throughout the State, while total dissolved solid (TDS) and specific conductance showed declining conditions.

Assessment Results Highlights:

- Twenty-four (10%) of the 241 fully assessed subwatersheds were placed on Sublist 1 with all applicable designated uses assessed and attained.

- Of the 970 subwatersheds designated for the aquatic life use, 20% (192) attained the use, 60% (586) did not attain the use, and 20% (192) were not assessed. Subwatersheds not attaining the general aquatic life use were distributed throughout the State. Subwatersheds attaining the use tend to be concentrated in the upper northwest corner of the State, the Pinelands Region and adjacent estuarine waters. (These areas are also the least developed in the State).

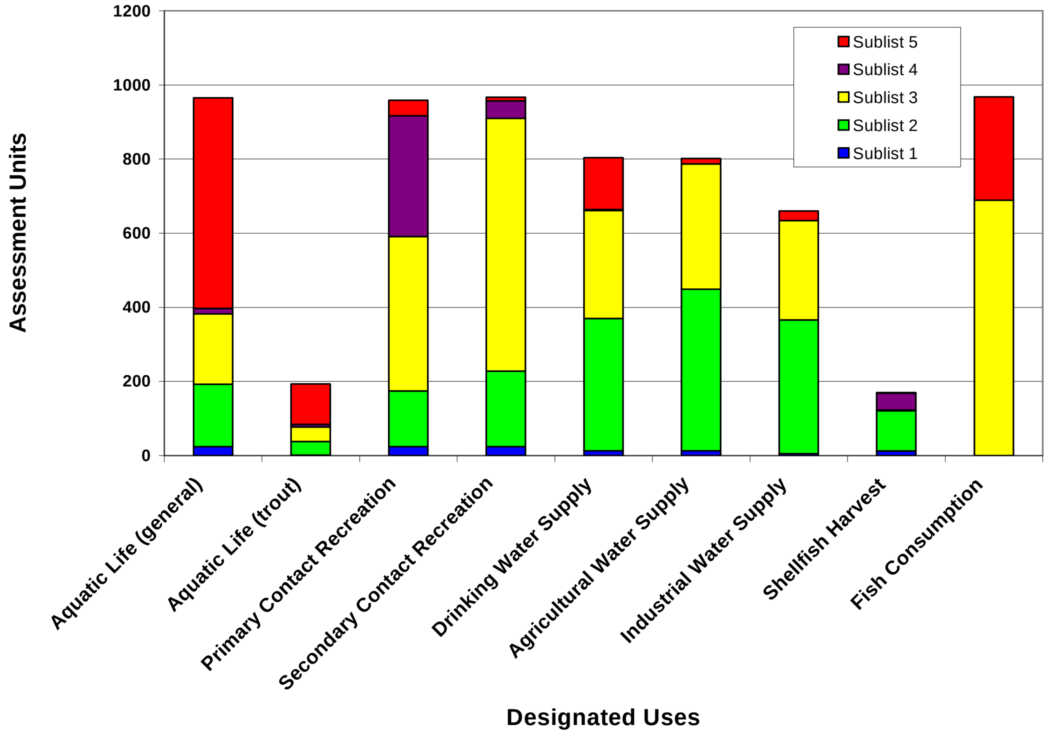
- None of the subwatersheds in New Jersey's ocean waters attained aquatic life uses based on dissolved oxygen (DO) levels. DO is being used as a surrogate for aquatic life assessment in the coastal waters while the Department develops biological indicators.

- Of all the 940 subwatersheds designated for primary contact recreational use, 18 % attained the use, 39% did not attain the use, and 43% were not assessed. Although less than 200 subwatersheds meet primary contact recreation, the area with the most intensive recreational use (ocean beaches), is fully swimmable. Between Sandy Hook and Cape May, the one minor exception is a stretch of 500 yards of beach in Monmouth County, which undergoes a "rain provisional closure" due to bacteria contamination emanating from Wreck Pond when rains occur in excess of 0.1 inches in 24 hours. Actions are underway to address this problem, including extending the outfall pipe and identifying and eliminating nonpoint sources of pathogens upstream.

- Of the universe of 733 subwatersheds to which the drinking water supply use applies, 370 (51%) attained the use, 147 (20%) did not attain the use, and 216 (29%) were not assessed. Of the 517 (71%) subwatersheds assessed for drinking water supply, 72% attained the use and 28% did not. These results are not directly related to the safety of finished potable water supplies.

The results for all the designated uses are summarized in Figure ES-1 on the following page. This figure depicts the number of assessment units to which each designated use applies, the number of units assessed for each use and the placement of the designated uses on one of the five sublists. (The total number of assessment units varies from one designated use to another as all designated uses are not applicable statewide, e.g., shellfish consumption is not a designated use in freshwaters; drinking water supply is not a designated use in saline/estuarine waters.)

Figure ES-1: Designated Use Assessment Status for Non-Lake Watersheds



Impaired Waters:

The Department has identified 688 (71%) HUC-14 subwatersheds and 161 (34%) lakes as impaired for one or more designated uses (see Appendix A). These waterbodies appear on Sublist 5 for one or more pollutants. The Department identified the pollutants causing the impairment for each assessment unit/designated use combination identified on Sublist 5 and developed the 2006 303(d) List of Impaired Waters (see Appendix B). There are a total of 33 pollutants identified on the 2006 303(d) List in one or more assessment units, resulting in 2012 pollutant/waterbody combinations. The top five pollutants (mercury, PCBs, phosphorus, pH, and pathogens) are responsible for over 50% of the listings. Figure ES-2 on the following page displays the top 16 pollutants responsible for over 90% of the listings. (Note: When only biological data is used to identify an assessment unit as not attaining the aquatic life designated use, the cause of the impairment was identified as “pollutant unknown”.) The Department ranked the 2012 impairments listed on the State’s 303(d) list and prioritized 238 impairments for TMDL development in the next two years (see Appendix D).

As stated earlier, the Department is still transitioning to a fully Integrated Water Quality Monitoring and Assessment Report. The first phase of this transition included a change in the delineation of assessment units and a shift in focus from assessing pollutant levels in waterbodies to assessing designated use attainment. These and other changes in methodology have made it difficult to compare the results of different Integrated Lists and to evaluate trends over time.

Figure ES-2: Pollutants Responsible For Over 90% Of Impairments

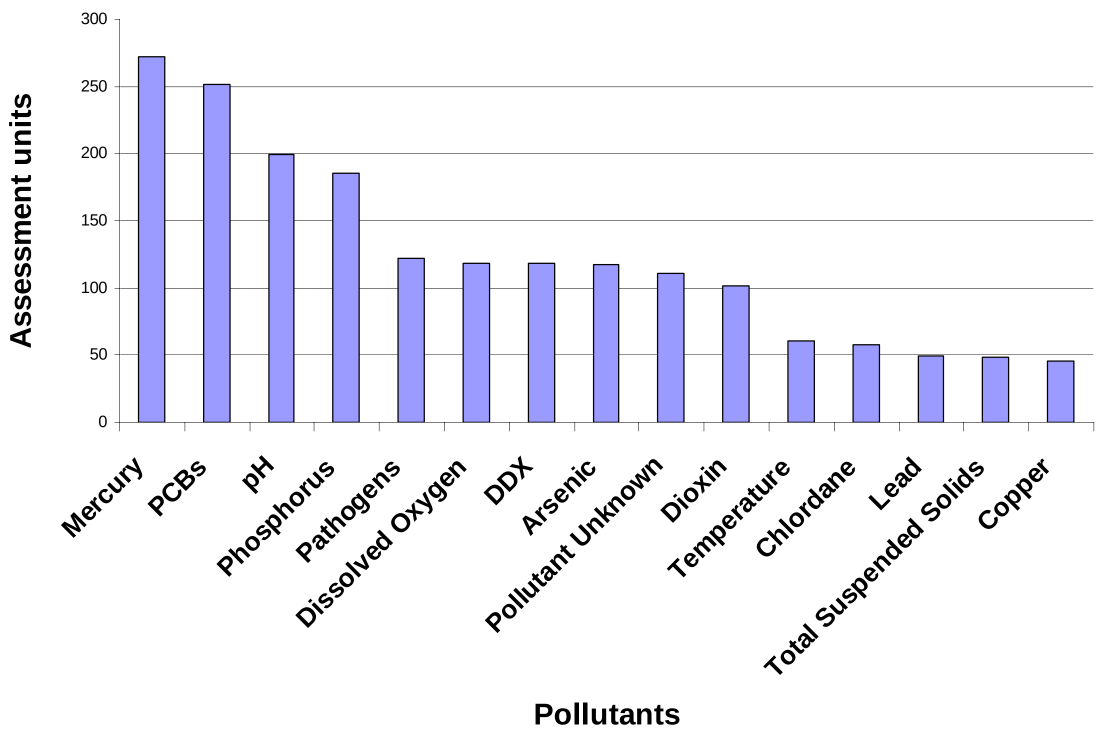
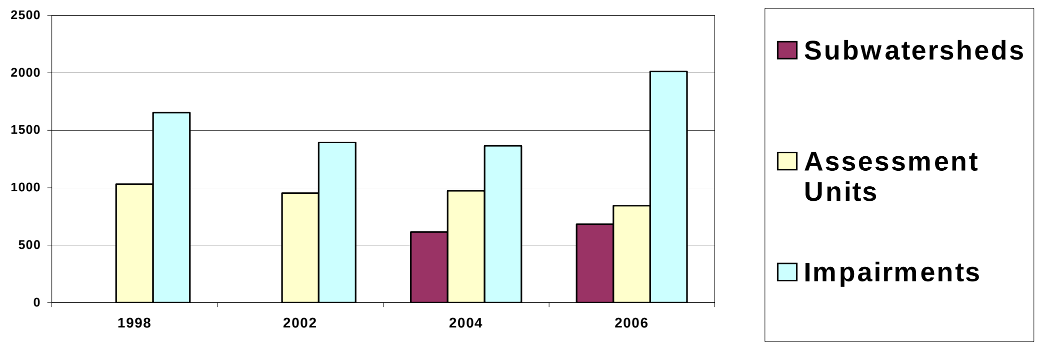


Figure ES-3 on the following page shows that the number of impaired pollutant-waterbody combinations or impairments, changed from just above 1,500 (in 1998) to below 1,500 (in 2002 and 2004) to 2,012 (in 2006). While this appears to be an increase in overall impairment of New Jersey's waters, it is actually difficult to make any conclusions regarding impaired waterbody trends since the unit of measurement (i.e., assessment unit boundaries) has changed over the same time period. Specifically, the yellow bar representing the number of impaired waterbodies in 1998 depicts the total number of <u>all types</u> of waterbodies that were placed on the 1998 303(d) list, including stream segments which were based on individual monitoring locations, etc.; the yellow bar in 2006 depicts the total number of impaired HUC-14 subwatersheds and lakes placed on Sublist 5 of the 2006 Integrated List. The number of impaired waterbodies (using the 2004 station based spatial extent) has actually decreased from 973 in 2004 to 849 in 2006. The apparent decrease in number of impaired waterbodies over time may be due to the consolidation of numerous impaired waterbodies into their respective HUC-14 subwatersheds.

Figure ES-3 Impaired Waterbody Trends*

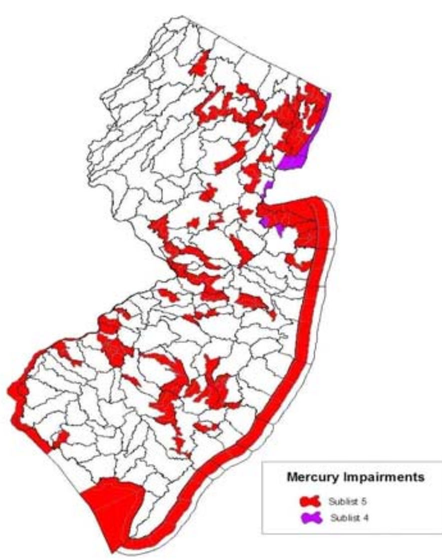


* It is difficult to make conclusions regarding trends in the number of impairments because the size of the assessment units has changed over this time period. Beginning with the 2006 Integrated Report, the Department is now reporting attainment status based on subwatersheds instead of monitoring stations.

Conversely, while the number of impaired pollutant-waterbody combinations or impairments (green boxes) seems to increase dramatically in 2006 after a steady decrease between 1998 and 2004, the increase is mainly due to expanded fish consumption advisories associated with mercury and/or PCBs in fish tissue (see Chapter 4, Section 4.6 for details on fish consumption use assessment). The best comparison of impaired waterbodies between 2004 and 2006 would be based on subwatersheds (red bars); there were 614 impaired subwatersheds in 2004 and 688 impaired subwatersheds for 2006. One of the main reasons for the change in the spatial extent delineation of an assessment unit, from station-based to subwatershed-based, was to develop a stable assessment unit whose assessment results could be tracked over time and to allow a more accurate and substantive use impairment trend analysis to be presented in future reports.

Pollutants Causing Impairment:

Figure ES-4 Mercury Impairments (excluding lakes)



Mercury and PCBs (polychlorinated biphenols) caused the highest number of impairments in New Jersey's waters, with 272 and 252 impaired assessment units, respectively. These impairments were generally associated with fish consumption advisories and fish tissue analysis, but some were associated with water column data. All locations sampled to date for fish tissue have resulted in the issuance of fish consumption advisories due to excessive levels of one of these persistent, ubiquitous contaminants. Sources of these pollutants include air deposition, sediments, municipal and industrial point source discharges and contaminated sites. Lake advisories are largely due to mercury in largemouth bass and chain pickerel; however, other species such as yellow perch, small mouth bass, and bullheads are often identified as well. River advisories identify mercury, PCBs, and DDX in the same species as well as American eels. In coastal waters, advisories are centered on striped bass and bluefish for mercury.

For most species and regions, concentrations of PCBs and chlordanes have decreased markedly compared to evaluations made a decade ago. Changes in DDX are more equivocal, with some, but not all species showing decreases. The observed decreases could be due to environmental cleanups, pollution prevention programs or changes in the bioavailability of contaminants. PCBs are very stable in the environment; hence, reductions are largely due to input reductions and the gradual outflow of sediments to estuaries and ocean and/or burial by successive generations of non-contaminated sediment. Declines in chlordane levels may result from these processes but also from chemical degradation, especially over long time periods. Although environmental levels of some contaminants, such as PCBs, are dropping, increased listings are expected in the future due to two converging factors. The first is New Jersey's adoption of more protective, more restrictive fish advisory triggers. The second factor is the planned assessment of new and as yet un-monitored waters for fish tissue contaminants. The Department has proposed amendments to the NJPDES rules at N.J.A.C. 7:14A to address the discharges of PCBs and mercury from NJPDES sources. Towards the management of environmental mercury, the Department has made considerable progress implementing a broad effort to reduce environmental mercury, particularly from air deposition, based upon recommendations from New Jersey's Mercury Task Force (see Chapter 5, Section 5.8 for details) and from surface water discharges to publicly-owned treatment works (see Chapter 5, Section 5.4 Water Pollution Control Programs).

- **pH caused the second highest number of impairments,** affecting 199 assessment units. Many of the streams listed as impaired for pH flow into and out of the Pinelands but are classified as FW2 waters; only streams within the geographic boundary of the Pinelands region are classified as Pinelands (PL) waters with a corresponding surface water quality criterion for pH. As a result, many streams are listed as impaired due to naturally low pH. The Department will need to determine the natural boundary for low pH waters and revise the stream classification or establish site-specific criteria. While a majority of the impairments may be resolved by refinements to the Surface Water Quality Standards, other impairments may be due to excessive productivity.

Figure ES-5

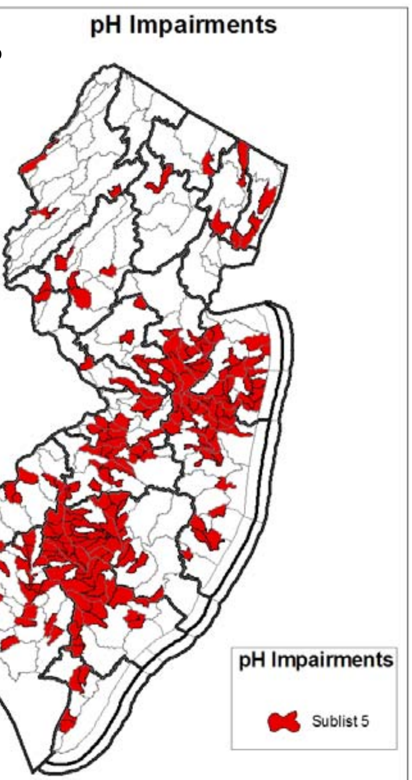
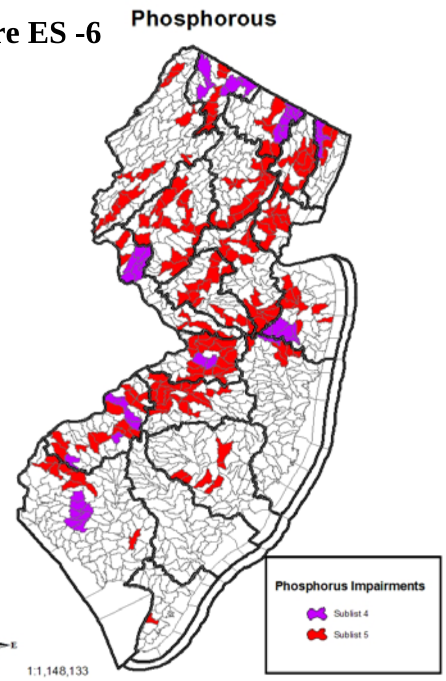


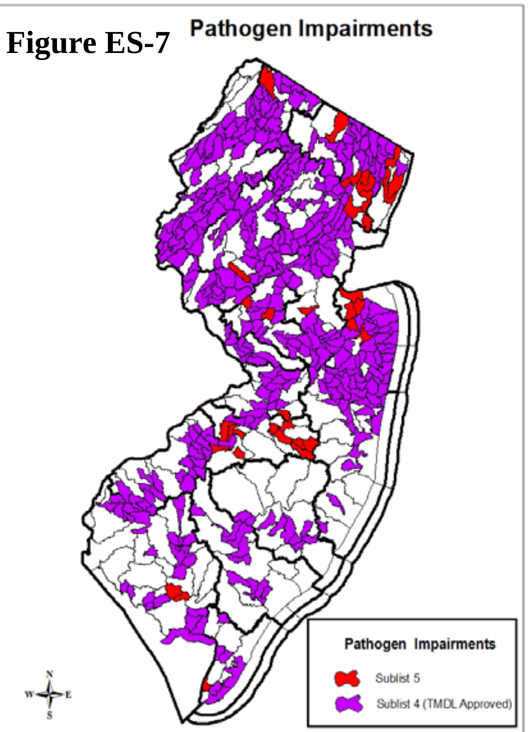
Figure ES -6



- **Phosphorus caused the third most frequent number of impairments,** affecting 185 assessment units. For the purposes of this assessment, waters are considered impaired for phosphorus if ambient concentrations exceed the numerical criterion of 0.1 mg/L. The Surface Water Quality Standards also include narrative criteria stating that the numeric criteria apply unless phosphorus is not limiting and does not render the waters unsuitable for the designated uses. The Department has not assessed whether the levels of phosphorus render the waters unsuitable for their respective uses. The NJPDES program is providing permitted discharge facilities an opportunity to determine whether or not the phosphorus levels present in their receiving waters render the waters unsuitable. The Department stated in the Assessment Methods that it would delist a waterbody for phosphorus if such water quality studies indicate that phosphorus levels above the numeric criterion did not render the waters unsuitable.

  The Department completed phosphorus TMDLs for 16 subwatersheds listed as impaired on the 2004 Integrated List. The Department plans to develop 92 TMDLs to address the impairments due to phosphorus in the next two years. TMDLs are underway to address impairments in the Passaic River Watershed and the Raritan-Millstone River Watershed. These two TMDL initiatives alone are expected to address 63 subwatersheds listed on Sublist 5.

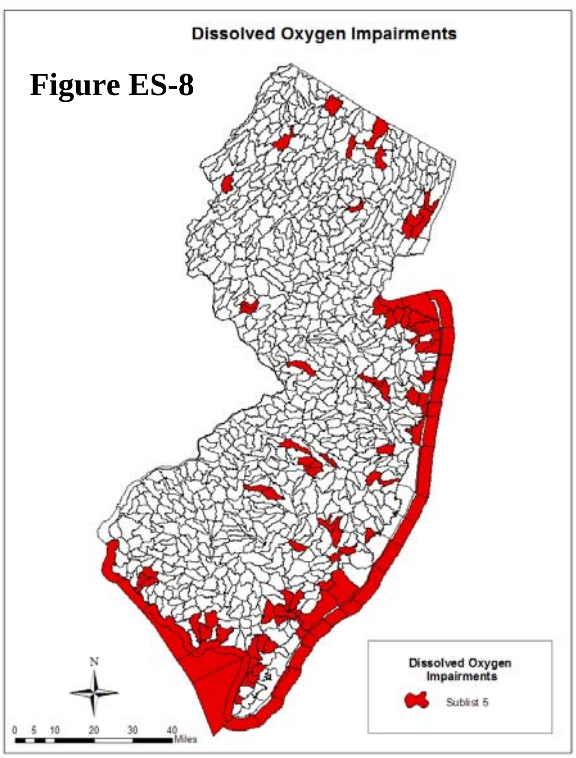
Figure ES-7



- **Pathogens caused the impairment of 122 assessment units.** The presence of bacteria associated with human waste (i.e., fecal matter) is generally used to determine if waters are unsafe to swim and whether it is safe to harvest and directly consume shellfish. Thus, attainment of the recreational use is assessed using a suite of bacterial indicators. In the recent past, fecal coliform bacteria were the principal indicator of sanitary quality for recreational use. Current monitoring uses *E. coli* in fresh waters and *Enterococci* in coastal waters (see section 4.2 of the Methods Document, Appendix G). In shellfish waters, total coliform and fecal coliform are the indicators used to determine sanitary quality.

Pathogens are generally associated with Combined Sewer Overflows (see Chapter 5, section 5.4), failing septic systems and illicit discharges, but may also be contributed by nonpoint sources of pollution, e.g., stormwater runoff containing fecal matter deposited by pets, wildlife and waterfowl. The Department has prioritized TMDL development for fecal coliform impairments identified on the 1998 303(d) List and has adopted 360 pathogen TMDLs to date.

- **Dissolved oxygen (DO) caused the impairment of 118 assessment units, including 38 in ocean waters.** DO is necessary for almost all aquatic life, consequently the concentration of DO in the water column provides a good indicator of the health of an aquatic ecosystem. Under low DO conditions, fish are more susceptible to the effects of other pollutants, such as metals and toxics, and at very low DO levels, trace metals from sediments are released into the water column. Low DO in the ocean is due to an extensive anoxic cell that forms off the coast during the summer months and breaks up in the fall. The biological impacts of this low DO cell are currently unknown, but are of increasing concern regarding potential impacts to marine biology. The reason for this benthic low DO cell is not known, although summer algal bloom die-off has been implicated. The impacts on benthic marine biota are unclear as well. It is important to note that surface DO levels have historically been acceptable. For additional details regarding this phenomenon, see the Department's 2004 Integrated Report at: http://www.state.nj.us/dep/wmm/sgwqt/wat/integratedlist/integratedlist2004.html.



Coastal waters are critical to New Jersey and other coastal states for tourism and for recreational and commercial fisheries. These waters are also impacted by river discharges from one of the most densely populated watersheds in the country, as well as numerous wastewater discharges from coastal communities. Understanding the impact to the coastal ecosystem of these pollutant sources relative to impacts such as ocean upwelling and global warming will be critical to New Jersey and other coastal states over the next few decades. The Department has begun using a benthic metric for Raritan Bay developed by USEPA Region 2 that provides a valid measure of aquatic life impairment. The Department plans to expand this type of ecological assessment to the rest of New Jersey's estuarine waters. Development of a benthic index will provide New Jersey, USEPA and other Mid-Atlantic States with a valuable tool to assess the ecosystem health of nearshore ocean waters.

The index development will complement research being conducted by USEPA and NOAA in the federal waters off the New Jersey coast. The study, which is being performed under the National Coastal Assessment Program, will measure benthos, fish and water quality in federal waters from Cape Hatteras to Maine. While this federal study will cover a much larger geographic range, it will not include the more impacted state waters within three nautical miles of the shore in close proximity to potential pollution sources such as river discharges and wastewater discharges. Data collected in the federal study and in this current project will provide a much more complete picture of ecosystem health in the ocean waters off of New Jersey.

- **Unknown pollutants caused biological impairment in 111 assessment units.** The Department relies heavily upon biological monitoring to assess aquatic life use attainment. The Department must determine which pollutants cause the aquatic life use impairment in order to develop a TMDL. In many cases, physical/chemical water quality monitoring data is available and can be used to identify the pollutant or pollutants causing impairment. Where this information is not available, or the data does not identify an exceedance of chemical water quality criteria, the Department has listed the assessment unit on the 303(d) List as "pollutant unknown". The Department has identified one or more pollutants associated with aquatic life impairments for 327 waterbodies previously listed as biological impairments.

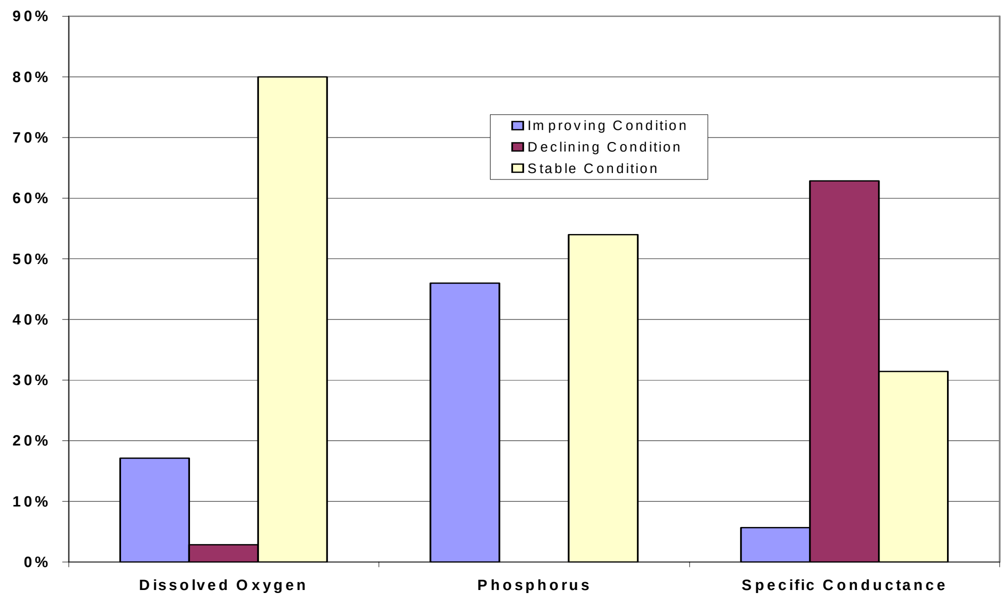
  To help identify pollutant causes of biological impairment, the Department has developed a Stressor Identification process. The results of this process are expected to either identify a pollutant for which a TMDL can be developed or determine definitively that the cause of the impairment is due to pollution (pollution is defined here as "the man-made or man-induced alteration of physical integrity of a waterbody such as a dam or stream channeling") for which a TMDL is not required. This effort is an outgrowth of a USEPA initiative that was subsequently modified by this Department to better reflect the Department's own assessment experience. An initial group of 138 impaired biological sites were selected for the process, out of which five were selected for a pilot study. These sites are in Drakes, Holland and Beaver Brooks, all tributaries to the South Branch Raritan River. The Department anticipates completing the pilot studies in 2007, after which a broader effort will begin in coordination with stream restoration projects funded under the Department's 319h Nonpoint Source Pollution Control Grant Program (see Chapter 5, Section 5.5).

Water Quality Trends:

While DO and phosphorus are identified as the pollutants causing non-attainment for a significant number of impairments using 2004 data, a trend analysis of water quality from 1985 to 2004 (see Chapter 3, Section 3.3 for details) indicates that nutrient concentrations, including DO, are improving or remaining stable throughout the State.

These results are consistent with the improvements to water quality expected from upgrades to wastewater treatment plants occurring since the 1980's. Nutrient loads, especially ammonia, have been reduced significantly through more extensive wastewater treatment. For recent impairments caused by nutrients, the source of the pollutant (e.g. point or nonpoint) must be determined in order to identify and implement an effective management strategy. This type of source evaluation is conducted in much greater detail through the development of TMDLs.

Figure ES-9: Statewide Trends



Unlike DO and Phosphorus conditions, which have improved statewide, Total Dissolved Solids (TDS) and Specific Conductance showed declining conditions in over 60% of the stations. (Only Specific Conductance conditions are shown in Figure ES-9 as they closely mirrored TDS.) TDS is comprised of minerals and other substances dissolved in water. Changes in TDS can affect organisms by altering the flow of water through cell membranes, which can retard growth or even cause death. These changes can make water unfit for other uses. TDS exceedances have been associated with runoff from urban and agricultural areas, especially runoff containing salt used to control ice on roadways. Wastewater treatment discharges and discharges associated with septic systems can also contribute to increased TDS loads.

Preparing for 2008 and Beyond:

- **Prioritize monitoring efforts to more fully assess all designated uses:** The new assessment methodology focuses on attainment of designated uses in HUC-14 subwatersheds rather than concentrations of pollutants in waterbodies. Specific types of data are needed to assess each use. The Department has assessed all uses in 88 (10%) of the State's 970 HUC-14 subwatersheds while 241 (25%) of these assessment units are fully assessed, not including the fish consumption designated use. A total of 24 subwatersheds that have been fully assessed and attain all the applicable designated uses. Many subwatersheds need additional monitoring to complete the full assessment of uses. Consistent with the recommendations contained in the Department's Long-Term Water Quality Monitoring Strategy, the Department will use the Integrated Report to focus additional monitoring on subwatersheds that exhibit data gaps. By focusing efforts to fully assess all uses, the Department hopes to increase the number of subwatersheds in full use attainment (i.e. Sublist 1).

- **Lake Assessments**: The Department will be re-examining its approach to lake use assessment from several perspectives. For the 2006 Integrated Report, the Department defined "lakes" as all impoundments greater than two acres, including small ponds that are on the run-of–the-river, stormwater detention basins, isolated small ponds, wider portions of rivers with dams, large lakes and reservoirs. The Department intends to re-evaluate lakes for the 2008 reporting cycle and incorporate many of the smaller run-of-the-river lakes into their corresponding HUC-14 subwatershed assessment unit. The Department can then focus future lake assessments on lakes that should be considered separately from the rest of the HUC-14 subwatershed. A GIS coverage will be created identifying all lakes that will be individually assessed. In addition, the Department will be evaluating how to integrate the Department's Lake Monitoring Program into the 2008 Integrated Report.

The full text of the Integrated Report and the Appendices are available for download at: http://www.nj.gov/dep/wmm/sgwqt/wat/integratedlist/integratedlist.html.

Chapter 1: Overview - New Jersey's Water Resources

New Jersey is the fifth smallest state in the nation and is one of the most geologically and hydrogeologically diverse. New Jersey contains a wide variety of land use types, water resources, geologic characteristics, and natural biota. Within the State's 7,788 square miles are 127 miles of coastline. Using USEPA's River Reach File 3 (RF3)* there are 7,840 miles of rivers and streams and 109 square miles (69,920 acres) of lakes and ponds larger than two acres. In addition, there are 1,482 square miles of fresh and saline marshes and wetlands, and 1,069 square miles of coastal waters. New Jersey used a more detailed stream coverage (1:24,000 scale) to generate the 2006 Integrated Report. Using this scale increases the number of stream miles to 18,126. A summary (or "atlas") of the State's population and water resources is presented in Table 1, below:

Table 1: New Jersey Water Resources Atlas

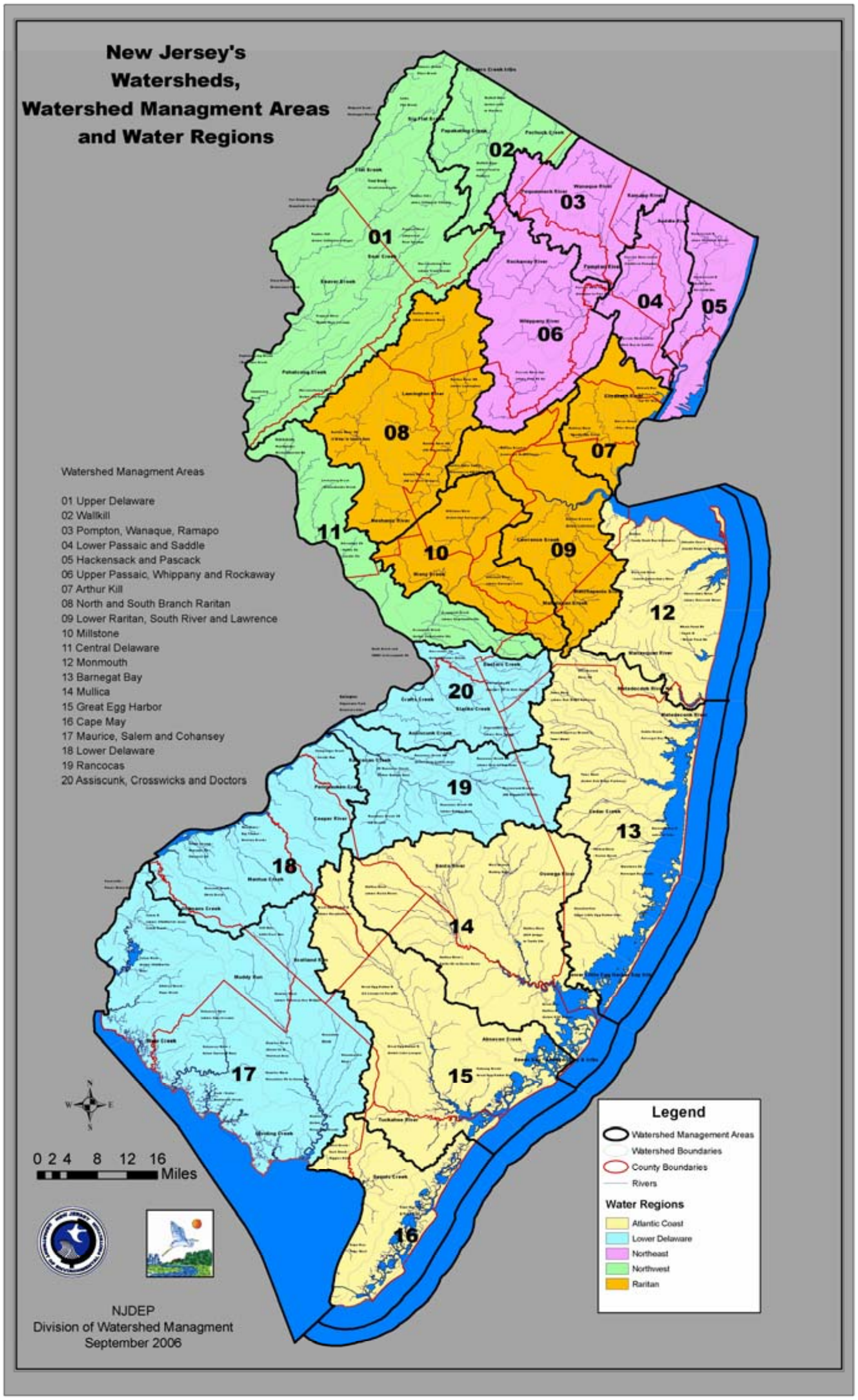
Resource	**Extent**
State Population (2000)	8,414,350
State Surface Jurisdictional Area	8,919 sq. miles[1]
State Surface Area	7,788 sq. miles[2]
Rivers and Streams	
Miles of nontidal rivers and streams	11,702
Miles of tidal rivers and streams	6,424
Miles of rivers and streams (total)	18,126
Border miles shared rivers/streams (nontidal and tidal)	197
Lakes, Ponds and Reservoirs	
Number of lakes/reservoirs/ponds (2 acres and larger)	3,268
Acres of lakes/reservoirs/ponds (2 acres and larger)	69,825
Number of significant publicly owned lakes/reservoirs/ponds	380
Acres of significant publicly owned lakes/reservoirs/ponds	24,000
Estuaries and Ocean	
Square Miles of Estuaries	260
Miles of Ocean Coast (linear miles)	127
Miles of Ocean Coast (sq. mi. of jurisdictional waters)	454
Wetlands	
Acres of Freshwater Wetlands	739,160
Acres of Tidal Wetlands	209,269

* A USEPA sponsored national hydrologic database that interconnects and uniquely identifies the stream segments (reaches) that comprise the Country's surface water drainage system.

New Jersey consists of five water regions, as shown in Figure 1 on the following page. These include the Northwest (1,226 sq. miles), Lower Delaware (2,228 sq. miles), Northeast (953 sq. miles), Raritan (1,284 sq. miles), and Atlantic Coastal (2,877 sq. miles). Drainage areas include New Jersey portions only. The five Water Regions have been divided into 20 Watershed Management Areas for management purposes. Within these 20 Watershed Management Areas, there are 151 HUC-11 watersheds and 970 HUC-14 subwatersheds. The HUC-11 watersheds and HUC-14 subwatersheds are part of a national system of watershed-based hydrologic units (HUCs) developed by USGS, USEPA and the U.S. Soil Conservation Service. For all waterbodies except lakes, the Department is using the HUC-14 subwatershed as the assessment unit for the 2006 Integrated Report. The average size of New Jersey's 970 HUC-14 subwatersheds is 8.5 square miles.

Approximately 8 million people live within New Jersey's 7,836 square miles, making it the most densely populated state in the nation. Land use in New Jersey can be broadly categorized into urban/suburban, agricultural, and undeveloped. Highly concentrated and expanding urban and industrial centers along with shrinking agricultural and undeveloped areas characterize New Jersey's current land use trends. Because of the high population and variable land uses, the State's streams, lakes, ponds, bays, ocean and ground water are impacted to varying degrees by point and nonpoint sources of pollution.

Figure 1: New Jersey's Watershed Management Areas and Water Regions



Chapter 2: Water Quality Monitoring

2.1 Summary of Water Quality Monitoring Programs

In March 2003, USEPA issued national guidance for developing a State Water Quality Monitoring and Assessment Strategy to ensure compliance with the federal Clean Water Act. Under this guidance, all states were required to develop a comprehensive, ten-year, long-term water monitoring strategy containing nine key elements to continue receiving federal Section 106 grant funds. The Department finalized *New Jersey's Water Monitoring and Assessment Strategy* in September 2004 (see Appendix H). Based on this Strategy, New Jersey's water monitoring programs now cover all waters of the State, including streams, rivers, lakes, reservoirs, estuaries, coastal areas, wetlands, and ground water.

Ambient Stream Monitoring Network:

For freshwater, New Jersey's program includes quarterly sampling of a 115-station ambient stream network. This stream monitoring is a cooperative program between the Department and the United States Geological Survey (USGS). In 2000, a supplemental ambient network for conventional parameters was initiated to provide monitoring at approximately 90 additional ambient sites. The chemical/physical networks monitor conventional parameters, metals, bacteria, pesticides, volatile organic compounds (VOC's) and sediments. Toxic parameters were added to supplemental monitoring locations beginning in FY2005. Future improvements include the addition of continuous temperature monitoring at selected sites and research to evaluate analytical methods for network use that can achieve lower detection limits for arsenic and mercury.

Ambient Biological Monitoring Network:

In 1992, the Department reactivated its Ambient Biomonitoring Network (AMNET). The network established sampling stations in each of the State's 151 HUC-11 subwatersheds, and has a total of 820 sites. The status of benthic macroinvertebrate communities is evaluated using EPA's Rapid Bioassessment Protocol (RBP). Each of the five major water regions is sampled on a rotational basis, every 5 years. Visual observation, stream habitat assessments and limited physical/chemical data are also collected. In 2000, a second biological monitoring network was initiated and validated for the northern portion of the state, known as the Fish Index of Biotic Integrity (FIBI). Using USEPA's protocol, the biological health of streams is assessed using fish assemblage information. Strategic enhancements for FIBI monitoring include the need for technical support in calibration of New Jersey's impairment scores, source identification monitoring for biologically impaired waters, and development of a FIBI sampling program in the southern coastal plain section of the state.

Ambient Lake Monitoring Network:

In 2004, the Department initiated a renewed ambient lake monitoring network designed to provide the water quality data necessary to assess the ecological health of the State's lentic water resources. This program involves the testing of randomly selected lakes from among the state's approximately 1100 named lakes. The water quality measurements conducted at each randomly selected lake include parameters such as dissolved oxygen, pH, nutrients, and chlorophyll a. Such testing will assist New Jersey in determining lake water quality, as needed to meet Clean Water Act requirements and to support TMDL development. (More detailed information on the ambient lake monitoring network is provided under section 2.2: Probability-based Monitoring.) Enhancement of the lake monitoring program would include developing trends monitoring and assessment capability, preferably through a volunteer lake monitoring program.

Marine Water Quality Monitoring Network:

For marine waters, the Department conducts water quality monitoring to classify approximately 700,000 acres of marine and estuarine shellfish waters. As part of the National Shellfish Sanitation Program (NSSP), the Department collects approximately 15,000 ambient water samples per year from a network of more than 2,500 monitoring stations throughout the State's coastal waters. These stations are sampled between five and twelve times per year. The resulting data are analyzed for compliance with federal standards for shellfish sanitation. Waters not in compliance are closed to shellfish harvesting. As part of the NSSP, the Department also conducts coastal phytoplankton monitoring every summer in New Jersey's bay and near-shore ocean waters. Strategic improvements to NSSP monitoring include enhancement of limited testing of toxics in shellfish tissue and capacity expansion for microbial source track down.

The Department also monitors the condition of the State's coastal waters by measuring basic water quality (dissolved oxygen (DO), nutrients, and water clarity) at 260 locations on a quarterly basis. USEPA provides assistance with this monitoring and with phytoplankton monitoring in the summer months, as well as support for NSSP sampling throughout the year. The Department and USEPA Region 2 are jointly evaluating the potential use of aircraft remote sensing to significantly enhance phytoplankton monitoring. USEPA's National Coastal Assessment (NCA) research program is performed in partnership with the Department and includes annual measurements of sediment chemistry, sediment toxicity and the benthic community at about 50 locations in New Jersey's estuarine waters. Strategic enhancements include transitioning the USEPA NCA research program into a state monitoring program, developing ecological assessments for estuarine waters and developing automated monitoring for dissolved oxygen in the state's coastal waters. The Department submitted a grant proposal to NOAA in FY2005 to develop a component of an Integrated Ocean Observing System which, if funded, would assist in addressing the need for continuous DO monitoring. The Department is also considering using data generated by other entities, i.e., the New Jersey Harbor Dischargers Group and the Delaware River Basin Commission, as a possible means of addressing geographical gaps in the State's coastal water monitoring in the New York/New Jersey Harbor Estuary and the Delaware River Watershed, respectively.

Targeted Surface Water Quality Monitoring Efforts:

In addition to the water monitoring networks described above, the Department also conducts targeted physical, chemical and biological water monitoring for needs such as further evaluation of waters previously listed as impaired on New Jersey's Impaired Waterbodies (303(d)) List, development and implementation of total maximum daily loads (TMDLs), and in response to environmental spills.

The Department has also identified key enhancements for crosscutting issues in water monitoring, such as toxics in fish and shellfish, TMDL development, wetlands, and volunteer monitoring, as well as for water quality assessment and water quality data management. For water quality assessment and data management, these enhancements include integration of all available, high quality data (both Department and non-department data) into the Department's assessment database for use in preparation of the *Integrated Water Quality Monitoring and Assessment Report*, as well as the addition of new external water monitoring data (e.g., volunteer monitoring) into STORET through development of a common data exchange element.

Volunteer Monitoring:

Through its volunteer monitoring program, the Department is reaching out to residents in each of the State's watersheds and utilizing the services of those "citizen scientists" who monitor their backyard stream, neighborhood marsh or other surface water body for various chemical, biological and/or physical parameters. By recruiting and training these individuals, a more comprehensive approach is taken and more of the state's waterways can be tested. Many of these volunteers are represented by organizations that have their own long-standing monitoring programs throughout the state; these groups participate in the Department's volunteer monitoring program through an umbrella advisory council called the Watershed Watch Network (WWN).

A four-tiered approach has been developed to facilitate the appropriate use of data generated by WWN member organizations and incorporate this data into various applications at the state level, such as supplementing TMDL pollutant source track-down assessments. Quality controls are designed into the system via increasingly rigorous requirements (e.g., a USEPA-approved Quality Assurance Project Plan, Department-sponsored training and use of certified labs for analysis of samples) as the tiers progress. The intended use of the data changes accordingly, from education and stewardship to indicators and regulatory response. Additional information about the Department's Volunteer Monitoring Program is provided in Chapter 5, Section 5.11 (Water Education and Outreach) and at: http://www.nj.gov/dep/watershedmgt/volunteer_monitoring.htm.

Ground Water Quality Monitoring:

For ground water, the Department has developed and now maintains a cooperative network with USGS, consisting of 150 wells screened at the water table that are sampled 30 times per year on a 5-year cycle. The primary goal of the Ambient Ground Water Quality Monitoring Network (AGWQMN) is to determine the status and trends of shallow ground water quality as a function of land use related to nonpoint source pollution in New Jersey. Parameters measured include conventionals (pH, turbidity, temperature, DO, nutrients), VOCs, radioactivity, and pesticides. Future improvements to this monitoring program include the integration of AGWMN data with site remediation-related data and data collected as a result of the Private Well Testing Act. (See Appendix I for a complete report on the AGWQMN).

Details of evaluations and suggested directions for all monitoring programs are contained in *New Jersey's Water Monitoring and Assessment Strategy 2005-2014* (see Appendix H). For additional information on the Department's water monitoring activities and networks, go to: http://www.nj.gov/dep/wmm/.

Chapter 2: Surface Water Quality Monitoring

2.2 Probability-Based Monitoring

Probability-based monitoring is one of three basic monitoring designs, the other two being a fixed station approach and a targeted approach (to address source identification and responses to environmental spills). The sampling approaches selected for each part of New Jersey's comprehensive water quality monitoring program are described in the previous section and explained in detail in Appendix H: New Jersey's Water Quality Monitoring and Assessment Strategy.

Probability-based monitoring provides a statistically-derived estimate of water quality conditions in a selected area even when all waters within that area are not directly sampled. Based upon the natural variability of water quality conditions and the level of sampling effort used, a level of confidence or certainty in this estimate can be determined. While fixed sites are generally used to quantify change at targeted locations, probabilistic sampling is generally used for spatial quantification of water quality conditions. In New Jersey, a probability-based design is used for monitoring lakes and estuarine waters.

Ambient Lake Monitoring Network:

As explained in Section 2.1, the Department administers an ambient lake monitoring network designed to provide the water quality data necessary to assess the ecological health of the State's lentic water resources. This program involves the testing of randomly selected lakes from the state's approximately 1,100 named lakes. The water quality measurements conducted at each lake includes parameters such as dissolve oxygen, pH, nutrients, and chlorophyll a. Such testing will assist New Jersey in determining the status and trends in lake water quality, as needed to meet our Clean Water Act requirements and our Total Maximum Daily Load-related water quality assessment obligations.

The lake monitoring network design is as follows:

1. <u>Target Population</u>: All lakes, created or natural (except water supply reservoirs), wholly or partially within the State of New Jersey's political boundaries. A lake is defined as a permanent body of water of at least two hectares in surface, and a minimum depth of one meter. Lakes have been selected randomly, using the USEPA - Generalized Random Tessellation Stratified (GRTS) survey design, but in a manner that equalizes selections over all Omernik level III ecoregions (six within the State). The New Jersey Geologic Information System (GIS) coverage containing approximately 1,100 polygons of named lakes has been used for the selection process.

2. <u>Network Stations</u>: The network consists of 200 lakes, each sampled once every five years, with forty lakes sampled per year. Depending on the lake size and characteristics, up to four sampling locations are monitored in each lake. Lakes not

exhibiting temperature stratification are sampled at one meter below the surface unless the lake is too shallow, in which case the sample is taken at a depth of one-foot below the surface. Lakes exhibiting stratification are sampled above and below the thermocline. Depth to bottom is measured at each station.

3. Sampling Frequency: All lakes in the network are sampled once every five years, with each lake being sampled at least three times during the year (Spring, Summer, and Fall).

4. Monitoring Parameters: Total Phosphorus, Total Kjeldahl Nitrogen, Total Nitrite+Nitrate Nitrogen, Ammonia Nitrogen, Dissolved Oxygen, Temperature, Specific Conductance, Alkalinity, Hardness, Secchi depths, and Chlorophyll *a* are collected and analyzed at each station. Qualitative evaluations of algal blooms and aquatic vegetation are performed at each lake.

The ambient lake monitoring network commenced in 2005; the full network is expected to be completely monitored by 2010. The Department will assess overall lake conditions once sufficient data have been collected to make an accurate assessment. In the interim, the site-specific monitoring data for the lakes sampled will be used for the Integrated Report.

Estuarine Waters of New Jersey:

Since the year 2000, the estuarine waters of New Jersey and other coastal states have been assessed under USEPA's National Coastal Assessment program (NCA). This program has a probabilistic design that was developed by USEPA’s Office of Research and Development. Specifics about the probabilistic design and other aspects of the program can be found at USEPA’s Web site at http://www.epa.gov/emap/nca/.

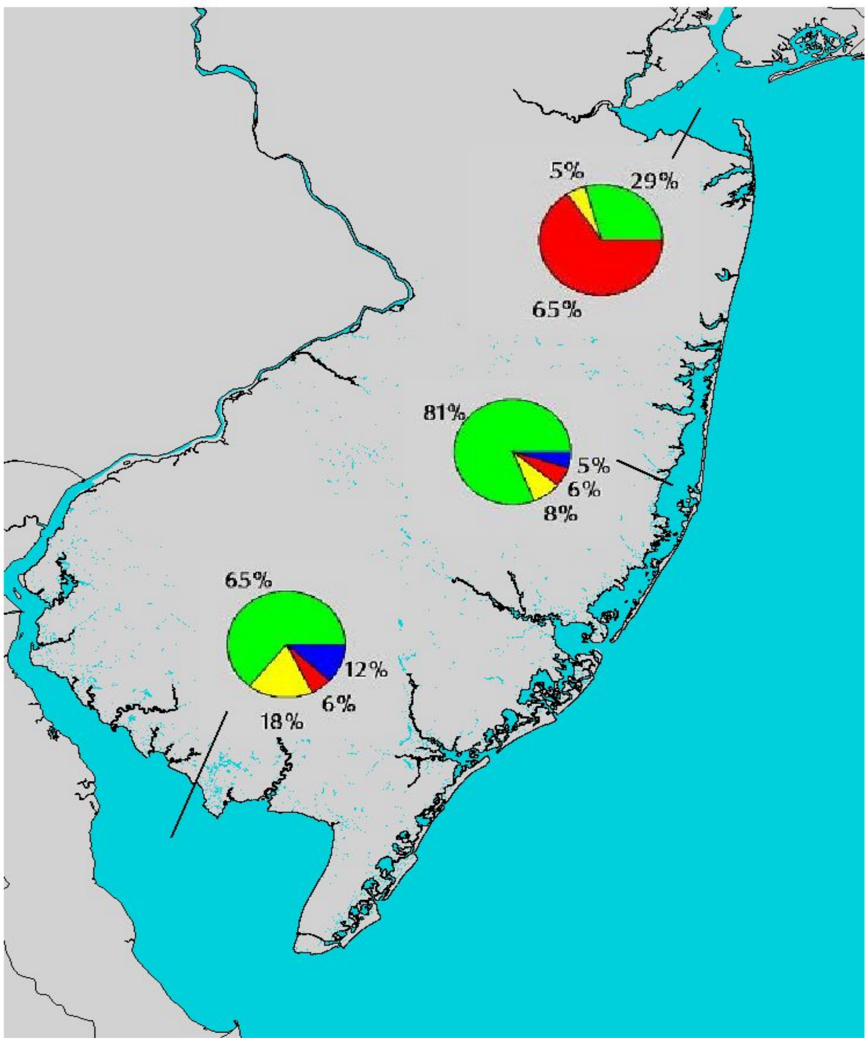
During an index period of time each year (July through September), up to 50 locations are sampled for water quality, sediment quality, benthic community, fish assemblage and fish pathology. Two assessment reports (the National Coastal Condition Reports) have been produced to date by USEPA based on data generated by this monitoring program. These reports are also available at the Web site listed above.

New Jersey does not fully concur with the assessment techniques used in these reports and is working in partnership with USEPA’s Atlantic Ecology Division (AED) and USEPA Region 2’s Monitoring and Assessment Program to address the Department’s concerns. For example, all three agencies feel that the metrics used to assess benthic diversity in the National Coastal Condition Reports are too generic and do not accurately reflect the degree of impairment in New Jersey's waters. A more specific index was developed by USEPA Region 2 and Rutgers University for the New York/New Jersey Harbor Estuary and is used by the Department in this Integrated Report for the assessment Harbor Estuary waters. The Department, USEPA AED, USEPA Region 2 and Rutgers University have partnered to develop an index similar to the Harbor index for the Atlantic Coastal estuarine waters and the near-shore ocean waters.

The National Coastal Condition Reports contain only limited water quality data from the NCA program's once-a-year sampling. More extensive water quality measurements are taken by the Department's Bureau of Marine Water Monitoring at more locations and more frequently than the NCA's program.

Of the NCA components, one of the more interesting for New Jersey's estuarine waters is the sediment quality assessment. This assessment is made using measures of sediment toxicity, sediment chemistry and total organic carbon. Figure 2.2-1 illustrates the sediment quality for each of New Jersey's major estuaries based on percent area that has good sediment quality (green), moderate sediment quality (yellow), poor sediment quality (red), or insufficient data (blue).

Figure 2.2-1: Sediment Quality In New Jersey's Major Estuarine Systems



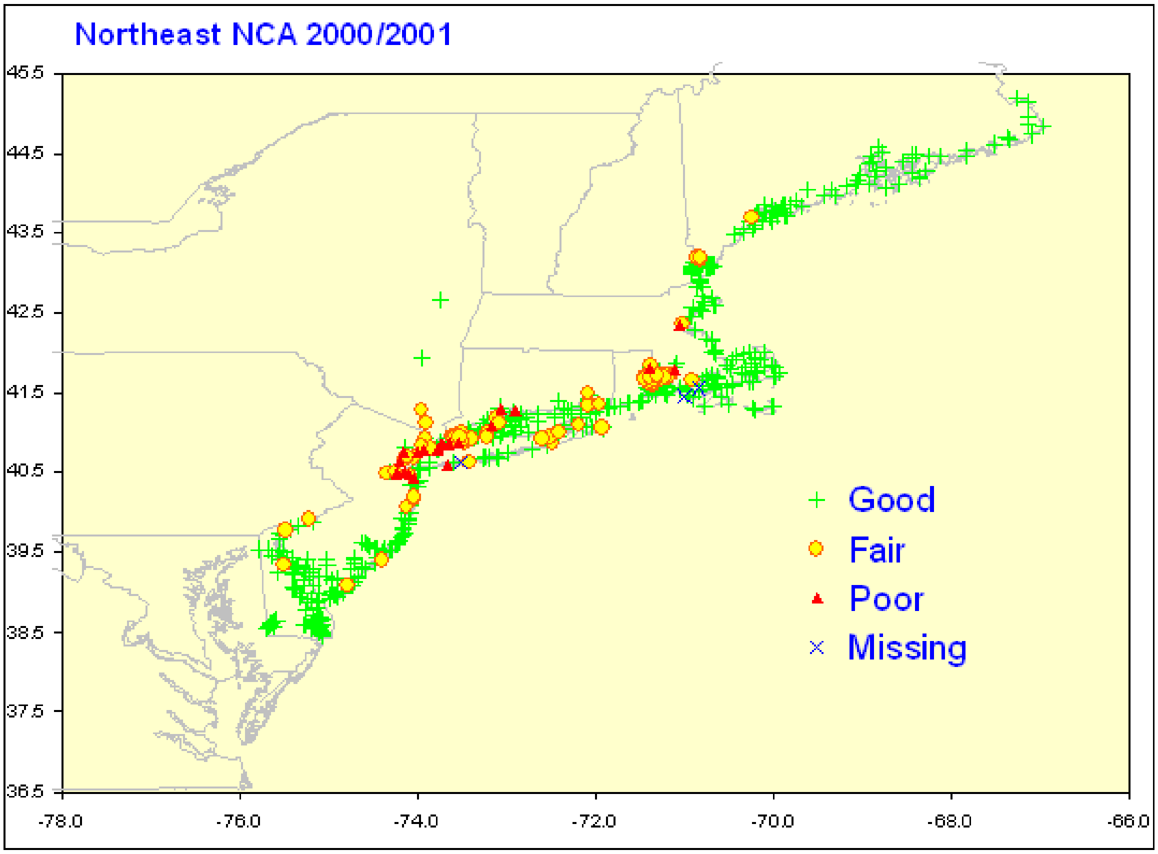
In the Delaware Estuary, one of the water bodies exhibiting poor sediment quality was the upper Maurice River where two NCA stations exhibited poor conditions. Sediment toxicity testing here found significantly less than 80% survival of the test organisms in these sediments. Sediments at these locations in the Maurice River also had a high percent of organic carbon and exceeded ERL (effects range low) levels for numerous heavy metals (arsenic, cadmium, chromium, nickel, lead, and zinc).

In the Barnegat Estuary, sediment quality is generally good (81% of the Estuary) with the exception being primarily in the Toms River and Metedeconk River. Sediment toxicity was low, even in the Toms River and Metedeconk River. Organic carbon was elevated, as were some contaminant levels. In the Toms River, arsenic, copper, and lead exceeded ERL levels. However, of greater concern is the exceedance of the mercury ERM (effects range medium) level in the Toms River. In the Metedeconk River, ERL levels were exceeded for cadmium, copper, lead, and zinc.

Waters of the New York/New Jersey Harbor Estuary exhibited the greatest degradation with regard to sediment quality with 65% of these waters having sediments classified as poor quality. The problem in these waters was not with sediment toxicity or organic carbon. Only one of the New Jersey stations was classified as poor for each of these. The main problem in the Harbor was with sediment contaminants. ERM levels for mercury and silver were exceeded at numerous locations within the Harbor. As can be seen from Figure 2-2, in the Northeast, only the Providence, Rhode Island area comes close to the Harbor with respect to mercury exceedances of the ERM levels. For silver, the Harbor is even more unique with regard to ERM exceedances (see Figure 2.2-3).

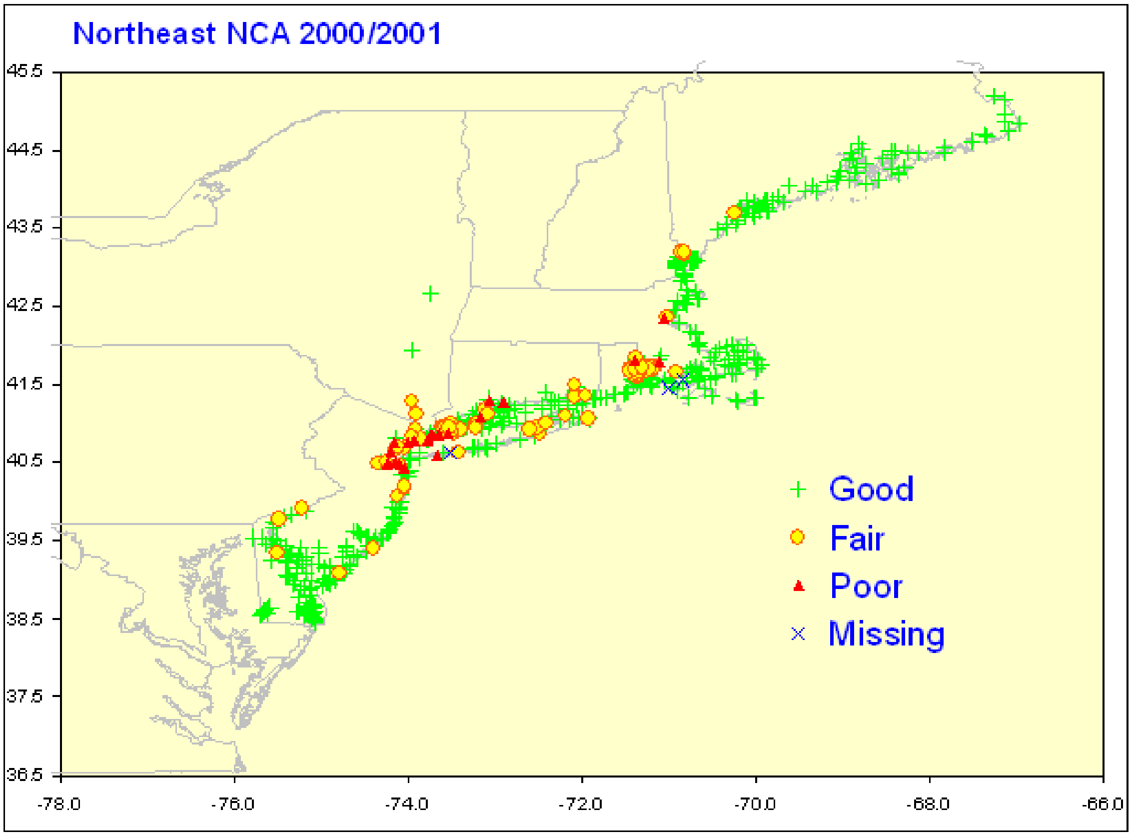
Currently, only data from 2000 and 2001 are available for assessment. As the subsequent years' data become available, these will be assessed for future integrated reports. The Department is also working with USEPA and Rutgers University to design an NCA monitoring and assessment program for New Jersey's near-shore ocean waters. Sampling for that program is expected to begin in 2007.

Figure 2.2-2: Mercury Levels throughout the Northeast



Legend: >ERM = red; <ERM and >ERL = yellow; <ERL = green)

Figure 2.2-3: Silver Levels throughout the Northeast



Legend: >ERM = red; <ERM and >ERL = yellow; <ERL = green)

Chapter 3: Water Quality Assessment

3.1 Summary of Assessment Methods

The methods used to develop New Jersey's 2006 Integrated Report are described in the *2006 Integrated List of Waterbodies Assessment Methodology* (Methods Document). The goal of the Methods Document is to provide an objective and scientifically sound waterbody assessment methodology including:

- A description of the data the Department will use to assess attainment of the designated uses;
- The quality assurance aspects of the data;
- A detailed description of the methods used to evaluate designated use attainment;
- The rationale for the placement of waterbodies on the five sublists.

The Department updates the Methods Document every two years, prior to development of the Integrated List. The 2006 Methods Document is provided in Appendix G. The major changes incorporated into the 2006 Methods Document are summarized below:

Reporting: USEPA uses the terms "assessment unit" and "waterbody" interchangeably. The Department decided to use the term "assessment unit" when referring to the spatial extent of a waterbody being assessed. In the past, USEPA recommended that an assessment unit be included in only one of the five sublists (i.e., the sublist that conveys the highest degree of impairment); however, this recommendation was eliminated as a result of the integrated assessment. In order to provide a more comprehensive assessment of the State's waters, the Department chose to develop the 2004 Integrated List by assessment unit/parameter combinations, not just by assessment unit (i.e., the Metedeconk River, NB at Jackson is listed on Sublist 1 for nitrates, Sublist 3 for pH and TSS and on Sublist 5 for aquatic life, phosphorus and fecal coliform). Listing waterbodies by assessment units and placing them on more than one sublist allows the public to better gauge progress within a watershed and across the state. The various sublists of the Integrated List are described in detail in the Methods Document (see Appendix G: section 7.1 "Integrated Listing Methodology").

For the 2006 Integrated Report, the Department has identified a suite of parameters that will serve as the minimum dataset associated with each designated use. Each assessment unit will be evaluated for attainment of its designated use(s), if the minimum dataset is available, and listed as either "attain" (if the data indicate the use(s) as being met) or "non-attain" (if the data indicate otherwise). If additional data is available and relevant to the designated use, it will be considered in the listing decision. If the minimum dataset is not available, the assessment unit will be placed on Sublist 3 (insufficient data). Thus, an assessment unit may be listed in one or more sublists depending on the results of the assessment (i.e., on Sublist 2 for drinking water, Sublist 3 for aquatic life and Sublist 5 for recreation). If all uses are assessed and attained, the assessment unit will be placed on Sublist 1. If one or more designated uses are assessed as "non-attain", the pollutant(s) causing the non-attainment will be identified on Sublist 5 when known. When the pollutant causing non-attainment is not known, the cause will be identified as "pollutant unknown" (see Table 3.1-1).

Table 3.1-1: Placement Conditions for the 2006 Integrated List

Sublist	Placement Conditions
Sublist 1	The designated use is assessed and attained AND all other designated uses in the assessment unit are assessed and attained. (Note: The fish consumption use is not used for this determination based on USEPA guidance).
Sublist 2	The designated use is assessed and attained BUT one or more designated uses in the assessment unit are not attained and/or there is insufficient information to make a determination.
Sublist 3	Insufficient data is available to determine if the designated use is being attained.
Sublist 4	The designated use is not attained or is threatened; however, development of a TMDL is not required for one of the following reasons:
	a. A TMDL has been completed for the pollutant causing non-attainment.
	b. Other enforceable pollution control requirements are reasonably expected to result in the conformance with the applicable water quality standard(s) in the near future and the designated use will be attained.
	c. Non-attainment is caused by something other than a pollutant (e.g. “pollution”).
Sublist 5	The designated use is not attained or is threatened by a pollutant(s) and a TMDL is required.

Use of ADB: USEPA is revising its Assessment Database (ADB) to accept a waterbody/designated use approach. If the necessary changes to the ADB are made in time, the Department anticipates using the ADB for reporting its 2006 assessment results to USEPA

Spatial Extent: In previous Integrated Reports, New Jersey used hydrology, specifically stream order, to extrapolate the extent of attainment or impairment from the area monitored and assessed to a larger stream segment. As the Department increased the scale of resolution for rivers and streams (once 1:100,000; now 1:24,000; soon to be 1:2,400), the number of unassessed waters and stream miles increased. Since this increase of the number of unassessed waters is incompatible with the goal of providing a comprehensive assessment of state waters, the Department developed a new spatial extent methodology that uses watershed delineations to represent assessed waterbodies. Using the watershed spatial extent method, the state’s waters are delineated based on Hydrologic Unit Code (HUC) 14 subwatersheds. A HUC is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the U.S. Geological Survey on state Hydrologic Unit Maps. Monitoring site(s) located within the HUC-14 subwatersheds are extrapolated to represent the waters within the entire HUC boundary (see Appendix G, section 6).

De minimis: During the assessment process, the Department may identify small isolated areas that do not meet the designated use(s) but which are considered *de minimis*, or of little significance, to the overall assessment of the waterbody. Most *de minimis* areas are small bathing beaches and isolated shellfish restrictions. These *de minimis* areas will be identified in the Integrated Report and are regulated for remediation under other programs such as the National Shellfish Sanitation Program and the Department of Health and Senior Services' Public Recreational Bathing Act (see Appendix G, section 7.1).

The Department's 2006 Integrated Water Quality Monitoring and Assessment Methods Document is included in this Report as Appendix G and is also available at: http://www.nj.gov/dep/wmm/sgwqt/wat/integratedlist/integratedlist2006.html.

Assessment methods for the Delaware River were developed by the Delaware River Basin Commission (DRBC), located at 25 State Police Drive, P.O. Box 7360, West Trenton, New Jersey 08628-0360. DRBC's Methods Document is available at:
http://www.state.nj.us/drbc/public.htm.

Chapter 3: Water Quality Assessment

3.2 Monitoring Data Used for the 2006 Integrated Report

The 2004 Integrated List served as the basis for the 2006 Integrated List. The Department has used all readily available data to add new listings for waterbodies that were not previously assessed, and to determine if any of the listings from the 2004 Integrated List should be revised. The new listings and the changes to the previous listings comprise the 2006 Integrated Report. For example, the 2004 Integrated List contained many listings that were based on historical data, such as impairments identified under the now defunct Clean Lakes Program*. While the Department is currently reevaluating its lake assessment methodology, these lakes continue to be listed as impaired waterbodies on the Integrated List until new data is available indicated different results. The Department has also carried over to the 2006 Integrated List waters listed based on 304(l) **, and waters listed based on contaminated sites. ***

The Department considers "readily available data" to be data that is available to the public, in electronic format, and collected under a Department-, USGS- or USEPA-approved Quality Assurance Project Plan. In addition to the Department-generated data described in Chapter 2, the Department used data submitted by a variety of other entities. Overall, a larger set of data was assessed for the 2006 Integrated Report than that used for the 2004 Report. Not only did the number of chemistry samples double but there was also an increase in continuous monitoring data. In addition to the Department's Division of Water Monitoring and Standards (WM&S), the Department used data from 29 different entities including federal agencies, county health departments, non-profit organizations (such as watershed associations), municipal utilities authorities (MUAs) and other state

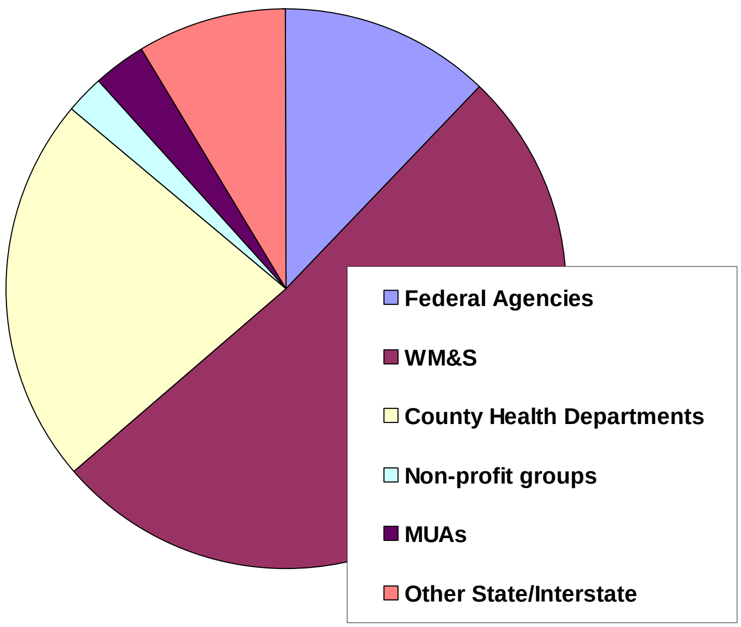
* The Clean Lakes Program was used to assess aesthetic quality of public lakes. This program was in operation between 1977 and 1992 and was designed by USEPA to facilitate identification and remediation of eutrophic public lakes. Many of the impairments brought to the Department's attention through the Clean Lakes Program centered around nuisance algal growth impairing swimming and in some cases boating. For many of the lakes placed on prior Sublist 5 or 303(d) Lists, there was no corresponding water quality data indicating an exceedance of a surface water quality standard.

** Section 304(l) of the CWA (1987 amendments) required states to identify those waters that were adversely effected by toxic, conventional and non-conventional pollutants and required the states to prepare individual control strategies to control point sources of toxic pollutants. The 304(l) list was incorporated into the 303(d) List where many of the listing remain due to a lack of new, more accurate data.

*** The Department considered data from contaminated sites in several specific instances. Five waterbodies were added to the 1998 Impaired Waterbodies List as remanded by USEPA due to pollutants from contaminated sites (Federal Register Vol. 66, Number 195; October 9, 2001). The 303(d) Evaluation Monitoring identified lead contamination in the Rancocas River due to activities at Fort Dix; remediation is underway. Superfund and RCRA data are not computerized and thus are not readily available. However, the Department is developing EQUIS database for chemical contaminants at over 8000 contaminated sites in New Jersey. Contaminated sites will be considered in more detail as the EQUIS database is populated. Information on Department programs involved in site cleanups and hazardous waste is available at http://www.nj.gov/dep/dshw/ .

and interstate agencies. The relative percentage of data contributed by these sources is depicted in Figure 3.2-1. This figure also shows that more than half of the data available was provided from sources outside the Department. A complete list of data providers who submitted data for use in the 2006 Report is presented in Appendix F. A brief description of major data sources is provided below. Appendix F also identifies sources not used and provides an explanation.

Figure 3.2-1: Sources of Data Used for the 2006 Integrated Report



Note: This figure does not include 3700 shellfish stations used for Shellfish Classification

Description Of Major Data Sources For The 2006 Integrated List:

- **NJDEP-USGS Cooperative Ambient Stream Monitoring Network (ASMN):** The Department (NJDEP) and the United States Geological Survey (USGS) cooperatively operate the Ambient Stream Monitoring Network. The data from this network was used to identify status and trends for conventional water quality parameters, metals, and recreational uses (using fecal coliform) in freshwater, nontidal streams, as well as sediment quality. For details and data go to: http://waterdata.usgs.gov/nwis/sw.

- **303(d) Evaluation Monitoring:** The 303(d) Evaluation Monitoring, also called 303(d) Reconnaissance Monitoring, was initiated in 1998 to provide high quality, current data regarding concentrations of total recoverable and dissolved metals in waterbodies included on the 1998 303(d) List for metals. This monitoring effort is also conducted cooperatively by the Department and USGS.

- **USGS National Ambient Water Quality Assessment (NAWQA):** NAWQA is a water quality monitoring and assessment program carried out by USGS. It is designed to support national and regional needs and decisions related to water quality management and policy. For details and data go to: http://water.usgs.gov/nawqa/.

- **Marine and Estuarine Monitoring Program:** The Department's Marine and Estuarine Monitoring Program includes 200 stations in tidal rivers, back bays, estuaries and inlets that are monitored quarterly for a suite of physical/chemical parameters as well as chlorophyll *α*, fecal and *Enterococcus* bacteria. Data is available from the Marine Monitoring Program's Web site at: http://www.state.nj.us/dep/wmm/bmw/

- **Ambient Biological Monitoring Network (AMNET):** This network monitors benthic macroinvertebrate organisms, including crustacean, larval insects, snails and worms, which are ubiquitous throughout New Jersey's streams and an important component of the aquatic food web. Over 900 AMNET stations located in freshwater, non-tidal streams are sampled on a five-year rotating schedule. Data and additional information are available at: http://www.state.nj.us/dep/wmm/bfbm/downloads.html.

- **New Jersey Pinelands Commission:** The Pinelands Commission provided biological and chemical/physical data for streams, rivers, and impoundments within the Mullica and Rancocas River Watersheds. These data are the result of the Commission's long-term environmental monitoring program designed to evaluate the consequences of the Comprehensive Management Plan for the Pinelands National Reserve. More information on water quality monitoring and assessment conducted by the Pinelands Commission is available on their Web site at: http://www.state.nj.us/pinelands.

- **Warm Water Fisheries Populations:** The aquatic life designated use assessment in lakes was based on assessments of lake fisheries performed by the Department's Division of Fish and Wildlife. The Bureau of Freshwater Fisheries, which supplied data for the Integrated List, may be contacted at: http://www.nj.gov/dep/fgw/fshresmgt.htm.

- **Fish Consumption Advisories:** The presence of fish consumption advisories and bans was used to evaluate the fish consumption designated use. Sampling locations for monitoring fish tissue contaminant levels are chosen to include areas where known or suspected sources of persistent bioaccumulative toxics might be found (e.g., PCBs, dioxin, pesticides, and mercury). The Interagency Toxics in Biota Committee, with representatives from the Department and New Jersey Department of Health and Senior Services (NJDHSS), oversees the issuance of fish consumption advisories and bans as needed to protect human health. Sampling locations and advisories are routinely listed at the Department's Web site at: http://www.nj.gov/dep/dsr/njmainfish.htm and in the New Jersey Fish and Wildlife Digests.

- **National Shellfish Sanitation Program:** The National Shellfish Sanitation Program is used to assess the shellfish consumption designated use. Shellfish harvesting areas are classified in accordance with the National Shellfish Sanitation Program (NSSP) through monitoring of total and fecal coliform bacteria in water and shellfish at over 2,500 sites and conducting sanitary surveys to identify potential pollution sources. For more information, go to: http://www.state.nj.us/dep/wmm/bmw/

- **Lake Bathing Beach Data:** The Lake Bathing Beach monitoring program was used to assess recreational designated use attainment at lake bathing beaches. The NJDHSS oversees monitoring conducted by local health agencies at about 360 lake beaches in New Jersey. Fecal coliform data (not closure records) were provided to the Department for use in lake beach assessments. Information is available from the individual County Health Departments, which may be contacted through the following website: http://www.nj.gov/dep/enforcement/county.html .

- **Cooperative Coastal Monitoring Program:** The Cooperative Coastal Monitoring Program (CCMP) was used to assess recreational designated use attainment at ocean and bay bathing beaches. This monitoring program is cooperatively operated by the Department, NJDHSS, and local health agencies. Ocean and bay bathing beaches are monitored weekly, with over 6000 samples collected each summer between Memorial Day and Labor Day at 179 ocean beaches and 139 bay beaches. Results are used to open and close bathing beaches to protect public health. Data are available from the individual participating County Health Departments, which may be contacted through the following website: http://www.nj.gov/dep/beaches/

- **Delaware River Basin Commission (DRBC):** The DRBC is responsible for monitoring and assessing waters in the Delaware River mainstem and estuary pursuant to Section 305(b) of the federal CWA. The Department incorporated the Commission's assessments into the 2006 Integrated Report. DRBC's 305 (b) Report can be found on their web page at: http://www.state.nj.us/drbc/public.htm.

- **Interstate Environmental Commission (IEC):** The IEC provided fecal coliform and dissolved oxygen data for the shared waters of the New York/New Jersey Harbor Estuary. Information on these data can be obtained from the Commission at 311 West 43rd Street, Suite 201, New York, New York 1036 or at: http://www.iec-nynjct.org/.

- **USEPA Helicopter Monitoring Program:** USEPA Region 2 monitors water quality via helicopter in the ocean at a series of ten transects that extend eastward from Sandy Hook to Cape May with samples taken at 1, 3, 5, 7, and 9-mile points along each transect. The 2006 Integrated Report used data collected along the transects within New Jersey's 3-mile jurisdiction. Parameters collected include dissolved oxygen and fecal coliform. USEPA data are available through the STORET database at: http://www.epa.gov/storet/.

Ongoing Local Water Quality Monitoring Programs

The Department solicited local water quality data and information through a notice published in the New Jersey Register on January 18, 2005 and the Department's Web site. Data were accepted by the Department for a period of six months and were required to be accompanied by an approved Quality Assurance Project Plan, accurate monitoring sites locations, electronic data format, citable report, and contact information. Data that met these conditions were received from the following entities:

- **Monmouth County Health Department:** Benthic macroinvertebrate data, ambient chemical and sanitary data were collected. Macroinvertebrate and water chemistry data are available from the Monmouth County Health Department's Web site at: http://www.visitmonmouth.com/health/environmental/water/water.htm.

- **Pequannock River Coalition:** Summertime diurnal temperature data were collected at numerous stations in the Pequannock River Watershed. Data is available from the Coalition at P.O. Box 392, Newfoundland, New Jersey 07435, or call (973) 492-3212.

- **Hudson Regional Health Commission:** Collection of fecal coliform bacteria to identify conditions that influence sanitary concentrations such as tides, rainfall, or temperature. Sampling sites represent publicly accessible locations for recreational use (e.g., kayaking, jet skis). Data are available from the Commission at 595 County Avenue, Secaucus, New Jersey 07094.

Chapter 3: Water Quality Assessment

3.3 Trend Analyses 1985-2004

Summary of Water Quality Trends:

A trend analysis was conducted in cooperation with the USGS for selected physical and chemical constituents at 36 sampling stations located throughout the State using long-term data (see Figure 3.3-1). Monitoring sites were limited to those that possessed at least 20 years of continuous water quality records and contained flow recordings to correct for the possible impacts from flow variations on instream concentrations through time. The constituents evaluated include dissolved oxygen, total nitrogen, nitrate, total ammonia, total phosphorus, specific conductance, and dissolved solids. The evaluation covered the time period from 1984 to 2004. The sites were located throughout the State, covering all physiographic regions and land uses. Adjustments were made to account for factors such as seasonality and variations in flow. An overall summary of results is displayed in Figure 3.3-2 and Table 3.3-1. Results by individual monitoring site are displayed in Table 3.3-2.

Figure 3.3-1: Water Quality Monitoring Sites Used In Trends Assessment

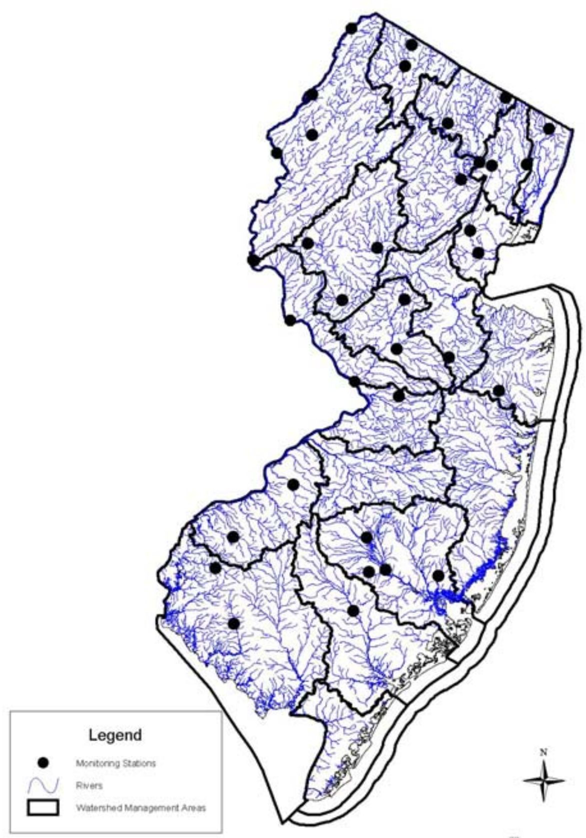
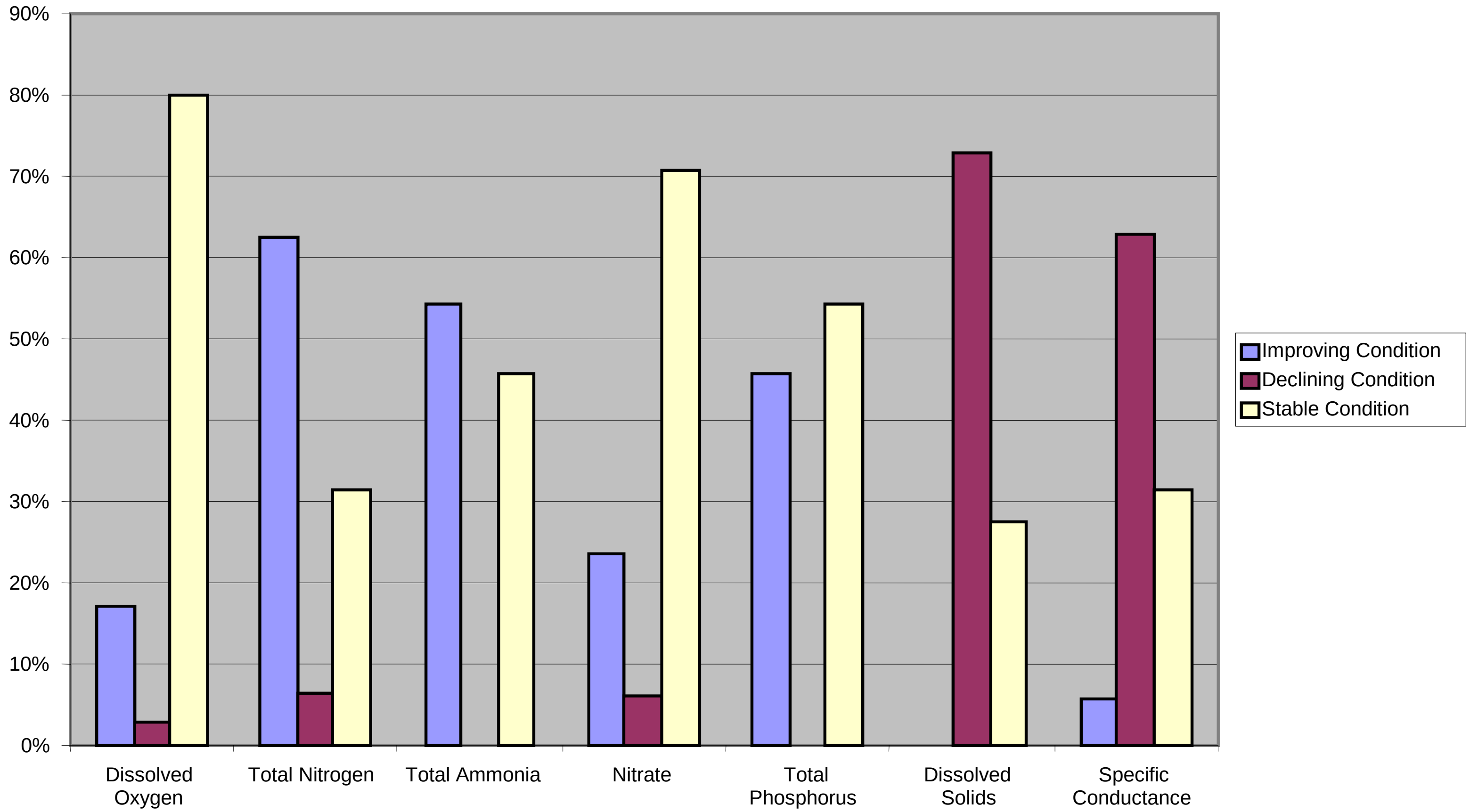


Figure 3.3-2: Trends 1984-2004



The nitrogen species of most interest are nitrate and ammonia because they are the most readily available forms of nitrogen taken up by organisms and plants as a nutrient. Phosphorus is also readily used by organisms and plants as a nutrient. Together, these nutrients are principally responsible for the growth rate of aquatic algae and vegetation. Water bodies affected by eutrophication (i.e., excessive primary production) are characterized by significant algae and weed growth and episodes of low dissolved oxygen. Low dissolved oxygen episodes occur when algae die off, and bacteria consume the dissolved oxygen in the process of decomposition. Dissolved oxygen (DO) is necessary for almost all aquatic life; consequently, concentrations of DO in water provide a good indicator of the health of aquatic ecosystems. Under low DO conditions, fish are more susceptible to other pollutants, such as metals and toxics; at very low DO levels, trace metals from sediments are released into the water column.

Trend results indicate that nutrient levels are improving or have stabilized throughout the state. Figure 3.3-2 shows trend results in terms of percent of the 36 monitoring sites assessed. Trend results also indicate that DO conditions have improved or stabilized throughout the state. These results are consistent with improvements to water quality expected from upgrades to wastewater treatment plants that have occurred since the 1980's. Nutrient loads, especially ammonia, have been reduced through more extensive wastewater treatment.

The trend analysis also indicates declining conditions for total dissolved solids (TDS) and an associated measure, specific conductance (SC). TDS is comprised of minerals and other substances dissolved in water. Changes in TDS can affect organisms by altering the flow of water through cell membranes, which can retard growth or even cause death. These changes can make water less fit for other uses. TDS exceedances have been associated with runoff from urban and agricultural areas, including runoff of salt used to control ice on roadways. Wastewater treatment discharges and discharges from septic systems can also contribute to increased TDS loadings. The TDS and SC trends were found in all types of land uses (urban, agricultural, mixed, and undeveloped) and physiographic regions.

These overall results suggest that for constituents removed by the treatment of point sources, water quality has definitely improved; high biological oxidation demands and their resulting depression of DO levels are largely a thing of the past. However, there appears that additional phosphorus controls are still needed. In addition, dissolved solids continue to be a problem at some locations. Although dissolved solids come from both point and nonpoint sources, we do know that road salting, and improper salt storage facilities are major contributors of this constituent and need to be better addressed by the Department's water quality management programs (see Chapter 5).

Table 3.3-1: Summary Of Water Quality Trends For Selected Water Quality Constituents

	SC	DO	DO_SAT	TN	NH3	NO3	TP	TDS
UP	22	6	7	2	0	2	0	24
DOWN	2	1	5	20	19	8	16	0
NONE	11	28	23	10	16	24	19	9
UP	63%	17%	20%	6%	0%	6%	0%	73%
DOWN	6%	3%	14%	63%	54%	24%	46%	0%
NONE	31%	80%	66%	31%	46%	71%	54%	27%

Legend:
SC = specific conductance DO = dissolved oxygen DO_SAT = dissolved oxygen saturation
TN = total nitrogen NH3 = nitrogen NO3 = nitrate
TP = total phosphorus TDS = total dissolved solids

Table 3.3- 2: Water Quality Trends By Individual Monitoring Stations

Station	Station Name	SC	DO	DO_SAT	TN	NH3	NO3	TP	TDS
01367770	Wallkill River near Sussex	up	none	none	none	down	none	none	up
01368000	Wallkill River at Unionville, NY	up	none	up	none	none	none	down	up
01377000	Hackensack River at Rivervale	up	none	down	down	none	none	none	up
01381800	Whippany River near Pine Brook	up	none	none	down	down	none	down	up
01382000	Passaic River at Two Bridges	up	up	up	down	down	down	none	up
01382500	Pequannock River at Macopin Intake Dam	none	none	none	none	none	none	down	none
01387500	Ramapo River near Mahwah	up	none	none	down	down	none	down	up
01389500	Passaic River at Little Falls	up	none	none	down	down	none	none	up
01391500	Saddle River at Lodi	up	none	none	up	none	up	none	up
01394500	Rahway River near Springfield	up	none	down	none	down	none	none	up
01395000	Rahway River at Rahway	up	down	down	down	none	none	none	up
01396660	Mulhockaway Creek at Van Syckel	up	none	none	NA	down	none	none	up
01398000	Neshanic River at Reaville	down	none	down	down	down	none	down	none
01399780	Lamington River at Burnt Mills	up	none	none	down	down	none	down	up
01400650	Millstone River near Grovers Mill	up	up	up	NA	down	NA	down	up
01402000	Millstone River at Blackwells Mills	up	none	none	none	none	none	none	up
01405340	Manalapan Brook at Federal Road, near Manalapan	up	none	none	down	none	none	none	up
01408000	Manasquan River at Squankum	up	none	none	none	none	none	none	up
01409387	Mullica River at Outlet of Atsion Lake, at Atsion	none	up	up	down	down	down	down	NA

Table 3.3-2: Water Quality Trends By Individual Monitoring Stations (continued)

Station	Station Name	SC	DO	DO_SAT	TN	NH3	NO3	TP	TDS
01409416	Hammonton River at Westcoatville	none	up	up	down	down	down	down	none
01409500	Batsto River at Batsto	none	none	none	down	down	none	none	none
01410150	EB Bass River near New Gretna	down	none	none	NA	down	down	none	NA
01411110	Great Egg Harbor River at Weymouth	none	up	up	down	down	none	down	none
01412800	Cohansey River at Seeley	none	none	none	up	none	none	none	up
01438500	Delaware River at Montague	none	none	none	down	none	down	none	none
01440000	Flat Brook near Flatbrookville	NA	NA	NA	NA	NA	NA	NA	NA
01443000	Delaware River at Portland, PA	none	none	up	down	none	down	down	none
01443500	Paulins Kill at Blairstown	up	none	none	down	down	none	down	up
01457400	Musconetcong River at Riegelsville	up	none	none	none	down	up	down	up
01457500	Delaware River at Riegelsville	none	none	none	none	none	none	down	none
01461000	Delaware River at Lumberville, PA	none	none	none	down	down	none	down	up
01463500	Delaware River at Trenton	none	none	none	down	down	down	none	none
01464515	Doctors Creek at Allentown	up	none	none	down	none	none	down	up
01467150	Cooper River at Haddonfield	up	none	none	none	none	down	none	up
01477120	Raccoon Creek near Swedesboro	up	none	down	down	none	none	none	up
01482500	Salem River at Woodstown	up	up	none	none	none	none	none	up

	SC	DO	DO_SAT	TN	NH3	NO3	TP	TDS
UP	22	6	7	2	0	2	0	24
DOWN	2	1	5	20	19	8	16	0
NONE	11	28	23	10	16	24	19	9

	SC	DO	DO_SAT	TN	NH3	NO3	TP	TDS
Improving	6%	17%	20%	63%	54%	24%	46%	0%
Declining	63%	3%	14%	6%	0%	6%	0%	73%
Stable	31%	80%	66%	31%	46%	71%	54%	27%

Chapter 4: Results of The 2006 Water Quality Assessment

This chapter explains the designated uses of the waters of New Jersey (Section 4.1) and the assessment results for each use on a statewide basis (Sections 4.2 through 4.6). These sections discuss, for each designated use, the waterbody classifications associated with the use, the methods used to assess attainment of the use, the results of the use assessment on a statewide basis, known or suspected pollutants causing non-attainment of the designated use, and potential or known sources of such pollutants. Section 4.7 explains the application of the designated uses assessments in generating the principle outcome of the Integrated Assessment, which is comprised of the Integrated List of Waterbodies, the 303(d) List of Impaired Waterbodies, and the priority ranking for TMDL development.

4.1 Designated Uses of New Jersey's Waters

USEPA's "Water Quality Standards Handbook" requires states to adopt water quality standards that "protect public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act." In order to satisfy these requirements, states assign or designate "uses" to waterbodies and then promulgate criteria that are the minimum necessary to attain these uses. New Jersey's designated uses and their corresponding water body classifications are listed in the Surface Water Quality Standards at N.J.A.C. 7:9B-1.12 and 1.13. The surface water quality criteria associated with the various waterbody classifications are listed in N.J.A.C. 7:9B-1.14. (The Surface Water Quality Standards are provided in Appendix J.) The purpose of the Integrated Report is to assess the quality of the State's waters in terms of whether the designated uses are being attained and, if not, to identify the specific causes of non-attainment so they can be eliminated.

For the purposes of this Integrated Report, the Department based its water quality assessment on seven categories of designated uses. These categories are explained briefly below. The rest of this chapter is comprised of individual sections that summarize the assessment results for each designated use, including the classifications of waters to which each use category applies.

1. **Aquatic Life Uses** means the **"**maintenance, migration, and propagation of the natural and established biota." In some limited cases (i.e. FW1-classified waters), it also means "set aside for posterity to represent the natural aquatic environment and its associated biota."

2. **Recreational Use** refers to the suitability of waterbodies for recreation on or in the water. There are actually three subcategories of the recreational use that are affected to different degrees by the sanitary quality of the water or aesthetic factors. Primary contact recreation involves recreational activities that present significant water ingestion risks and includes, but is not limited to, swimming, diving, surfing, and water skiing. Secondary contact recreation involves recreational activities where the probability of water ingestion is minimal and includes, but is not limited to, wading,

boating, and fishing. Aesthetic recreational use refers to the aesthetic condition of lakes, which can be adversely impacted by excessive algal growth (planktonic or rooted), resulting in unfavorable conditions for swimming, boating, and other recreational activities that would be adversely impacted by smells and other unpleasant conditions associated with excessive algal growth.

3. **Drinking Water Supply Use** refers to water that is safe to ingest after conventional filtration treatment (i.e. filtration, flocculation, coagulation, and sedimentation) and disinfection.

4. **Industrial Water Supply Use** refers to water used for processing or cooling.

5. **Agricultural Water Supply Use** refers to water used for field crops, livestock, horticulture, and silviculture.

6. **Fish Consumption Use** refers to fish whose tissues do not contain excessive levels of toxic contamination and are therefore safe for human consumption. While this use is not expressly identified in the New Jersey Surface Water Quality Standards, “fishable” waters is a goal of the federal Clean Water Act; therefore, the Department assesses the fish consumption use as part of the Integrated Report.

7. **Shellfish Harvest Use** refers to the harvest of mollusks (commonly known as clams, oysters, or mussels) that are safe for human consumption.

For organizational purposes, the discussion of industrial and agricultural uses is combined in Section 4.5.

Use Assessment on A Subwatershed Basis:

The 2006 Integrated Assessment used HUC-14 subwatersheds and lakes as the assessment unit. There are 970 HUC-14 subwatersheds and 468 lakes in New Jersey and, while the Department conducted 6,488 individual designated use assessments, Only 25% of the State’s HUC-14 subwatersheds had sufficient data to assess all applicable designated uses (except fish consumption). Nine percent (9%) could be fully assessed including fish consumption. However, 90% of the State’s stream miles (16,410 of 18,126 stream miles) were assessed for at least one designated use and 99.8% of the total acres of estuaries, bays, and ocean waters (166,384 of 166,133 acres) were assessed for at least one designated use.

Identifying Sources of Non-Attainment/Impairment:

Under Section 305(b), the primary focus is the evaluation of existing data and information to assess the overall “health” of waters of the state and to determine the status of use attainment. Under Section 303(d), the focus is on identifying impaired waters and pollutants causing impairments that require TMDLs. The Integrated Report focuses on both use attainment and impairment and their respective causes and sources.

Monitoring staff may have knowledge of particular discharges or land use conditions that could potentially be the source of a pollutant or biological impairment that is causing non-attainment of the designated use(s). This source information is included in the Integrated Report as available.

In preparing previous reports, it was assumed that additional source identification would result once a waterbody was designated for TMDL development. It was thought, at that time, that a more thorough investigative study would be conducted to determine the sources and causes of impairment. While this is still the case for all waters identified on the 2006 Integrated List, an additional step was found to be required as part of the 2006 Integrated Assessment process to be able to populate USEPA's Assessment Database (ADB). As the Department began using the ADB for reporting of assessment results, the need for more source information during the assessment process became evident. The Department developed a method for identifying the following list of additional **potential** sources of specific pollutants using the New Jersey Geographic Information System (GIS) as an analytic tool.

- Major Municipal Point Sources
- Industrial Point Sources
- Package Treatment Plants
- Combined Sewer Overflows
- On-Site Wastewater Treatment Systems
- Agricultural Land Use
- Urban Land Use
- Upstream Impoundments
- Atmospheric Deposition
- Natural Sources

The GIS coverage for the 2006 Integrated Assessment results was overlain with other GIS data layers containing potential sources. The Department used the following publicly available GIS data layers, which can be downloaded from http://www.nj.gov/dep/gis/. The limitations and accuracy of the available data is listed in the GIS Metadata.

- NJPDES Permitted Surface Water Discharges
- 1995/97 Land Use/Land Cover
- Lakes (Open Water Areas)

The first five potential sources were taken from the NJPDES point source coverage. The Department used "DISTYPE" to select Major Municipal Point Sources (MMJ), Major Industrial Point Sources (MMI), package treatment plants including minor municipals (municipal wastewater discharges of less than 1 million gallons per day and minor industrial facilities that discharge wastewater to waters of the state), and Combined Sewer Overflows (CSO). The NJPDES point source coverage was also used to identify on-site wastewater treatment plants (Discharges to Groundwater >2000 gallons per day).

Both Agriculture and Urban Land Uses were taken from the 1995/97 Land Use/Land Cover coverage and filtered once for agriculture only and a second time for urban only. If any portion of land within the assessed subwatershed contained agricultural land and/or urban land, the appropriate potential source was listed. This coverage is being replaced with the 2002 Land Use/Land Cover dataset, which is based on photography captured in the Spring of 2002. Since the 2002 coverage was released for general distribution as a preliminary product only and is not legally binding, the Department did not use this version to determine potential sources. It is possible that the land use changes that have occurred since 1995 and are reflected in the 2002 updated coverage may change the number of subwatersheds impacted by Agriculture and/or Urban Runoff.

Upstream Impoundments were identified as a potential source in all assessment units with temperature identified as a pollutant causing impairment. Atmospheric Deposition was listed as a potential source in all assessment units where mercury was identified as a pollutant causing impairment. Natural Sources was identified as a potential source in all assessment units where arsenic was identified as a pollutant causing impairment.

The process used to identify pollutants and sources that potentially impact a designated use was developed based on best professional judgement. The data layer for each source was overlain on each of the designated uses for which it could be a potential source. If the source location overlapped with a non-attained designated use, the source was identified as a potential source of impairment for that use.

This analysis has been used to identify potential sources of impairment within a subwatershed. No effort has been made to verify whether or not the source actually impacts the subwatershed or to what degree. Verification of actual sources of pollutants causing impairment in individual subwatersheds will occur through the TMDL process (see Chapter 5, Section 5.6 for a description of the TMDL Program).

Chapter 4: Results of The 2006 Water Quality Assessment

4.2 Aquatic Life Uses

The following definition of the aquatic life designated use assessed in this report is based on use classifications established in the New Jersey Surface Water Quality Standards at N. J. A. C. 7:9B. For this report, "Aquatic Life Uses" means any one of the following:

1. Set aside for posterity to represent the natural aquatic environment and its associated biota (for FW1 waters of the State);
2. Maintenance, migration, and propagation of the natural and established biota (for FW2, SE1, SE2, and SC waters); and
3. Maintenance and migration of fish populations, migration of diadromous fish, and maintenance of wildlife (for SE3 waters).

For assessment purposes, these aquatic life uses are grouped into two categories. The first is a general level of support, which is applied to all waters designated for aquatic life uses. The second category applies exclusively to waterbodies classified for Trout Production and Trout Maintenance. There are 733 HUC-14 freshwater subwatersheds and 237 HUC-14 coastal subwatersheds designated for aquatic life uses. There are 468 lakes identified for the purposes of this Report. All lakes are designated for aquatic life uses. Lakes were assessed separately from rivers and coastal waters.

General Aquatic Life Use:

Assessment Method for General Aquatic Life Use

Rivers
Whenever possible, the general aquatic life use is assessed in freshwater rivers and streams based upon actual biological data, either benthic macroinvertebrates and/or fin-fish populations. Where monitoring data indicate that biological communities are not impaired, the corresponding HUC-14 subwatersheds are assessed as attaining the aquatic life use and placed on Sublist 1 or 2. When monitoring data indicate that biological communities are impaired and the cause of impairment is identified as a pollutant exceeding the surface water quality standards, the assessment unit is assessed as not attaining the aquatic life use and is listed on Sublist 4 or 5. For assessment units placed on Sublist 5, the pollutant causing the non-attainment is also identified on the List of Impaired Waters (see Appendix B). When the cause of the biological impairment cannot be identified as a chemical constituent, the cause is listed as "Pollutant Unknown." If biological data are unavailable, the assessment unit is assessed using a suite of chemical/physical parameters, when available, which are relevant to attainment of the aquatic life uses. Detailed information regarding the assessment methodology for general aquatic life uses is provided in section 4.1 of the Methods Document (Appendix G).

Pinelands Region (Rivers and Lakes)
Because the current suite of biological indicators employed by the Department are not calibrated for the unique conditions of the State's Pinelands Region, the Department uses assessments of biological data supplied by the Pinelands Commission. These assessments are based upon monitoring of aquatic vegetation, finfish, and frog populations from Pinelands waters.

Coastal waters
In coastal waters, the aquatic life use is assessed principally using dissolved oxygen levels recorded in both ocean (SC) and estuarine (SE) waters. Some coastal aquatic life use assessments in the New York/New Jersey Harbor Estuary are based on biological data (benthic invertebrates) collected and assessed under the USEPA Regional Environmental Monitoring and Assessment (REMAP) Program.

Lakes (Non Pineland)
Lake biological assessments are currently based on lake fishery assessments supplied by the Department's Bureau of Freshwater Fisheries (BFF). These fishery assessments provide a direct indicator of the biological conditions within lakes. Prior to the Year 2000 Statewide Water Quality Inventory Report, aquatic life use assessments for lakes were based on lake trophic status, an indirect indicator of biological conditions. (See Appendix G: Methods Document, Section 4.1.2 for more details regarding the aquatic life use assessment methods for lakes.)

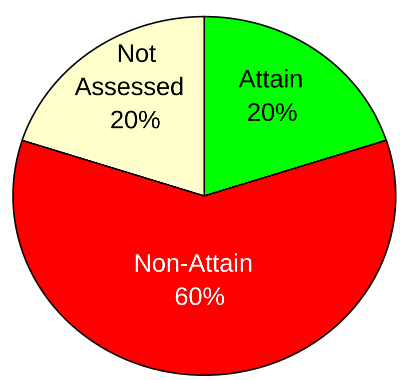
Assessment Results

Rivers and Coastal Waters
Assessment results for general aquatic life uses in rivers and coastal waters are summarized in Table 4.2-1 and Figure 4.2-1. There are 733 freshwater and 237 coastal (970 total) HUC-14 subwatersheds in New Jersey where the aquatic life use applies. Of these, 192 (20%) attained the use, 586 (60%) did not attain the use, and 192 (20%) were not assessed. Of the 778 HUC-14 subwatersheds assessed for general aquatic life, 25% attained the use and 75% did not.

Table 4.2-1: Assessment Results For General Aquatic For General Aquatic Life Use (Excluding Lakes)

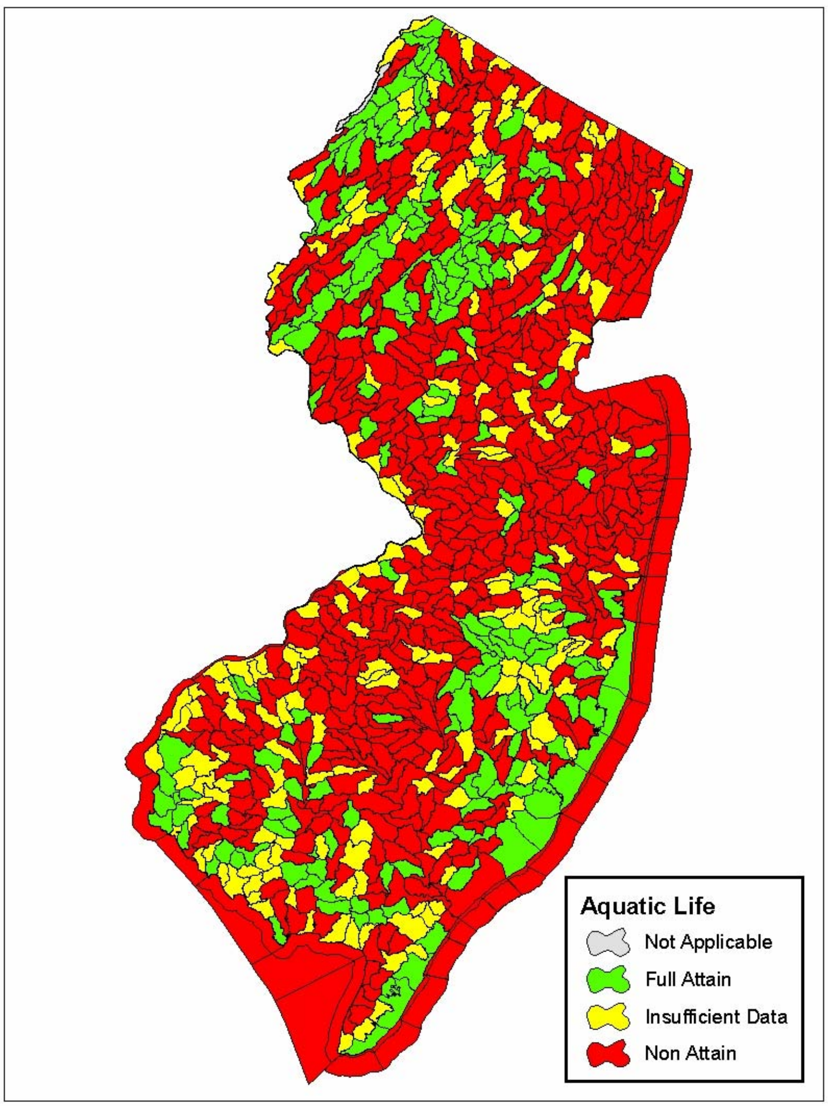
	# of HUCs	% of HUCs Assessed	% of Total HUCs
Attain	192	25%	20%
Non-Attain	586	**75%**	60%
Not Assessed	192		20%
Total Assessed	778		80%
Total # HUCs	970		

Figure 4.2-1: General Aquatic Life Use (Excluding Lakes) - Percentage



Spatially, assessment units not attaining the general aquatic life use are distributed throughout the State (see Figure 4.2-2). Assessment units attaining the use tend to be concentrated in the upper northwest corner of the State as well as in the Musconetcong, Upper Raritan and Passaic River Watersheds. Significant numbers of assessment units attaining the use are also seen in the Pinelands Region and adjacent estuarine waters, the Barnegat Bay Estuary and in the southwestern portion of the State. None of the assessment units in New Jersey's ocean waters attain aquatic life uses. This is generally due to a region containing low dissolved oxygen (DO) that forms off the coast on the ocean bottom during the summer months when the waters stratify and breaks up in the fall. This region of low DO in New Jersey extends from Sandy Hook south to the Wildwoods. This benthic low DO cell is discussed further in the next section, "Parameters Causing Non-Attainment".

Figure 4.2-2: General Aquatic Life Use Status Statewide (Except Lakes) – Spatial Extent



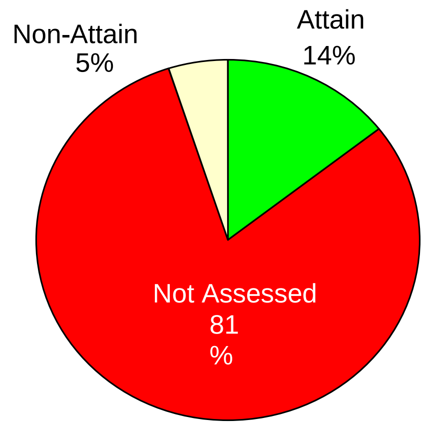
Lakes

Assessment results for general aquatic life uses in lakes are summarized in Table 4.2-2 and Figure 4.2-3. Of the 468 lakes identified for the purposes of this report, 67 (14%) attained the use, 24 (5%) did not attain the use and 377 (81%) were not assessed. Of the 91 (19%) lakes assessed for general aquatic life, 74% attained the use and 26% did not.

Table 4.2-2: Assessment Results for General Aquatic Life Use in Lakes

	# of HUCs	% of HUCs Assessed	% of Total HUCs
Attain	67	74%	14%
Non-Attain	24	**26%**	5%
Not Assessed	377		**81%**
Total Assessed	91		19%
Total # Lakes	468		

Figure 4.2-3: General Aquatic Use in Lakes - Percentage



Parameters Causing Non-Attainment

Rivers and Coastal Waters

Of the 788 HUC-14 subwatersheds assessed for general aquatic life use, 586 were "non-attain". The cause of non-attainment was identified for 475 of the 586 subwatersheds (81%) as a specific chemical/physical contaminant such as total phosphorus or pH. Non-attainment was assessed based on biological data alone for 111 (19%) subwatersheds where there were no corresponding chemical data. In these cases, the cause of non-attainment was listed as "pollutant unknown".

Conventional Parameters:

The parameters most closely associated with attainment of the aquatic life use are total phosphorus (TP), pH, temperature, total dissolved solids (TDS), and total suspended solids (TSS). Of the subwatersheds not attaining the general aquatic life use, the cause was most often attributed to exceedances of the TP or pH surface water quality criteria. Temperature was also a notable cause of impairment, but was mostly associated with trout production or trout maintenance non-attainment, which is discussed in more detail later in this section (see "Aquatic Life Use-Trout"). Exceedances of TDS and TSS were also identified as causes but to a much lesser degree than the other parameters. Exceedances of dissolved oxygen (DO) were also identified as a cause of non-attainment but largely for coastal subwatersheds. The following pages explain the statewide assessment results for these pollutants (TP, pH, temperature, TDS, TSS, and DO) in terms of conformance (i.e. meet or exceed) with the applicable surface water quality criteria.

Looking at only **TP** in rivers statewide, roughly one third of all freshwater HUC-14 subwatersheds exceeded the TP criteria, one third met the criteria and one third were not assessed (see Figures 4.2-4 and 4.2-5 below, and Table 4.2-3 on the following page).

Figure 4.2-4: Total Phosphorus (TP) Statewide (Rivers Only) – Percentages

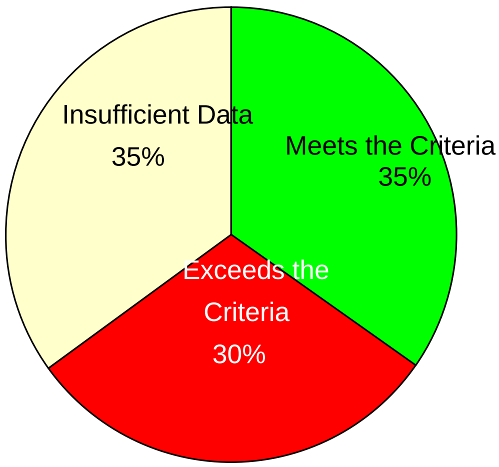
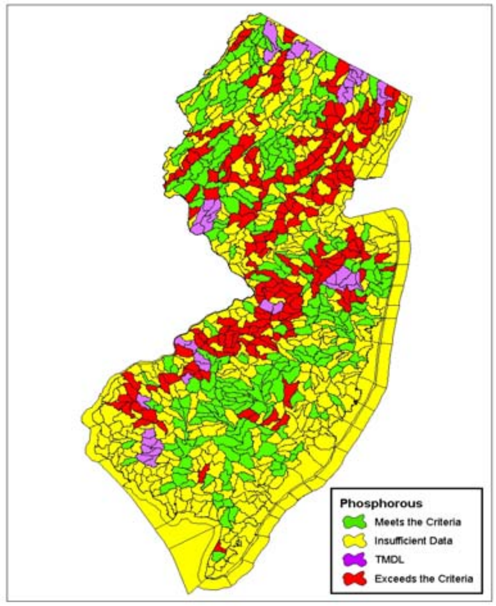


Figure 4.2-5: Total Phosphorus (TP) Statewide - Spatial Extent



A similar profile was exhibited by **pH** where 27% of freshwater subwatersheds exhibited exceedances, 42% showed no exceedances, and 31% were unassessed (see Figures 4.2-6 and 4.2-7 below, and Table 4.2-3 on the following page).

Figure 4.2-6: pH Statewide (Rivers Only) – Percentages

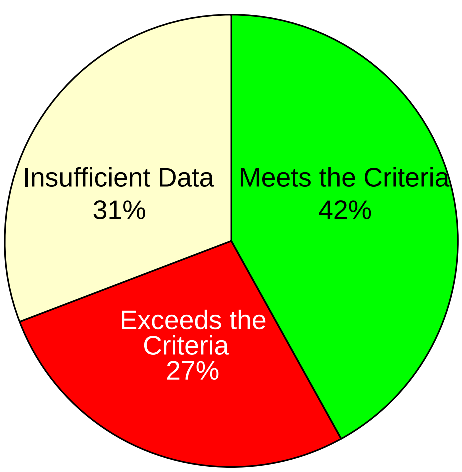


Figure 4.2-7: pH Statewide (Rivers Only) – Spatial Extent

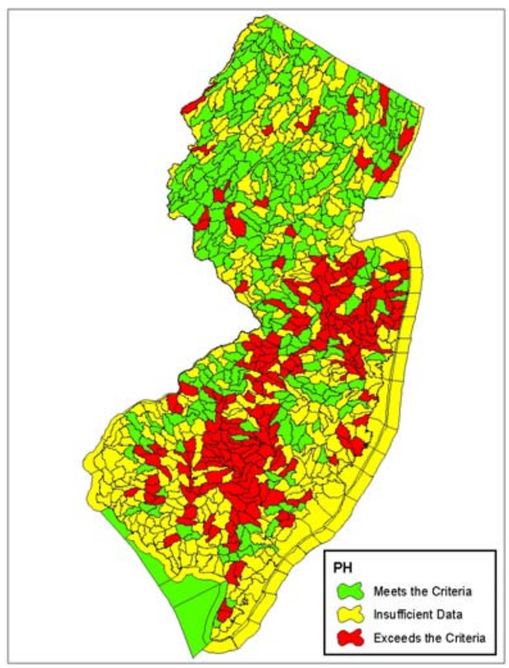


Table 4.2-3: Extent of HUC-14 Subwatersheds With Exceedances of Aquatic Life Criteria For Total Phosphorus (TP) And pH (Except Lakes)

	TP (Freshwater)			pH (Freshwater)		
	# of HUCs	% of Assessed HUCs	% of Total HUCs	# of HUCs	% of Assessed HUCs	% of Total HUCs
Meet Criteria	254	53%	35%	307	61%	42%
Exceed Criteria	222	47%	30%	199	39%	27%
Not Assessed	257		35%	227		31%
Total Assessed	476		65%	506		69%
Total # of HUCs	733			733		

Regarding **temperature**, 56% of freshwater subwatersheds met the criteria associated with the most stringent classification, and 9% exceeded the criteria; however, a majority of these exceedances were located in trout waters and resulted in a significant number of these waters (classified as Trout Production and Trout Maintenance) not attaining the Trout Aquatic Life Use (see discussion on "Aquatic Life Use-Trout" later in this section). Assessment results for temperature are depicted in Figures 4.2-8 and 4.2-9 below, and Table 4.2-4 on the following page.

Figure 4.2-8: Temperature Statewide (Rivers Only) – Percentages

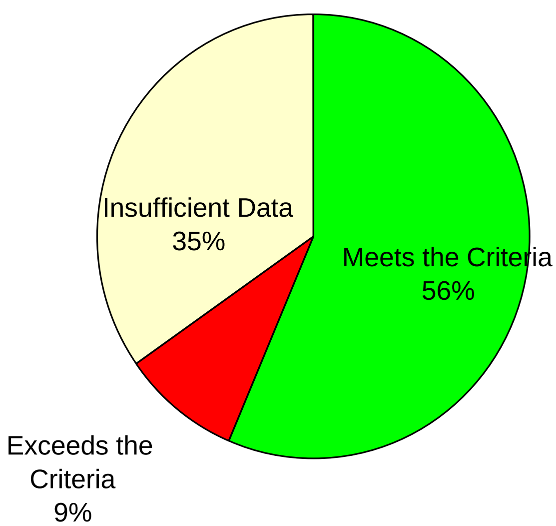


Figure 4.2-9: Temperature Statewide (Rivers Only) – Spatial Extent

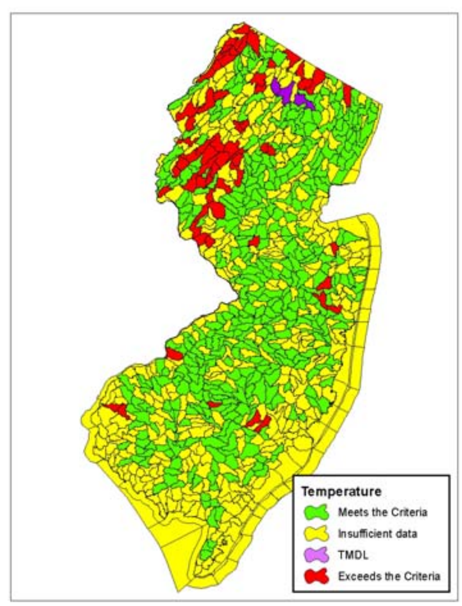


Table 4.2-4: Extent of HUC-14 Subwatersheds With Exceedances of Aquatic Life Criteria For Temperature (Except Lakes)

	Temperature (Freshwater)		
	# of HUCs	% of Assessed HUCs	% of Total HUCs
Meet the Criteria	413	86%	56%
Exceed the Criteria	66	**14%**	9%
Not Assessed	254		35%
Total Assessed	479		65%
Total # of HUCs	733		

Of the water quality constituents associated with attainment of the general aquatic life use, **total dissolved solids (TDS) and total suspended solids (TSS)** caused the smallest number of exceedances. Only 3% and 6% of the freshwater subwatersheds experienced exceedances for TDS and TSS, respectively (see Table 4.2-5 below, and Figures 4.2-10 through 4.2-13 on the following page).

Table 4.2-5: Extent of HUC-14 Subwatersheds With Exceedances of Aquatic Life Criteria For Total Suspended Solids (TSS) and Total Dissolved Solids (TDS) Statewide (Except Lakes)

	TSS			**TDS**		
	# of HUCs	% of Assessed HUCs	% of Total HUCs	# of HUCs	% of Assessed HUCs	% of Total HUCs
Meet the Criteria	358	88%	49%	405	95%	55%
Exceed the Criteria	47	12%	6%	20	5%	3%
Not Assessed	328		45%	308		42%
Total Assessed	405		55%	425		58%
Total # of HUCs	733			733		

Figure 4.2-10: Total Dissolved Solids (TDS) Statewide (Rivers Only) – Percentages

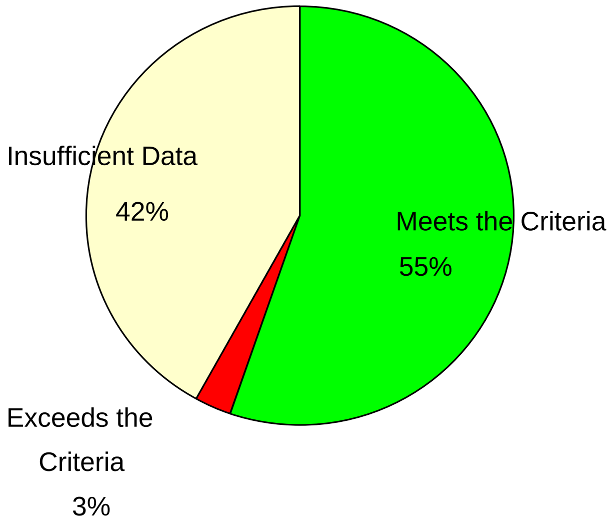


Figure 4.2-11: Total Dissolved Solids (TDS) Statewide (Rivers Only) – Spatial Extent

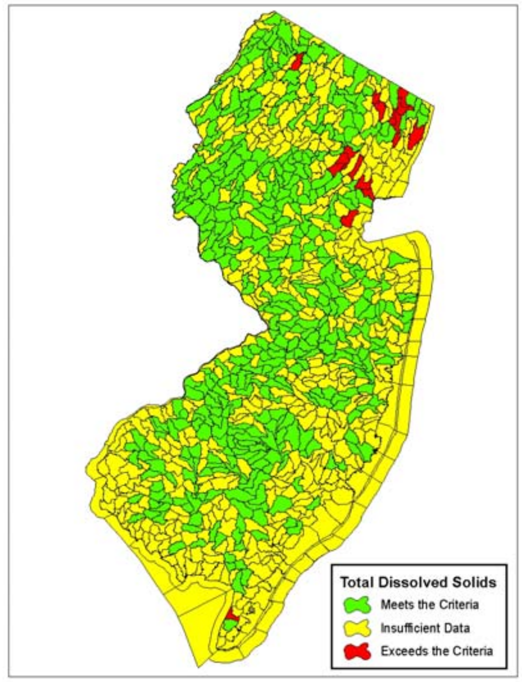


Figure 4.2-12: Total Suspended Solids (TSS) Statewide (Rivers Only) – Percentages

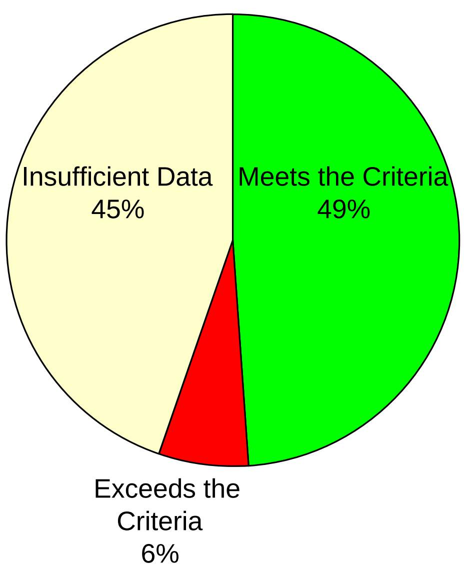
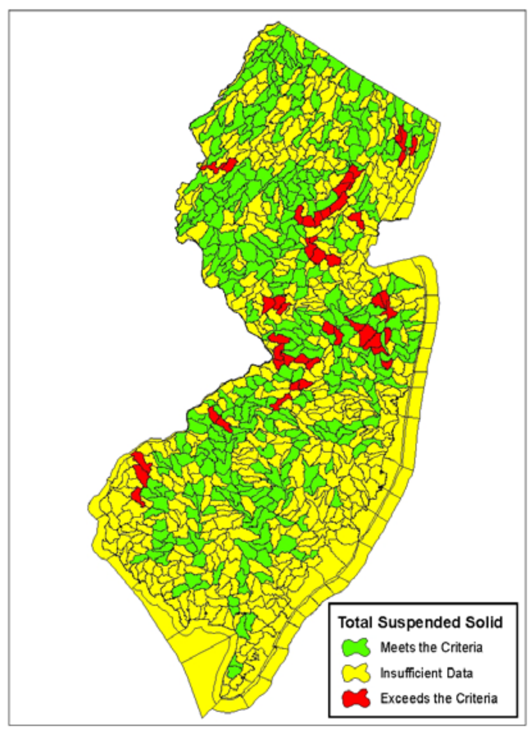


Figure 4.2-13: Total Suspended Solids (TSS) Statewide (Rivers Only) – Spatial Extent



Regarding **dissolved oxygen (DO)**, 118 (34 freshwater and 84 coastal) subwatersheds statewide exhibited exceedances of DO criteria; however, this is largely a coastal issue (see Table 4.2-6 below, and Figure 4.2-16 on the following page). Only 34 out of 465 (7%) assessed freshwater subwatersheds exhibited DO exceedances (see Figure 4.2-14). In contrast, 84 out of 233 assessed coastal subwatersheds were listed as "non-attain" for aquatic life with DO listed as the pollutant causing impairment (see Figure 4.2-15).

Figure 4.2-14: Dissolved Oxygen (DO) Freshwater (Except lakes) – Percentages

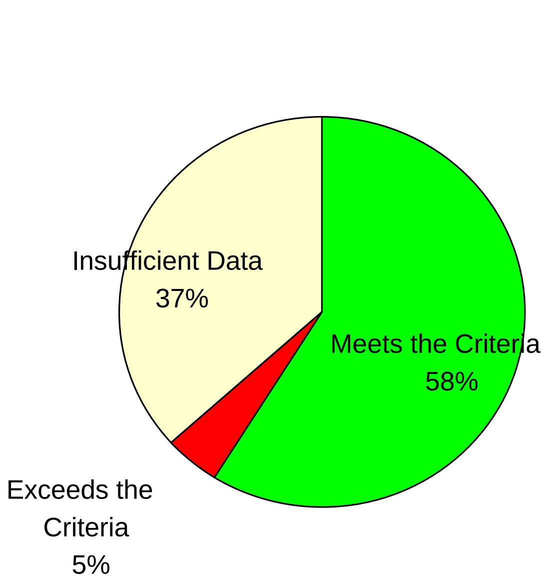


Figure 4.2-15: Dissolved Oxygen (DO) Coastal Waters–Percentages

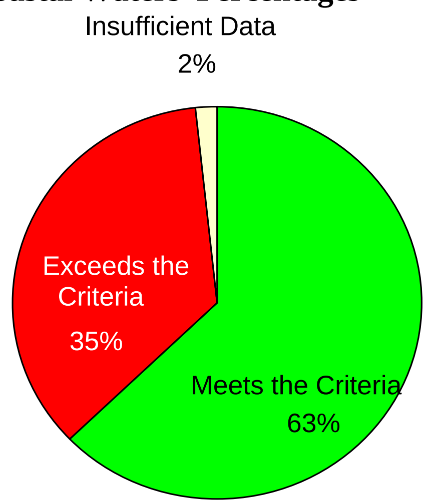
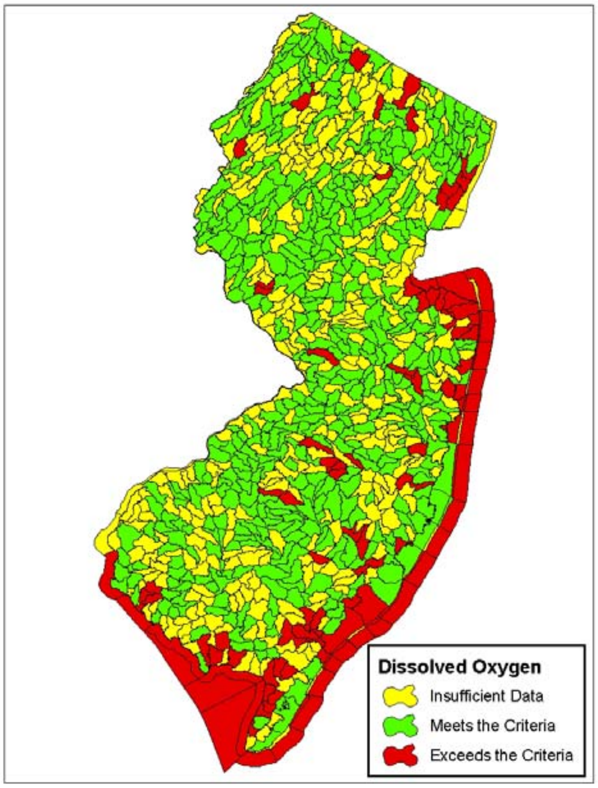


Table 4.2-6: Extent of HUC-14 Subwatersheds With Exceedances of Aquatic Life Criteria For Dissolved Oxygen (DO) Statewide (Except Lakes)

	DO (Freshwater)			**DO (Coastal)**		
	# of HUCs	% of Assessed HUCs	% of Total HUCs	# of HUCs	% of Assessed HUCs	% of Total HUCs
Meet Criteria	431	93%	58%	149	64%	63%
Exceed Criteria	34	**7%**	5%	84	**36%**	35%
Not Assessed	268		37%	4		2%
Total Assessed	465		63%	233		98%
Total # of HUCs	733			237		

Figure 4.2-16: Dissolved Oxygen (DO) Statewide (Except Lakes) - Spatial Extent



The DO problem in the ocean results from a region containing low DO that forms off the coast on the ocean bottom during the summer months, when the waters stratify, and breaks up in the fall. This region of low

DO in New Jersey extends from Sandy Hook south to the Wildwoods. It is important to note that surface DO levels have historically met applicable criteria. The reason for this benthic low DO cell is not known, although summer algal bloom die-off has been implicated by some investigators. The impacts on benthic marine biota are unclear as well. For additional details regarding this phenomenon, see the 2004 Integrated Report, Section 3.3, page III-171.

Metals:
The following suite of metals is also relevant to aquatic life use attainment: cadmium, chromium, copper, nickel, lead, and zinc. However, data for each of these metals is not essential to an aquatic life use assessment (as indicated in the Methods Document, Appendix G). Due to the high cost of metals analysis, the percentage of waters assessed for metals is currently low. Where metals data are available, exceedances of the applicable surface water quality criteria are evaluated as part of the aquatic life use assessment.. Where waters were assessed for metals, exceedances of the surface water quality criteria for chromium, nickel, and zinc were relatively low. A greater number of exceedances were identified for cadmium, copper and lead. Because few subwatersheds are assessed for metals, the actual percent of subwatersheds impaired due to exceedances of metal criteria may actually be far greater than indicated by the assessment results. The criteria for cadmium and copper (as well as chromium, nickel and zinc) are pH and hardness-dependant. This means that relatively low environmental levels of these metals can cause an exceedance of the metals criteria in waters of low pH and hardness. See "Future Assessment Methods For Aquatic Life" below for information regarding improvements in metals monitoring to address this and other concerns.

Table 4.2-7: Extent of HUC-14 Subwatersheds With Exceedances of Aquatic Life Criteria For Metals

	Cadmium			**Chromium**			**Copper**		
	# of HUCs	% of Assessed HUCs	% of Total HUCs	# of HUCs	% of Assessed HUCs	% of Total HUCs	# of HUCs	% of Assessed HUCs	% of Total HUCs
Meet Criteria	50	79%	5.1%	159	88%	16.4%	157	77%	16%
Exceed Criteria	13	**21%**	1.3%	22	**12%**	2.3%	46	**23%**	4.7%
Not Assessed	907		94%	789		81%	767		79%
Total Assessed	63		6%	181		19%	203		21%
Total # of HUCs	970			970			970		

Table 4.2-7 (continued): Extent of HUC-14 Subwatersheds With Exceedances of Aquatic Life Criteria For Metals

	Lead			**Nickel**			**Zinc**		
	# of HUCs	% of Assessed HUCs	% of Total HUCs	# of HUCs	% of Assessed HUCs	% of Total HUCs	# of HUCs	% of Assessed HUCs	% of Total HUCs
Meet Criteria	116	69%	12%	175	96%	18%	159	94%	16%
Exceed Criteria	52	**31%**	5%	8	**4%**	1%	10	**6%**	1%
Not Assessed	802		83%	787		81%	801		83%
Total Assessed	168		17%	183		19%	169		17%
Total # of HUCs	970			970			970		

Lakes

Non-attainment of general aquatic life uses in lakes is largely caused by excessive eutrophication. This results from excessive amounts of nutrients (specifically phosphorus and sometimes sediment) delivered to a lake via stormwater runoff from the watershed. In the Pinelands region, this problem is exacerbated by the sensitivity of lakes, whereby modest amounts of anthropogenic inputs can significantly alter the water chemistry resulting in non-Pinelands fauna replacing the more sensitive native Pinelands biota.

Sources of Parameters Causing Non-Attainment

Table 4.2-8 below summarizes the potential sources of parameters (including the pollutants described above as well as "pollutant unknown") causing non-attainment of the general aquatic life use. These potential sources were identified through the use of Geographic Information Systems (GIS) computer technology (see Section 4.1 for a detailed explanation of this assessment procedure). Based solely on whether or not a specific land use was present in each of the aquatic life use assessment units, urban runoff and agricultural land uses were the most predominant potential sources of the parameters causing non-attainment. In other words, of all the HUC-14 subwatersheds not attaining the general aquatic life use, there were more land uses associated with urban runoff and agriculture than any of the other potential sources considered. The second most common category of potential sources was point sources, such as package plants and municipal point sources. Onsite wastewater treatment systems (small wastewater treatment plants that discharge to ground water in amounts greater than 2000 gal/day) was the third most common category.

Table 4.2-8: Potential Sources Of Parameters Causing Non-Attainment Of The General Aquatic Life Use

Sources	**Number of Assessment Units (HUC-14s)**
Municipal Point Source	73
Industrial Point Source	4
Package Plants	94
On-Site Wastewater Treatment	53
Combined Sewer Overflow	6
Upstream Impoundments	40
Agriculture	452
Urban Runoff	514

Actions Taken To Date

The Department has completed 79 TMDLs that are expected to improve the aquatic life conditions in the affected watersheds. Among those completed are 11 TMDLs for temperature, mostly focusing on the Pequannock River Watershed. Twenty-five TMDLs have been completed for phosphorus. An additional 43 TMDLs have been completed for eutrophic lakes.

For aquatic life use impairments assessed based on benthic macroinvertebrate data, the Department is trying to identify the pollutant(s) causing non-attainment (identified on the 2006 303(d) list as "pollutant unknown"). The Department has initiated a program to identify the full suite of stressors that may have caused the biological impairment, on a site-specific basis. This Stressor Identification (SI) process is an outgrowth of a USEPA initiative that was subsequently modified by the Department to better reflect the New Jersey's assessment experience. An initial group of 138 impaired biological sites were selected for the process, out of which five were selected for a pilot study. These sites are located in Drakes, Holland, and Beaver Brooks, all tributaries to the South Branch Raritan River. The Department anticipates completing the pilot study by mid-2007, after which a full-scale effort will begin in coordination with stream restoration projects funded under the Department's 319(h) Nonpoint Source Pollution Control Grant Program.

Actions Planned

A total of 148 TMDLs are planned to be completed within the next two years that are expected to increase aquatic life use attainment in the affected watersheds (see Appendix D for the Two-Year TMDL Schedule). Of these TMDLs, two are for DO in the Neshanic River Watershed, 13 will be predominantly for temperature in the Raritan River Watershed, 28 will be for pH in Watershed Management Areas 9 and 10, 92 will be for TP predominantly in the Raritan, Passaic, and Rancocas River Watersheds, and 13 will be for TSS in the Manasquan and Raritan River Watersheds.

As stated earlier, the Department currently uses biological data collected by the Pinelands Commission to assess general aquatic life use attainment in Pinelands waters. These data, although useful, have limited utility for assessing biological status from a regulatory perspective. In response, a biological indicator based upon benthic macroinvertebrate populations has been developed by a USEPA contractor specifically for use in the Pinelands Region of the State. The Department still needs to establish regulatory criteria for the indicator that establish what constitutes attainment of the use; however, the Department hopes to have this new methodology in place by early 2007.

With respect to finfish assessments, the Department is developing a Fish Index of Biotic Integrity (IBI) metric for use in the inner coastal plain of southern New Jersey. The Department is also refining the Fish IBI metric currently in use for the northern portion of the State.

With regards to chemical monitoring, the Department has increased the number of metals monitoring sites by adding 100 new sites to its surface water monitoring network. This network upgrade occurred in 2005; however, these data are not reflected in the current assessment. In addition, metals are monitored historically by a network-operated cooperatively by the Department and USGS**.** Forty new sites are randomly selected every two years as part of this cooperative network so, as time progresses, an ever-greater number of locations will have been assessed for metals throughout the State.

Aquatic Life Use - Trout

As discussed at the beginning of this section, the second category of aquatic life uses applies exclusively to freshwater waterbodies classified for one of two trout uses:

1. Trout production: Waters designated at N.J.A.C. 7:9B-1.15(b) through (g) for use by trout for spawning or nursery purposes during their first summer.

2. Trout maintenance waters: Waters designated at N.J.A.C. 7:9B-1.15(b) through (g) for the support of trout throughout the year.

The Trout Use classification is generally regarded as more restrictive than the General Aquatic Life Use. There are 197 assessment units that contain waters classified for the Trout Aquatic Life Use.

Assessment Method for Aquatic Life Use - Trout

As shown in the map below, HUC-14 subwatersheds containing waters classified for trout uses are concentrated in the northwest portion of the State, with some isolated waters located in Watershed Management Areas 4, 5, 12, 13, and 18. Detailed information regarding the assessment methodology for the Aquatic Life Use-Trout is located in Appendix G: Methods Document, Section 4.1.1B. Before conducting an assessment for this use, an assessment is first conducted for the general aquatic life use, based on biological data (see Assessment Method for General Aquatic Life Use, above). The temperature and DO profile are then assessed using the surface water quality criteria for trout waters.

Assessment Results

Assessment results for the Trout Aquatic Life Use are summarized in Table 4.2-9, Figure 4.2-17 (below), and Figure 4.2-18 on the following page. Of the 197 HUC-14 subwatersheds possessing waters classified as Trout Production or Trout Maintenance, 38 (19%) attained the use, 107 (55%) did not attain the use and 52 (26%) were not assessed. Of the 145 (74%) subwatersheds assessed for trout aquatic life, 26% attained the use and 74% did not.

Table 4.2-9: Assessment Results for Trout Aquatic Life Use (Excluding Lakes):

	# of HUCs	% of HUCs Assessed	% of Total HUCs
Attain	38	26%	19%
Non-Attain	107	**74%**	55%
Not Assessed	52		26%
Total Assessed	145		74%
Total # HUCs	197		

Figure 4.2-17: Trout Aquatic Life Use Status Statewide (Excluding Lakes)- Percentages:

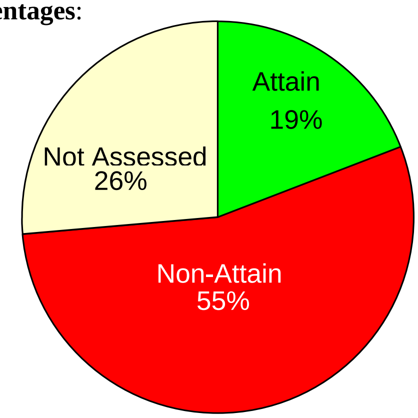
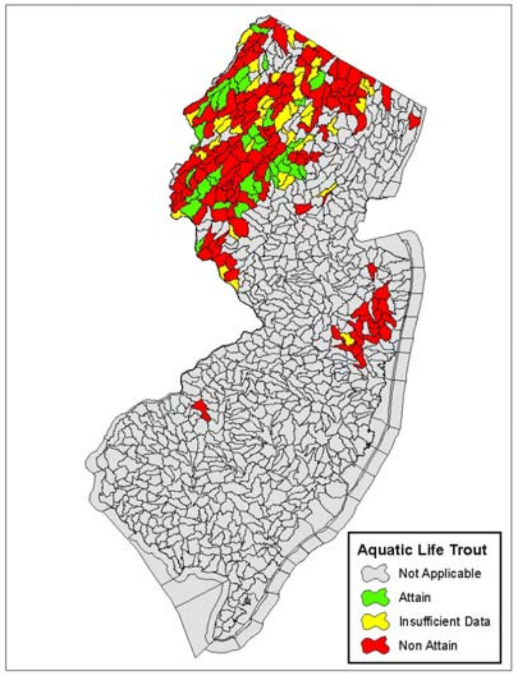


Figure 4.2-18: Trout Aquatic Life Use Status Statewide (Excluding Lakes)-Spatial Extent



<u>Parameters Causing Non-Attainment of the Trout Aquatic Life Use</u>
Exceedances of the temperature criteria are responsible for the vast majority of subwatersheds not attaining the trout aquatic life use. A much smaller percentage of subwatersheds in non-attainment were caused by exceedances of DO. It would appear from these results that excessive temperatures are a key cause of non-attainment of the trout aquatic life use statewide.

<u>Sources of Parameters Causing Non-Attainment</u>
Table 4.2-10 on the following page summarizes the potential sources of parameters (including the pollutants described above as well as "pollutant unknown") causing non-attainment of the general aquatic life use. These potential sources were identified through the use of Geographic Information Systems (GIS) computer technology (see "Identifying Sources of Impairment" in Section 4.1 for a detailed explanation of assessment procedure). Based solely on whether or not a specific land use was present in each of the aquatic life use assessment units, urban runoff and agricultural land uses were the most predominant potential sources of the parameters causing non-attainment. In other words, of all the HUC-14 subwatersheds not attaining the general aquatic life use, there were more land uses associated with urban runoff and agriculture than any of the other potential sources considered. The second most common potential sources were upstream impoundments and package plants. Note that runoff from urban surfaces and impoundments are both known to contribute to the warming of receiving waters.

Table 4.2-10: Potential Sources Of Parameters Causing Non-Attainment Of The Trout Aquatic Life Use

Sources	**Number of Assessment Units (HUC-14s)**
Municipal Point Source	6
Package Plants	30
Upstream impoundments	54
Agriculture	79
Urban Runoff	80

<u>Actions Taken To Date And Actions Planned</u>
Same as for General Aquatic Life (above).

Chapter 4: Results of The 2006 Water Quality Assessment

4.3 Recreational Uses

The recreational use of waters of the state is derived from the original goal of the federal Clean Water Act that all waters be “fishable” and “swimmable”. The surface water criteria used to determine if waters are “swimmable” are health-based, since swimming involves direct contact with, and potential ingestion of, pollutants in the water that can affect human health. Of primary concern among these pollutants is the ingestion of pathogens that can cause illness and even death. Because of the serious health concerns associated with this use, recreational use is assessed based on two subcategories: primary contact and secondary contact.

Primary contact recreational uses are water-related recreational activities that involve significant ingestion risks and include, but are not limited to, wading, swimming, diving, surfing, and water skiing. **Secondary contact recreational** uses are water-related recreational activities where the probability of water ingestion is minimal and includes, but is not limited to, boating and fishing.

Since the 2006 Integrated Report focuses on designated uses rather than just parameters, a third assessment subcategory for recreational use has been added to address eutrophication of lakes. **Aesthetic recreational use** refers to lakes in which excessive algal growth, be it planktonic or rooted, has created aesthetically unpleasant conditions for swimming and difficult conditions for boating.

Primary contact recreation is a designated use for all state waters classified as FW, PL, SE1, and SC; representing 940 assessment units and 468 lakes. Secondary contact recreation is a designated use for all state waters, representing 970 assessment units and 468 lakes. However, the existing surface water quality criteria for secondary contact recreation applies only to SE2 and SE3 waters. Lakes are also designated for aesthetics; therefore, the pollutants of concern for recreational use attainment for lakes also include nutrients, particularly, total phosphorus (TP). New Jersey lakes are relatively small in size (many are man-made), which makes them very susceptible to excessive algal growth as a consequence of eutrophication. Where total phosphorus is the limiting nutrient responsible for the nuisance algae, it is assessed as the pollutant causing impairment of the aesthetic use of the lake. Attainment of the aesthetic subcategory of recreational use is discussed separately from the contact recreational uses at the end of this section.

Primary and Secondary Contact Recreational Uses:

<u>Assessment Methods</u>

The sanitary fitness of waterbodies for recreational use (primary and secondary) is assessed with a suite of bacterial indicators. In the recent past, fecal coliform bacteria was the principal indicator of sanitary quality for recreational use. The sanitary indicator for recreation has been recently replaced in many cases by *Escherichia coli* (E. coli) in freshwaters and *Enterococci* in coastal waters (see Appendix G: Methods Document, section 4.2 for details regarding assessment of the recreational use).

Assessment Results
Results of the contact recreational use assessments are summarized in Table 4.3-1 and explained below.

Table 4.3-1: Assessment Results for Recreational Use

Designated Use		Attain	Non-Attain	Not Assessed	Number of Assessment Units
Primary Contact	Rivers and Coastal Waters	172 (18%)	371 (39%)	397 (43%)	940
	Freshwater Lakes	209 (45%)	183 (39%)	76 (16%)	468
Secondary Contact	Rivers and Coastal Waters	227 (23%)	57 (6%)	686 (71%)	970
	Freshwater Lakes	209 (45%)	0 (0%)	259 (55%)	468

Note: Assessment was for both primary and secondary contact recreational uses expressed in number of assessment units. Percentages are based on the total number of assessment units to which the use applies.

Primary Contact Recreation - Rivers and Coastal Waters:
Of all the 940 subwatersheds designated for primary contact recreational use, 18 % attained the use, 39% did not attain the use, and 43% were not assessed (see Figure 4.3-1). However, looking at just the State's ocean beaches, the Department regards New Jersey's coastal beaches from Sandy Hook to Cape May Point to be fully swimmable, i.e. attain the primary contact recreational use (see Figure 4.3-2). The one minor exception is a stretch of 500 yards of beach in Monmouth County that undergoes a "rain provisional closure" when rains occur in excess of 0.1 inches/24 hour due to bacteria contamination emanating from Wreck Pond.

Figure 4.3-1: Primary Contact Recreation Use (Tidal and Nontidal Waters) – Percentage

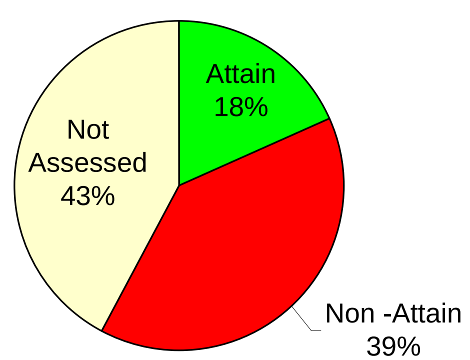
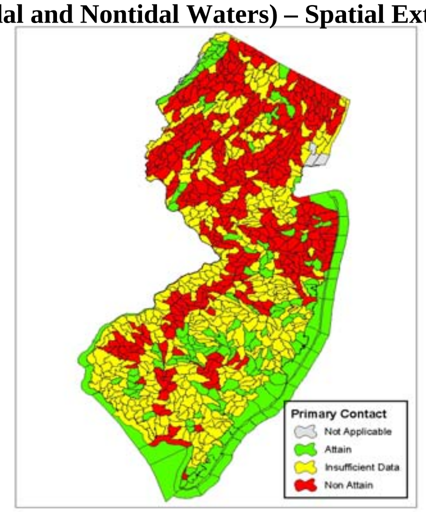
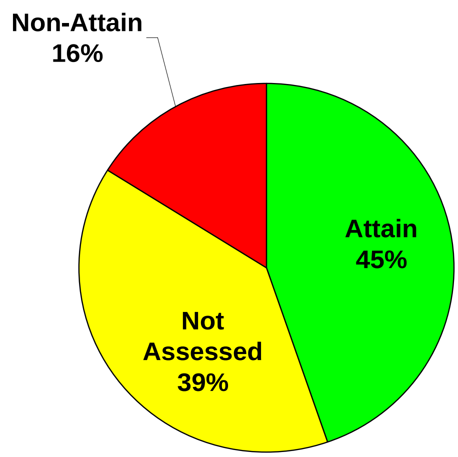


Figure 4.3-2: Primary Contact Recreation Use (Tidal and Nontidal Waters) – Spatial Extent



Primary Contact Recreation In Lakes:
Of New Jersey's 468 lakes, 209 (45%) attain the use, 76 (16%) do not attain the use and 183 (39%) were not assessed (see Table 4.3-1, on the preceding page and Figure 4.3-3, below). Of the 76 lakes in non-attainment for primary contact recreation, the Department has scheduled 58 for TMDL development within the next two years.

Figure 4.3-3: Primary Contact Recreation Use in Lakes



Secondary Contact Recreation - Rivers and Coastal Waters:
All of New Jersey's 970 subwatersheds are designated for secondary contact recreation. However, the Department has not established surface water quality criteria to evaluate use attainment in FW2 waters. The assessment was based on the secondary contact criteria established for SE2 waters. Using this criteria, 277 (23%) subwatersheds attained the use, 57 (6%) did not attain the use, and 686 (71%) were not assessed for secondary contact recreation (see Table 4-3.1 on the preceding page and Figures 4.3-5 and 4.3.6, on the following page).

Figure 4.3-4: Secondary Contact Recreational Use Statewide (Rivers and Coastal Waters) – Percentage

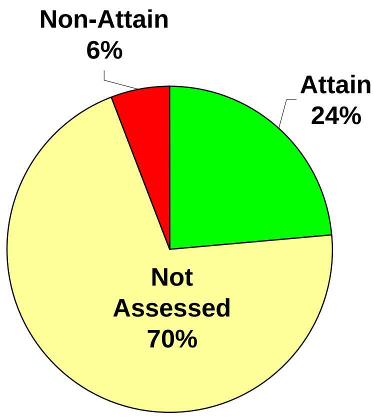
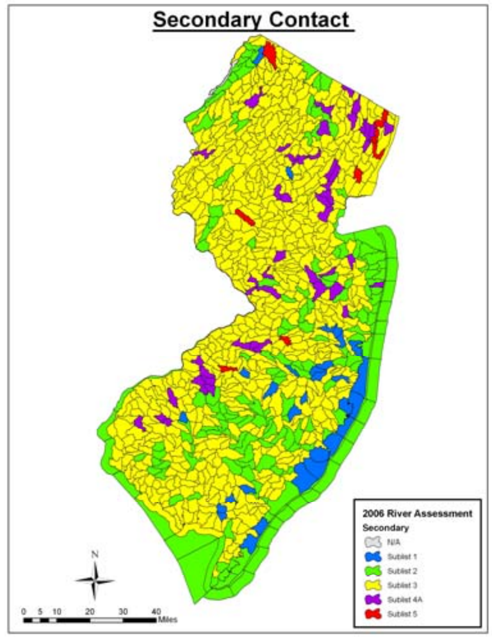


Figure 4.3-5: Secondary Contact Recreational Use Statewide (Rivers and Coastal Waters) – Spatial Extent



Secondary Contact Recreation - Lakes

There is insufficient data (five samples within 30 days) for lakes to develop the geometric mean necessary to evaluate the surface water quality standards for secondary contact recreation. The Department assumes that any lakes meeting the more restrictive primary contact recreational use also meet the less restrictive secondary contact recreational use. Therefore, 45% of the lakes assessed attained secondary contact recreation.

<u>Parameters Causing Non-Attainment:</u>

The sanitary fitness of waterbodies for recreational use (primary and secondary) was assessed with a suite of bacterial indicators. In the recent past, fecal coliform bacteria was the principal indicator of sanitary quality for recreational use. The sanitary indicator for recreation has been recently replaced in many cases by *Escherichia coli* (E. coli) in freshwaters and *Enterococci* in coastal waters (see Appendix G: Methods Document, section 4.2 for details regarding assessment of the recreational use).

<u>Sources Of Parameters Causing Non-Attainment</u>

Sources of pathogens to freshwaters are generally nonpoint in nature and include stormwater runoff from urban and suburban surfaces, Canadian geese and other wildlife, failing septic systems, livestock holding areas and pet waste (conducted through stormwater conveyances). Illicit cross connections between sanitary and storm sewer lines and interconnections caused by leaking sanitary sewer lines and failing septic systems within, or in close proximity to, stormwater lines may also contribute pathogens to receiving waters (see Chapter 5, Section 5.5 for more information on nonpoint sources of pollution). Combined sewer overflows (CSOs) are wet weather pathogen sources, predominantly located in the New York/New Jersey Harbor and the Delaware River Estuary Complexes (see Chapter 5, Section 5.4 for more information on CSOs).

Sources of pathogens found in coastal bathing and shellfish waters include many of the same sources that plague freshwater systems. These include stormwater inputs; wildlife, including waterfowl and sea gulls; illicit cross-connections between sanitary and storm sewer lines, leaking sanitary sewer lines and CSOs.

Table 4.3-2 summarizes sources identified as potentially impacting recreational uses through the use of Geographic Information Systems (GIS) computer technology. See "Identifying Sources of Impairment" under Section 4.1 of this Chapter for a detailed explanation of assessment procedure. Based on this methodology**,** urban runoff and agriculture were associated with the largest number of assessment units not attaining recreational uses. Note that although CSOs are associated with a limited number of impaired subwatersheds, they are source of pathogens that need to be addressed on a regional basis.

Table 4.3-2: Potential sources of parameters Causing Non-Attainment Of Primary And Secondary Recreational Uses (excluding lakes)

Designated Use	Sources	Number of Subwatersheds	Stream Miles
Primary Contact Recreation	Combined Sewer Overflow	6	97
	Agriculture	37	764
	Urban Runoff	44	862
Secondary Contact Recreation	Combined Sewer Overflow	3	36
	Agriculture	5	125
	Urban Runoff	8	172

<u>Actions Taken</u>
Of the 371 assessment units that do not attain primary contact recreation, 318 were placed on Sublist 4 rather than Sublist 5 of the Integrated List because the Department has already developed and adopted a fecal coliform TMDL for these subwatersheds.

<u>Actions Planned</u>
A total of 90 pathogen TMDLs are planned by the Department to be completed within the next 2 years. Of these, the majority (59) is for lakes and focus on bathing beaches. The remaining 31 TMDLs are for stream and river segments.

Aesthetic Recreational Use Of Lakes:

Many of New Jersey's lakes are shallow stream impoundments constructed for such purposes as real estate enhancement, flood, and sediment control. Such lakes are highly prone to eutrophication. Eutrophication occurs naturally as lakes age; however, this process can be accelerated with excessive input of nutrients and suspended sediments from the surrounding watershed. Eutrophic lakes are characterized by excessive growth of aquatic weeds and algae; shallow depths, as sediments fill the lake; elevated temperatures; and low dissolved oxygen. The excessive growth of algae, be it planktonic or rooted, often creates aesthetically unpleasant conditions for swimming and difficult conditions for boating.

Assessment Methods

In the 1980's and early 1990's, the Department addressed lakes under the USEPA Clean Lakes Program. This program provided funds for assessing and implementing source controls causing impairment of publicly owned lakes. Issues centered around nuisance algal growth impairing swimming and, in some cases, boating. Lakes that received funding under this program were listed on earlier Section 303(d) Lists for recreational use impairment due to the consequences of eutrophication. Additional details regarding the methods used to assess the aesthetic recreational use of lakes are provided in Appendix G: Methods Document, 4.2.2.

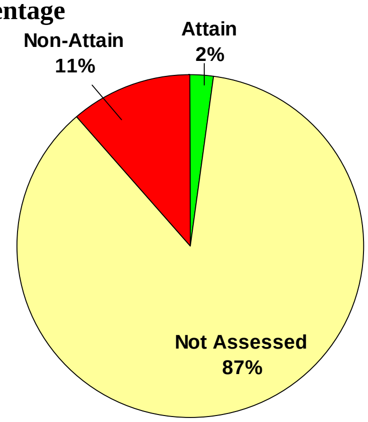
Assessment Results

Currently there are 468 lakes assessed for one or more designated uses in New Jersey. Of these 63 (13%) lakes were assessed for aesthetic recreational use of which 16% attained the use and 84% did not. Results of the aesthetic recreational use assessment for lakes are summarized in Table 4.3-3 and Figure 4.3-5 on the following page. When taken from the perspective of the universe of 468 lakes; ten lakes (2%) attained the use, 53 (11 %) lakes did not attain the use, and 405 (87%) lakes were not assessed.

Table 4.3-3: Assessment Results for Aesthetic Recreational Use Of Lakes

	# of Lakes Assessed	% of Lakes Assessed	% of All Lakes
Attain	10	16%	2%
Non-Attain	53	**84%**	11%
Not Assessed	405		**87%**
Total Assessed	63		17%
Total # Lakes	468		

Figure 4.3-6: Assessment Results for Aesthetic Recreational Use of Lakes – Percentage



Parameters Causing Non-Attainment And Sources Of Impairment

As stated earlier, much of the Department's information regarding lake eutrophication initially came from the Clean Lakes Program. Recently, source assessments have been performed by the Division of Watershed Management as part of a series of lake TMDLs. These assessments have indicated that stormwater runoff from urban, suburban and agricultural nonpoint sources are the principal sources of pollution and causes of impairment in New Jersey lakes. Wildlife, especially waterfowl such as Canada geese, can contribute nutrients (and pathogens) either directly or indirectly via stormwater flows to lakes. The relative importance of each source of pollution varies with the lake assessed. These TMDLs indicate that point sources do not contribute overall pollutant loading in the lakes assessed.

Conversely, for lakes with significant retention times, a pollutant like total phosphorus can constitute a significant portion of the overall loading to a lake and thus be identified as a cause of impairment. In Swartwood Lake, the internal loading (phosphorus contained with the lake sediments and biota) comprised almost half the total annual phosphorus budget (amount of phosphorus entering and exiting the lake). In contrast, lakes in the Cooper River Watershed, such as Cooper River Lake and Evans Pond, have brief retention times, which render these internal sources relatively insignificant (M. Gorska, Division of Watershed Management; personal communication).

Actions Taken

The Clean Lakes Program was used to assess aesthetic quality of public lakes. This program was in operation between 1977 and 1992 and was designed by USEPA to facilitate identification and remediation of eutrophic public lakes. Many of the impairments brought to the Department's attention through the Clean Lakes Program centered around nuisance algal growth impairing swimming and in some cases boating. For many of the lakes placed on prior Sublist 5 or 303(d) Lists, there was no corresponding water quality data indicating an exceedance of a SWQS. The Department is in the process of reevaluating its lake assessment methodology, especially from the perspective of assessing the impacts of excessive eutrophication on the aesthetic recreational use of lakes. In the meantime, these lakes will continue to be listed as impaired waterbodies on the Integrated List.

As stated above, pollutants (specifically total phosphorus) have been identified as the cause of impairment for larger, deeper lakes. Phosphorus TMDLs have been developed by the Department for a total of 42 eutrophic lakes.

Actions Planned

Although there are no nutrient TMDLs scheduled for development within the next two years, the Department is preparing detailed lake characterization and assessments where TMDLs have been completed, to facilitate TMDL implementation. Any remaining eutrophic lakes will be addressed by the TMDL program within a time frame acceptable to USEPA.

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4.4. Drinking Water Supply Designated Use

Water that is supporting the drinking water use is safe to ingest after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection. All FW2 and PL waters in New Jersey are classified for potable water supply use, representing 733 HUC-14 subwatersheds as the assessment units.

Assessment methods

The core parameters used to assess this use are nitrate, total dissolved solids (TDS), chloride, and a suite of heavy metals and other toxic substances. In addition to these constituents, the Department also uses monitoring data from finished water supplies to determine compliance with the federal Safe Drinking Water Act (U.S.C. s/s 300f *et seq*) and any data delineating source water restrictions if and when available (see Appendix G: Methods Document, section 4.5 for further details).

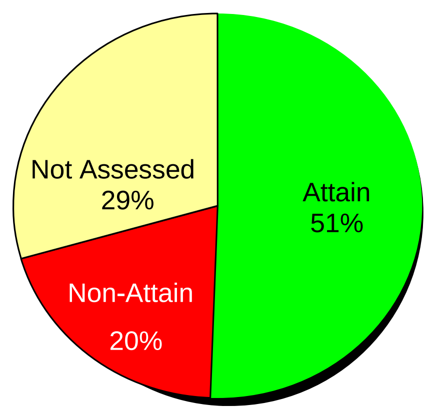
Assessment Results

Results are summarized in Table 4.4-1 and Figure 4.4-1. Of the universe of 733 HUC-14 subwatersheds to which the drinking water supply use applies, 370 (51%) attained the use, 147 (20%) did not attain the use, and 216 (29%) were not assessed. Of the 517 (71%) subwatersheds assessed for drinking water supply, 72% attained the use and 28% did not.

Table 4.4-1: Assessment Results For Drinking Water Supply Use (Excluding Lakes)

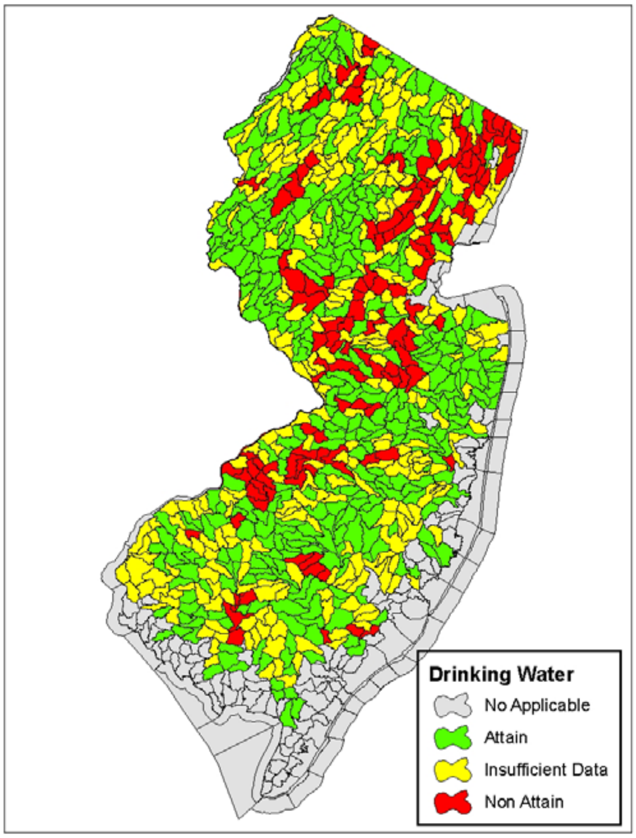
	# of HUCs	% of HUCs Assessed	% of Total HUCs
Attain	370	**72%**	51%
Non-Attain	147	28%	20%
Not Assessed	216		29%
Total Assessed	517		**71%**
Total # HUCs	733		

Table 4.4-1: Assessment Results For Drinking Water Supply Use (Excluding Lakes)



Spatial representation of drinking water supply use attainment is presented in Figure 4.4-2 on the following page. With some exceptions, regions of non-attainment are mostly located in the Piedmont and portions of the Inner Coastal Plain physiographic provinces.

Figure 4.4-2: Drinking Water Supply Use Status Statewide



<u>Parameters Causing Non-Attainment</u>
Within the 147 HUC-14 subwatersheds not attaining the drinking water supply use, the leading pollutants identified as causing non-attainment include arsenic, mercury, lead, total dissolved solids (TDS) and nitrate. The significance of each is as follows:

- One hundred-seventeen of 163 assessed subwatersheds showed exceedances of arsenic.
- Seventy-six of 95 assessed subwatersheds showed exceedances for mercury. Note that current exceedances for water column mercury are all for human health; however, the 76 impaired subwatersheds includes an undetermined number of mercury impairments that were "carried over" from earlier 303(d) lists that may have been listed for reasons other than an exceedance of human health criteria.
- Fifty-seven of 168 assessed subwatersheds had exceedances of the human health criterion for lead.
- Twenty of 425 assessed subwatersheds had exceedances of the TDS criterion.
- Only six of 471 assessed subwatersheds showed exceedances for nitrate.

There were few or no exceedances of surface water quality criteria for other constituents that have the potential to influence water potability. It should be noted that, in some subwatersheds, non-attainment might be due to one or more of these pollutants. In addition, certain subwatersheds were assessed for some but not all drinking water pollutants.

Arsenic

To date, two community water systems have incurred violations for exceeding the new minimum contaminant level (MCL) of five parts per billion (ppb) of arsenic. There are a total of 606 community water systems in New Jersey. Compliance with the arsenic MCL is based upon the average of four quarters of sampling, and the Department estimates that an additional five community water systems will incur an MCL violation at the conclusion of required sampling. Within one year of the date of the MCL violation, the water purveyors must take whatever actions are necessary to meet the MCL, which could include treatment, installing a new well, etc. Figures and maps depicting the percentages and the spatial extent of arsenic exceedances statewide are provided on the following page (see Figures 4.4-3 and 4.4-4).

Figure 4.4-3: Arsenic Statewide (Rivers) -Percentages

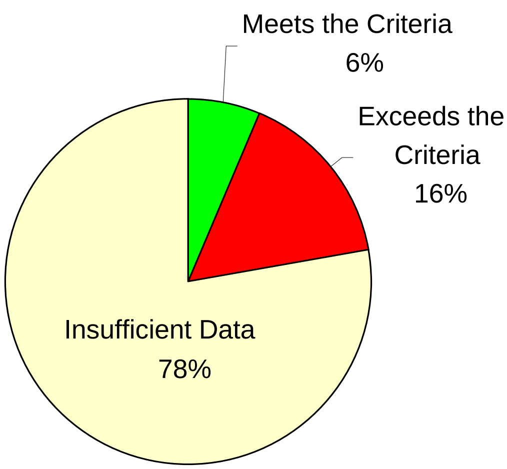
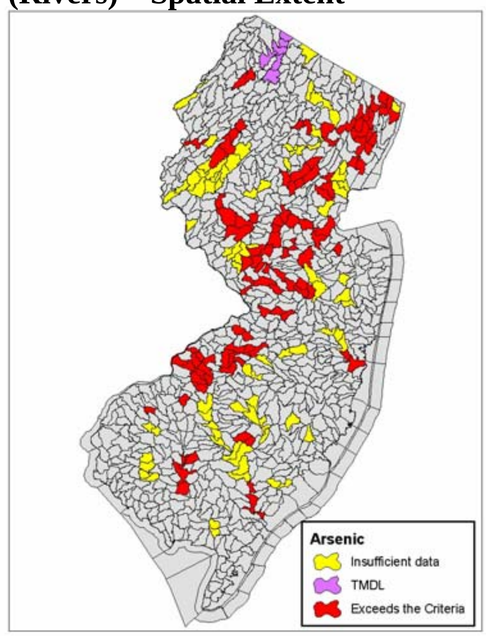


Figure 4.4-4: Arsenic Statewide (Rivers) – Spatial Extent



Nitrate

Even though the number of exceedances of the surface water quality criterion for nitrate was low, nitrate in drinking water is still a concern, as it is associated with causing "blue baby syndrome," a potentially fatal condition that occurs when an infant's blood cannot transport sufficient oxygen. Figures and maps depicting the percentages and the spatial extent of nitrate exceedances statewide are provided on the following page (see Figures 4.4-5 and 4.4-6 on the following page).

Figure 4.4-6: Nitrate Statewide (Rivers) -Percentages

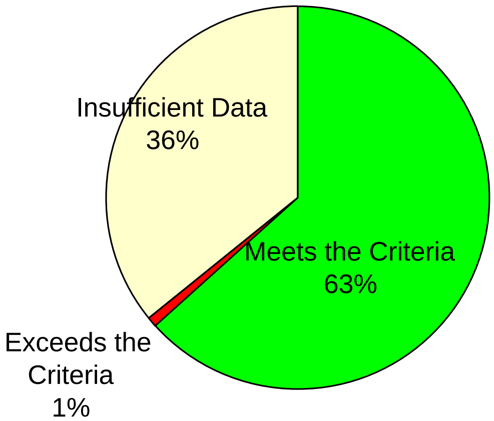
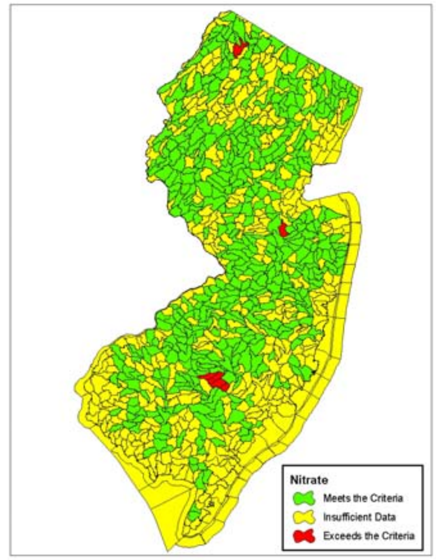


Figure 4.4-5: Nitrate Statewide (Rivers) – Spatial Extent



Assessment units with exceedances for thallium, nickel, and zinc were also minimal with one, eight, and ten subwatersheds, respectively, showing exceedances of the applicable criteria. There were no exceedances of the surface water quality standards for chloride in any of the 374 subwatersheds assessed. Other relevant pollutants are not visually represented due to reasons identified under "Assessment Methods".

<u>Sources of Parameters Causing Non-Attainment</u>
Table 4.4-2 below summarizes sources identified as potentially causing non-attainment of the drinking water supply use. These sources were identified using Geographic Information Systems (GIS) computer technology (see "Identifying Sources of Impairment" under Section 4.1 of this Chapter for a detailed explanation of the assessment procedure). Based on this methodology, urban runoff was associated with the largest number of subwatersheds not attaining the drinking water supply use. Natural sources (which refers only to sources of arsenic) and agriculture represent the next most predominant potential sources of parameters causing non-attainment.

Table 4.4-2: Potential Sources of Parameters Causing Non-Attainment of the Drinking Water Supply Use

Sources	**Number of Assessment Units**	**HUC-14 Subwatersheds**
Municipal Point Source	26	423
Agriculture	106	1,777
Urban Runoff	124	2,009
Natural Sources*****	114	1,625

***** Natural sources refers only to sources of arsenic

Actions Taken To Date

TMDLs have been developed for arsenic in eight stream segments in the Wallkill River Watershed. In addition, the Department has initiated a broad effort to reduce environmental mercury from atmospheric sources based upon recommendations from the Mercury Task Force. See Chapter 5, Section 5.8 for details regarding the State's mercury reduction activities. The Department also issued a new rule in September 2006 to reduce the levels of mercury discharged to publicly owned treatment works (POTWs). The proposed rule is intended to reduce mercury discharge from dental facilities that can contribute as much as 35 to 45 percent of the mercury entering POTWs. See Chapter 5, Section 5.4 "Water Pollution Control Programs", as well as "Actions Taken" under Section 4.6 "Fish Consumption Use", for additional information regarding current mercury management.

Actions Planned

Although the Department has extensive data on conventional pollutants in rivers and streams, drinking water supply use attainment is also affected by metals, for which there are limited data in state waters. The Department also has little data with which to characterize drinking water reservoirs in the State. To address the metals data gap, the Department has added 100 new metals monitoring sites to its surface water monitoring network. While sampling at these new sites commenced in 2005, data from these sites were not used in this Report as the reporting period ended in April 2004. The 2005 results and subsequent data will be used for assessments published in the 2008 Integrated Report. In addition, metals are monitored historically by a network-operated cooperatively by the USGS and the Department. Forty new sites are randomly selected every 2 years so, as time progresses, an ever-greater number of locations will have been assessed for metals throughout the State.

For the 2008 Integrated Report, the Department will also be tabulating water quality monitoring information based on assessment units and surface water quality criteria, which will generate more comprehensive assessments for the drinking water supply use.

Regarding reservoir data, drinking water systems in the State that maintain raw water reservoirs are not required to report on the quality of their reservoir water to the Department. The Department feels that there may be useful data collected by these water systems. The Department, at times, obtains this data as part of a specific treatment plant construction approval process. The Department will continue to look into ways to expand the drinking water supply assessment.

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4.5 Industrial and Agricultural Water Supply Uses

Industrial Water Supply Use refers to water used for processing or cooling and applies to all FW2 waters (567 HUC-14 subwatersheds). Agricultural Water Supply Use refers to water used for field crops, livestock, horticulture, and silviculture, and applies to all FW2 and PL waters (733 HUC-14 subwatersheds).

Assessment Methods

The core indicators for assessing **industrial water supply use** are total suspended solids (TSS) and pH. (See Appendix G: Methods Document, section 4.6 for further details regarding assessment of the industrial use.) The core indicators for assessing **agricultural water supply use** are total dissolved solids (TDS) and salinity. However, since salinity data were not available, assessment of the agricultural use was based solely upon TDS for the 2006 Integrated List.

Since the criteria used to assess the drinking water supply use are more protective, subwatersheds attaining the drinking water use are automatically assessed as attaining industrial and agricultural uses as well. If a subwatershed is not attaining the drinking water use, it is then assessed for the industrial use based on TSS and pH, and for the agricultural use based on TDS. (See Appendix G: Methods Document, section 4.6 for further details regarding assessment of the agricultural use.)

Assessment Results

Results are summarized in Table 4.5-1 below and in Figures 4.5-1 (agricultural use) and 4.5-3 (industrial use) on the following page. Of the 733 subwatersheds to which the **agricultural water supply use** applies, 449 (61%) attained the use, 15 (2%) did not attain the use, and 269 (37%) were not assessed. Results for **industrial water supply use** were similar. Out of 567 subwatersheds to which the industrial use applies, 366 (64%) attained the use, 26 (5%) did not attain the use, and 175 (31%) were not assessed.

Table 4.5-1: Assessment Results For Agricultural And Industrial Water Supply Uses

Number of HUC-14 Subwatersheds				
Designated Use	**Use Applies**	**Attain**	**Non-Attain**	**Not Assessed**
Agriculture	733	449 (61%)	15 (2%)	269 (37%)
Industrial	567	366 (64%)	26 (5%)	175 (31%)

Spatially, attainment of both agricultural and industrial water supply uses had similar profiles, with a small number of non-attaining subwatersheds limited to the northeast portion of the State for the agricultural use (Figure 4.5-2) and expanding slightly into the central portion of the state for non-attainment of the industrial use (Figure 4.5-4).

Figure 4.5-1: Agricultural Water Supply Use Statewide - Percentage

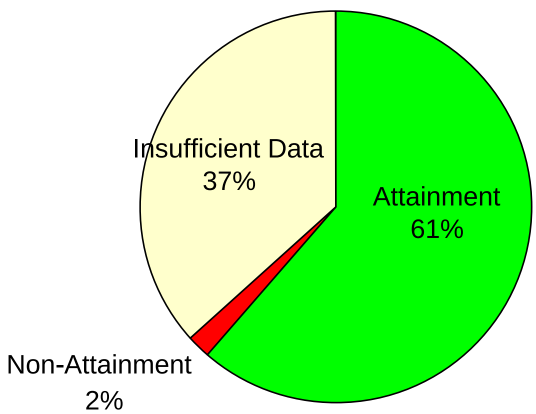


Figure 4.5-2: Agricultural Water Supply Use Statewide – Spatial Extent

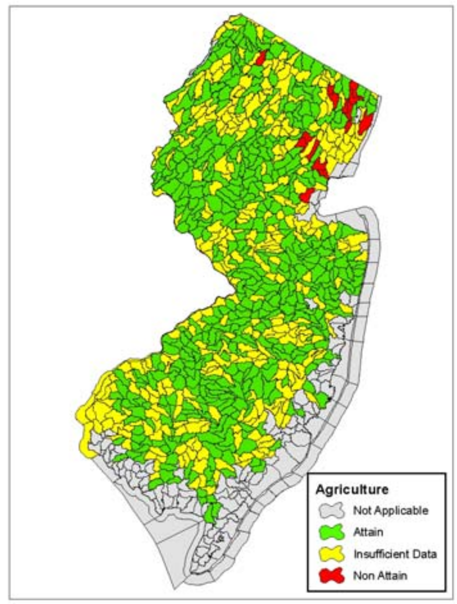


Figure 4.5-3: Industrial Use Water Supply Use Statewide - Percentage

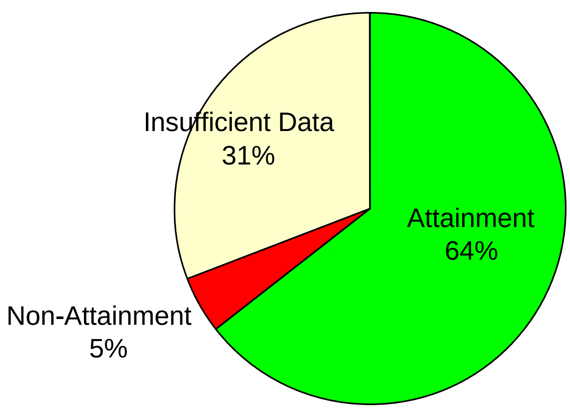
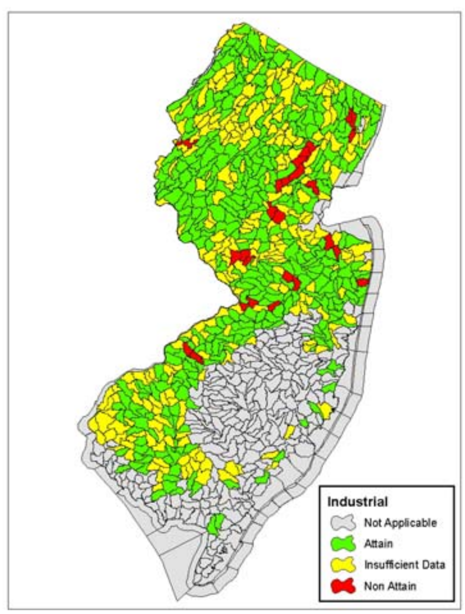


Figure 4.5-4: Industrial Water Supply Use Statewide – Spatial Extent



Parameters Causing Non-Attainment

Exceedances of the applicable surface water quality criteria for TDS were responsible for subwatersheds not attaining the agricultural use. Exceedances of the applicable surface water quality criteria for pH and TSS were relatively equal causes of industrial use non-attainment.

Sources Of Parameters Causing Non-Attainment

Table 4.5-2 below summarizes sources identified as potentially causing non-attainment of the agricultural and industrial water supply uses within impaired subwatersheds. These sources were identified using Geographic Information Systems (GIS) computer technology (see "Identifying Sources of Impairment" under Section 4.1 of this Chapter for a detailed explanation of the assessment procedure). Based on this methodology, urban runoff and agricultural sources were associated with the largest number of subwatersheds not attaining both agricultural and industrial water supply uses. Municipal point sources were a much less predominant potential source of parameters causing non-attainment.

Table 4.5-2: Potential Sources of Parameters Causing Non-Attainment Of Agricultural and Industrial Water Supply Uses

Agricultural Water Supply Use		
Sources	**Number of Waterbodies**	**Stream Miles**
Agriculture	10	157
Urban Runoff	15	202
Industrial Water Supply Use		
Sources	**Number of Waterbodies**	**Stream Miles**
Municipal Point Source	8	116
Agriculture	26	396
Urban Runoff	26	410

Actions Taken To Date

None

Actions Planned

A total of 13 TMDLs for TSS are scheduled in the Manasquan River Watershed (WMA 12), the Stony Brook and Millstone River Watersheds in WMA 10, and the Raritan River, Green Brook, and Weamaconk Creek Watersheds in WMA 9.

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4.6 Fish Consumption Use

The fish consumption use refers to fish whose tissues do not contain excessive levels of toxic contamination and are therefore safe for human consumption. While this use is not expressly identified in the New Jersey Surface Water Quality Standards, "fishable" waters is a goal of the federal Clean Water Act; therefore, the Department assesses the fish consumption use as part of the Integrated Report. All New Jersey waters (freshwaters, coastal and lakes) are designated for the fish consumption use.

Assessment methods

Fish consumption use assessments are based on the presence of fish consumption advisories or bans. The data collection, risk assessment, and issuance of fish consumption advisories and bans are overseen by the New Jersey Interagency Toxics in Biota Committee (ITBC). Edible portions of individual animals are tested for one or more bioaccumulative chemicals (e.g., PCBs, chlorinated pesticides, dioxins, and mercury). These data are evaluated to determine if levels of such chemicals in harvested animals pose a threat to human health and, if so, consumption advisories and bans are issued to protect human health. See Appendix G: Methods Document, section 4.3 for details regarding the assessment methodology for the fish consumption use. It should be noted that using fish tissue advisories as indicators of local water quality is problematic. Many fish species are extremely mobile, which makes associations between a contaminated fish and the actual location of contamination within the fish's environment tenuous. This fact is especially true for coastal migratory fish such as striped bass and blue fish.

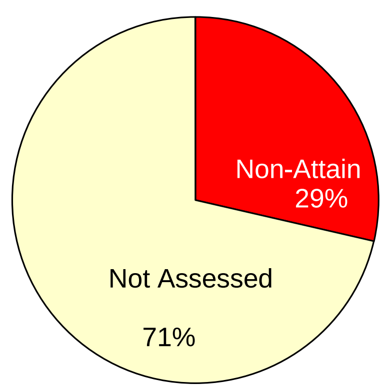
Assessment Results

Assessment results are summarized in Table 4.6-1. While less than 30% of all subwatersheds have been assessed for fish consumption, wherever an assessment was conducted, levels of contaminants found in fish tissue were high enough to warrant issuance of a consumption advisory or ban. Therefore, none of the subwatersheds assessed attain the fish consumption use, as depicted in Figure 4.6-1 below.

Table 4.6-1: Assessment Results For Fish Consumption Use (Rivers and Coastal Waters)

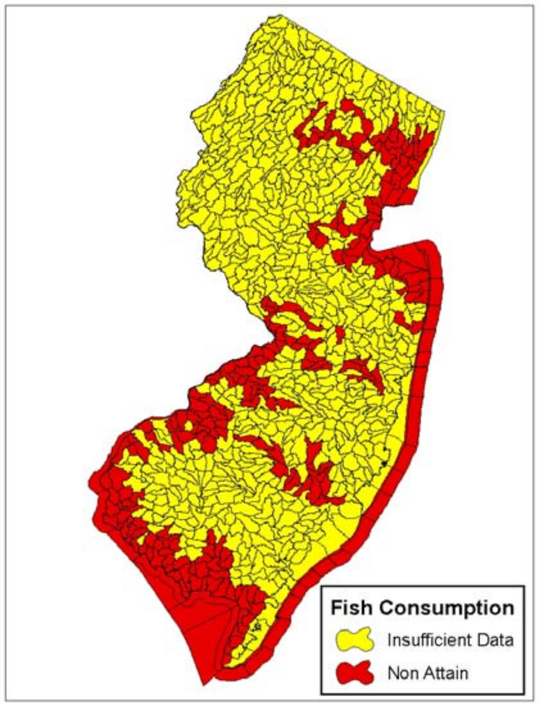
Number of Assessment Units			
Use Applies	**Attain**	**Non-Attain**	**Not Assessed**
970	0	278 (29%)	692 (71%)

Figure 4.6-1: Assessment Results For Fish Consumption Use (Rivers and Coastal Waters)



The spatial extent of the fish consumption use assessment, as it is applied to rivers and coastal waters, is depicted in Figure 4.7-3. Of the 78 lakes assessed, all were "non-attain", mostly due to mercury. The Department is currently unable to display a map of the impaired lakes, as this requires an extensive GIS coverage of "named lakes" that the Department does not have. The Department will be developing such a coverage beginning in early 2007 to use for the 2008 Integrated Report.

Figure 4.7-3: Fish Consumption Use Attainment Status Statewide (Rivers and Coastal Waters)



Parameters Causing Non-Attainment

Non-attainment of the fish consumption use in rivers and coastal waters is principally due to PCB and mercury contamination of fish tissue, resulting in the issuance of fish consumption advisories or bans. PCBs are responsible for the greatest number of advisories; followed by mercury and DDX (DDX includes DDT and its metabolites DDD, and DDE). Of lesser frequency were advisories resulting from dioxin (an industrial byproduct), chlordane (a pesticide), and Dieldrin, an insecticide (see Table 4.6-2 on the following page). Fish advisories for lakes are largely due to mercury (69 lakes) in largemouth bass and chain pickerel; however, other species such as yellow perch, small mouth bass, and bullheads were also frequently identified. PCBs were also indicated in 11 lakes. Fish advisories for rivers were issued based on excessive levels of mercury, PCBs, and DDX in the same species as in lakes, and also in American eels. In coastal waters, fish advisories were mostly issued based on excessive levels of mercury in striped bass and bluefish. Details regarding fish advisories can be obtained at: www.FishSmartEatSmartNJ.org or http://www.state.nj.us/dep/dsr/njmainfish.htm.

Table 4.6-2: Number Of Assessment Units In Non-Attainment Due To Each Fish Tissue Contaminant

Parameter	**PCBs**	**Mercury**	**DDX**	**Dioxin**	**Chlordane**	**Dieldren**
Number of Subwatersheds	245	149	108	89	48	7

Note that this table is formatted differently than similar tables in this Chapter because none of the assessed watersheds attain the use and impairment was often caused by more than one pollutant.

Wherever excessive levels of contaminants are found in fish tissue, a fish consumption advisory or ban is issued based on the contaminant posing the highest human health risk, based on USEPA's risk assessment methodology. There are often additional, lower risk contaminants present that are not named in the advisory but which would generate an advisory if found alone. These "lower risk" parameters are still identified on the Department's 303(d) List, since the Department's listing method requires that all contaminants that have the potential to generate advisories are listed as the cause of non-attainment of the fish consumption use. Thus, for a given waterbody, only one contaminant is identified in the published fish consumption advisory while numerous constituents may be identified for the same waterbody/subwatershed on the State's 303 (d) List.

Sources Of Parameters Causing Non-Attainment

Table 4.7-3 summarizes the potential sources of pollutants causing non-attainment of the fish consumption use. These potential sources were identified through the use of Geographic Information Systems (GIS) computer technology (see "Identifying Sources of Impairment" under Section 4.1 for a detailed explanation of this assessment procedure). Based on this methodology, atmospheric deposition and urban runoff were associated with the greatest number of subwatersheds not attaining the fish consumption use, followed by agriculture.

Table 4.7-3: Potential Sources Of Parameters Causing Non-Attainment Of The Fish Consumption Use

Sources	**Number of Subwatersheds**
Municipal Point Source	52
Industrial Point Source	2
Package Plants	28
Combined Sewer Overflow	23
Agriculture	173
Urban Runoff	223
Atmospheric Deposition	278

Mercury is a toxic metal commonly used in thermometers, electrical switches and many everyday household items. The largest anthropogenic sources of mercury contamination in fish are air emissions from steel and iron manufacturing, coal combustion, municipal waste incineration, and sludge incineration. Other sources include landfill leachate, religious and ceremonial uses of mercury, and land application of sludge.

Actions Taken To Date

For most species of fish and regions of the state, concentrations of PCBs and chlordanes have decreased markedly compared to evaluations made a decade ago. Changes in DDX are more equivocal, with some but not all groups showing decreases. The observed decreases could be due to environmental cleanups, pollution prevention programs, chemical degradation, or changes in the bioavailability of contaminants. Although environmental levels of some contaminants, such as PCBs, are declining, New Jersey has adopted a more restrictive and protective methodology for generating consumption advisories, resulting in more listings of impaired waters.

On December 19, 2005, the Department proposed amendments to the NJPDES rules at N.J.A.C. 7:14A that would require major facilities discharging to PCB-impaired waters to monitor their discharge for PCBs (see 37 N.J.R. 4723(a)). Based on the results of this monitoring, some facilities would be required to develop and implement a PCB Pollutant Minimization Plan (PMP). See Chapter 5, Section 5.4 “Discharge to Surface Water Permits” for additional information. In addition, USEPA developed a TMDL in cooperation with Delaware, Pennsylvania, and New Jersey to address impairment of the Delaware Estuary from elevated levels of PCBs in the tissue of fish caught in parts of the Delaware River from Trenton to the Delaware Bay. USEPA established the TMDL on behalf of the three states based on the work of the Delaware River Basin Commission (see Chapter 5, Section 5.12 “Regional Initiatives” for details). The Department has also initiated a broad effort to reduce environmental mercury from air deposition based on recommendations from the Mercury Task Force (see Chapter 5, Section 5.8) and from discharges to surface water from publicly owned treatment plants (POTWs). See Chapter 5, Section 5.4 “Water Pollution Control Programs" for additional details.

Towards the management of a broad suite of contaminants, including dioxins/furans, pesticides, PAHs, metals, and PCBs within the New York/New Jersey Harbor Estuary, the interstate Contamination Assessment and Reduction Project (CARP) is studying the fate and transport of contaminants discharged into the Harbor Estuary and will use this information to take necessary action to reduce the discharges of these contaminants. The primary objectives of CARP are to identify the sources, transport, and fate of the polluting organic chemicals discharged to the Harbor Estuary. CARP was created to address problems associated with the management of existing contaminated dredged material in the Harbor Estuary and to develop solutions to reduce this contamination in the future (see Chapter 5, Section 5.12).

Actions Planned

The Department has institutionalized and will continue to expand routine monitoring for mercury in fish tissue. The Department is also working with a USGS research analytical laboratory to detect mercury levels down to 0.04 parts per trillion. The Department has processed 33 samples at these levels and plans to expand the effort to assess environmental mercury levels at selected New Jersey locations in the near future.

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4.7 Shellfish Harvest Use

The shellfish harvest use refers to the harvest of mollusks (commonly known as clams, oysters, or mussels) that are safe for human consumption without further treatment such as depuration and seasonal restrictions. All waters of the State classified as SC and SE1 (170 HUC-14 subwatersheds) are designated for the shellfish harvest use. This classification system is separate and distinct from that used by the National Shellfish Sanitation Program (NSSP) to regulate harvesting of shellfish (see "Assessment Method" below for more details on the NSSP).

<u>Assessment Methods</u>
The Department monitors the sanitary quality of estuarine and ocean waters by observing measurements of coliform bacterial concentrations (indicators of the presence of pathogens) in the water column. Monitoring is focused on areas with the potential for a harvestable shellfish resource. In addition, shoreline surveys and hydrographic tracing are performed to identify pollution sources. The Department then classifies the waters in accordance with the National Shellfish Sanitation Program (NSSP) requirements (NOAA 1997). These requirements regulate the harvesting of shellfish by applying specific classifications to bay, estuarine, and ocean waters. Waters are classified as unrestricted harvest, special restricted, seasonal or prohibited. Prohibited, special restricted, and seasonal areas are further separated into waters where shellfish harvest is prohibited due to poor water quality or administrative closures based on land use, resource availability or sanitary surveys. Definitions of these classifications may be obtained at http://www.state.nj.us/dep/wmm/bmw/info01.htm. The official adopted Shellfish Classification maps (available on the Department's Web site at http://www.state.nj.us/dep/wmm/bmw/waterclass.htm) should be referenced for determining exact locations of the boundaries of these classified areas. The shellfish harvest use assessment methodology incorporates the results of the shellfish harvest classification process (see Appendix G: Methods Document, section 4.4 for more information).

HUC-14 subwatershed boundaries do not coincide with shellfish classification boundaries and, in many instances, one subwatershed may contain several shellfish use classifications. In most instances, the assessment results will reflect the worst-case shellfish classification found within the subwatershed. In the few instances where only a *de minimus* portion of the acreage within the subwatershed is restricted for harvest to any degree, the restricted area will be considered negligible and the assessment will be based on the status of the remainder of the subwatershed.

<u>Assessment Results</u>

Of the State's 970 HUC-14 subwatersheds, 170 subwatersheds contain waters designated for the shellfish harvest use. Of these, 121 subwatersheds attained the use, 47 did not attain the use, and two were not assessed (see Table 4.7-1 and Figure 4.7-1, below). Seventy-one percent of the 168 assessed subwatersheds are attaining the shellfish consumption use. Overall, attainment of the shellfish harvest use has increased since the 2002 Integrated Report. Areas assessed as attaining the use in the ocean and back bays increased from 86% to 92% and 73% to 76%, respectively. The status in the tidal rivers stayed the same. A spatial representation of the shellfish harvest use statewide is presented in Figure 4.7.2.

Table 4.7-1: Assessment Results For Shellfish Harvest Use

Number Of HUC-14 Subwatersheds			
Use Applies	**Attain**	**Non-Attain**	**Not Assessed**
170	121 (71%)	47 (28%)	2 (1%)

Figure 4.7-1: Assessment Results For Shellfish Harvest Use

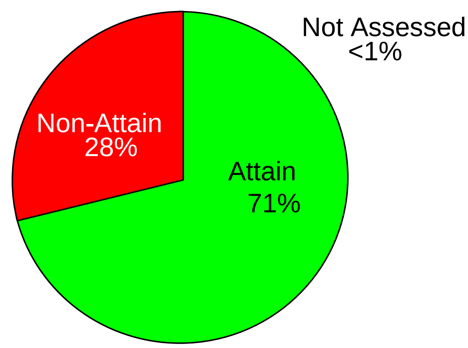
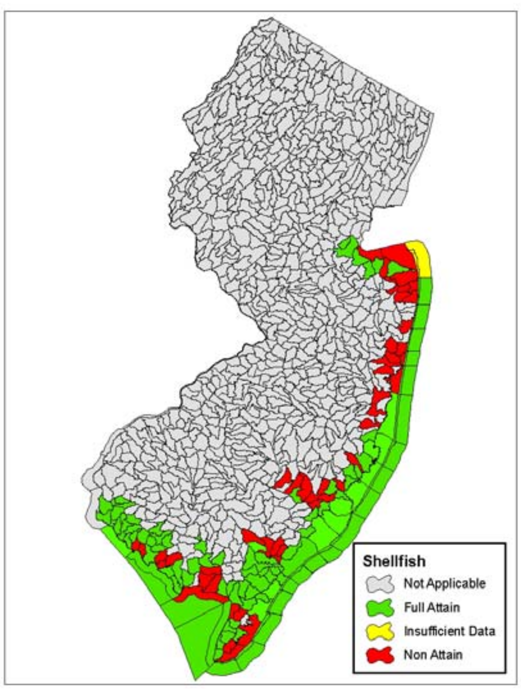
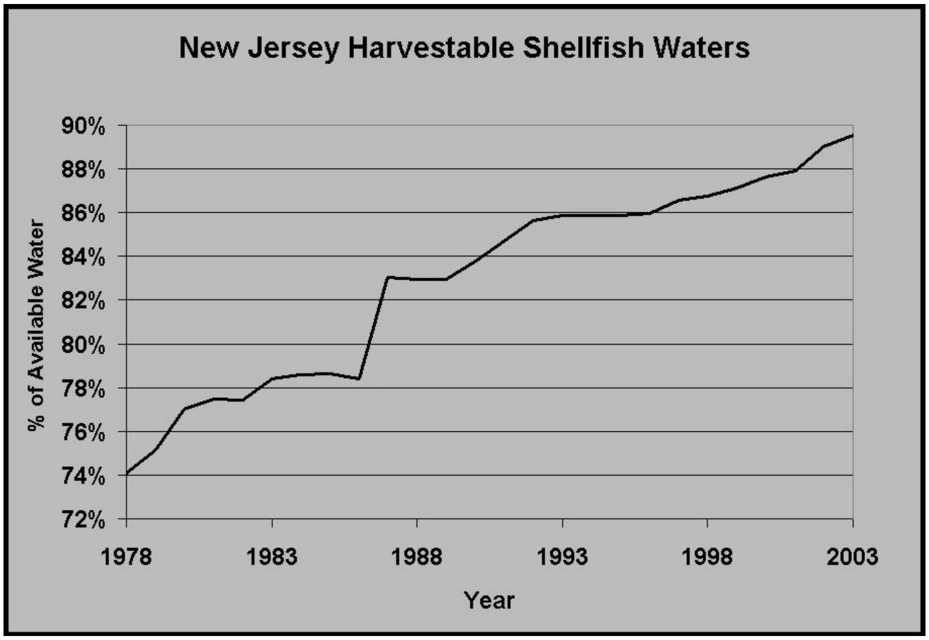


Figure 4.7-2: Shellfish Harvest Use Status Statewide For Coastal Waters And Tidal Rivers



The shellfish harvest use assessment identifies a greater area of New Jersey's waters as not attaining the shellfish harvest use then actual waters closed for shellfish harvesting. This is because areas opened for certain seasons or requiring depuration or relay are considered available for shellfish harvest but are considered impaired under USEPA's guidance for the Integrated Report. New Jersey has been a national leader in maintaining and enhancing waters available for shellfish harvest. The shellfish waters that support harvesting have increased from 74% in 1978 to 89% in 2003 (see Figure 4.7-3).

Figure 4.7-3: New Jersey Harvestable Shellfish Waters



<u>Parameters Causing Non-Attainment</u>
The parameters used to classify waters for shellfish harvest are fecal and total coliform bacterial concentrations.

<u>Sources Of Parameters Causing Non-Attainment</u>
Potential pathogen sources were identified as part of *The 1995 National Shellfish Register* (NOAA 1997) by the Department's Bureau of Marine Water Monitoring (BMWM), which supplied information to the National Oceanic and Atmospheric Administration (NOAA) about individual shellfish growing areas within state jurisdictional waters. The BMWM identified the presence of 12 different sources of pollution, including agricultural feedlots and marinas, grouped into three broader categories: point, nonpoint, and upstream sources. In estuarine waters, marinas, boating, urban runoff, and stormwater were identified as major contributing factors affecting shellfish. In addition, the potential pollutant sources identified through the TMDL process included marinas, failing septics/sewers, seagull/geese and other wildlife waste, pet waste, and agricultural runoff.

There has been a trend toward general improvement in water quality in the estuaries since domestic wastewater discharges were relocated to offshore areas. In addition, many previously unsewered areas have become sewered. However, there remain a few isolated instances where inadequately treated domestic wastewater emanating from individual onsite septic systems adversely affects water quality.

Marinas have been identified as potentially affecting the suitability of shellfish growing areas. All confines of a marina are automatically classified as prohibited for shellfish harvesting. A buffer area may also be included in areas classified as prohibited to account for the size of the marina and the size of boats. This is a precautionary measure similar to the buffer around sewage outfalls (see explanation of "prohibited" under Assessment Methods, earlier in this Section, and at:
http://www.state.nj.us/dep/wmm/bmw/info01.htm).

Recreational activities may also have a seasonal impact on shellfish waters. In 1997, "No Discharge Zones" under the Clean Vessels Act were instituted in some areas, such as the Manasquan, Shark, Shrewsbury, and Navesink Rivers. The discharging of human waste from boats into the estuary/bays in these areas is prohibited. These requirements are expected to facilitate further improvements in water quality in these shellfish waters.

Actions Taken To Date
New Jersey has had a long history of improving the sanitary quality of its coastal waters. Each year, the Department updates the classification of New Jersey's coastal waters for shellfish harvesting based on analysis of extensive sampling (over 15,000 samples per year) and pollution source surveys. The classifications indicate sanitary coastal water quality.

The Department has established 46 TMDLs for pathogens in the coastal shellfish-impaired waters listed below. These impairments were spread throughout the eastern coastline of New Jersey, from Raritan Bay around Sandy Hook, down the Atlantic Ocean coast, and around Cape May to the Cohansey River in the Delaware Bay.

- Five TMDLs for Total Coliform to Address Shellfish-Impaired Waters in WMA 12, Atlantic Coastal Water Region
- Fourteen TMDLs for Total Coliform to Address Shellfish-Impaired Waters in WMA 13, Atlantic Coastal Water Region
- Six TMDLs for Total Coliform to Address Shellfish-Impaired Waters in WMA 14, Atlantic Coastal Water Region
- Six TMDLs for Total Coliform to Address Shellfish-Impaired Waters in WMA 15, Atlantic Coastal Water Region
- Eight TMDLs for Total Coliform to Address Shellfish-Impaired Waters in WMA 16, Atlantic Coastal Water Region
- Seven TMDLs for Total Coliform to Address Shellfish-Impaired Waters in WMA 17, Lower Delaware Water Region

The TMDL Reports are available on the Division of Watershed Management's Web site at: http://www.state.nj.us/dep/watershedmgt

Actions Planned

The Bureau of Marine Water Monitoring plans to perform stormwater monitoring studies to identify and track down pollution sources affecting the State's coastal waters. The Bureau will continue to use analytical methods such as coliphage and Multiple Antibiotic Resistance (MAR) and will investigate new procedures including Optical Brighteners and qPCR. This strategy will aid in identifying, prioritizing, and remediating pollution sources in the State's shellfish growing waters. Information regarding these new technologies is available at the following Web sites:

- For information on MAR go to http://www.springerlink.com/content/p5p4413ku0082707/.
- For optical brighteners go to http://notes.tetratech-ffx.com/newsnotes.nsf/0/e97b45f666caa0a4852569cb00664a1f?OpenDocument, and: http://www.novaregion.org/obm.htm.
- For information on qPCR go to http://www.epa.gov/futureofscience/respond/beachmonitoring.html.

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4.8 Integrated Assessment and Listing Process

2006 Integrated List of Waterbodies:

Development of the Integrated List
Once the assessments for all the designated uses are completed, the Department develops the Integrated List of Waterbodies. The USEPA Guidance for developing Integrated Reports (USEPA 2005) recommends placing the assessment results into one of five specific categories or sublists. An overview of the process for development of the Integrated List is provided in Chapter 3, Section 3.1 of this report while a detailed description of the listing process is included in sections 1 and 7 of the 2006 Integrated Water Quality Monitoring and Assessment Methods Document (Appendix G).

The Integrated List is divided into two parts: Part 1 (Appendix A-1) includes all the river and coastal assessment units; Part 2 (Appendix A-2) includes all assessed lake assessment units. The Department anticipates incorporating many of the smaller individual lakes included in Part 2 into their respective HUC-14 subwatersheds for assessment purposes in the 2008 Integrated List. Only the larger lakes will be assessed individually, thus reducing the double counting of impairments on the 303(d) List (Appendix B).

When assessing each designated use, the Department determines whether the use is met ("attain"), there is insufficient data to assess the use ("not assessed"), or the use is impaired ("non-attain"). Where the use is attained, the assessment unit may be placed on Sublist 1 or 2, depending on the status of other designated uses. The assessment unit will be placed on Sublist 2 unless all other designated uses applicable to that unit are assessed and in attainment (with the exception of fish consumption), in which case the assessment unit will be placed on Sublist 1. Assessment units with insufficient data to assess attainment of a designated use will be placed in Sublist 3 for that use. Assessment units that are not attaining one or more designated uses may be placed on Sublist 4 or 5. When a designated use is not attained *and* actions have been taken to correct the impairment, the assessment unit will be placed on Sublist 4 for that designated use. In contrast, where a designated use is not attained and a TMDL is required to be developed, the assessment unit will be placed on Sublist 5 and listed by the pollutant causing non-attainment/impairment. Table 4.8-1 summarizes the decision-making process used for applying the results of the designated use assessments to the Integrated List. Sections 4.2 through 4.6 of this Chapter summarize the results of the individual designated use assessments, including tables, graphs, and maps.

Table 4.8-1: Process for Development of the Integrated List

Use Assessment Result	Integrated Assessment	Sublist
Full Attainment	All designated uses are assessed AND all uses are attained. (Based on USEPA guidance, Fish Consumption is not used for this determination.)	**Sublist 1**
Attain	The designated use is assessed and attained BUT one or more designated uses in the assessment unit are not attained and/or there is insufficient information to make a determination.	**Sublist 2**
Insufficient Data	Insufficient data is available to determine if the use is attained	**Sublist 3**
Non-Attain	The designated use is not attained or is threatened; however, development of a TMDL is not required because a TMDL has been developed for the pollutant causing non-attainment.	**Sublist 4A**
Non-Attain	The designated use is not attained or is threatened; however, development of a TMDL is not required because other enforceable pollution control requirements are reasonably expected to result in conformance with the applicable water quality standard(s) in the near future and the designated use will be attained. Examples of such requirements include nonpoint source controls, lake restoration projects, NJPDES stormwater permits, and enforcement actions.	**Sublist 4B**
Non-Attain	The designated use is not attained or is threatened; however, development of a TMDL is not required because non-attainment is caused by something other than a pollutant (e.g. “pollution” such as overland flow of stormwater, stream flow alterations, and habitat degradation).	**Sublist 4C**
Non-Attain	The designated use is not attained or is threatened by a pollutant(s) and a TMDL is required.	**Sublist 5**

<u>Summary of Assessments (Rivers and Coastal Waters)</u>

The assessment units for Rivers and Coastal Waters are HUC 14 subwatersheds except for the Delaware River which is zoned. Although nine different designated uses (recreational use is comprised of two subcategories) were assessed, not all uses are applicable to all assessment units. An individual assessment unit may have between four and eight designated uses assessed depending on the classification of the streams associated with that assessment unit. The uses designated for the various stream classifications are as follows:

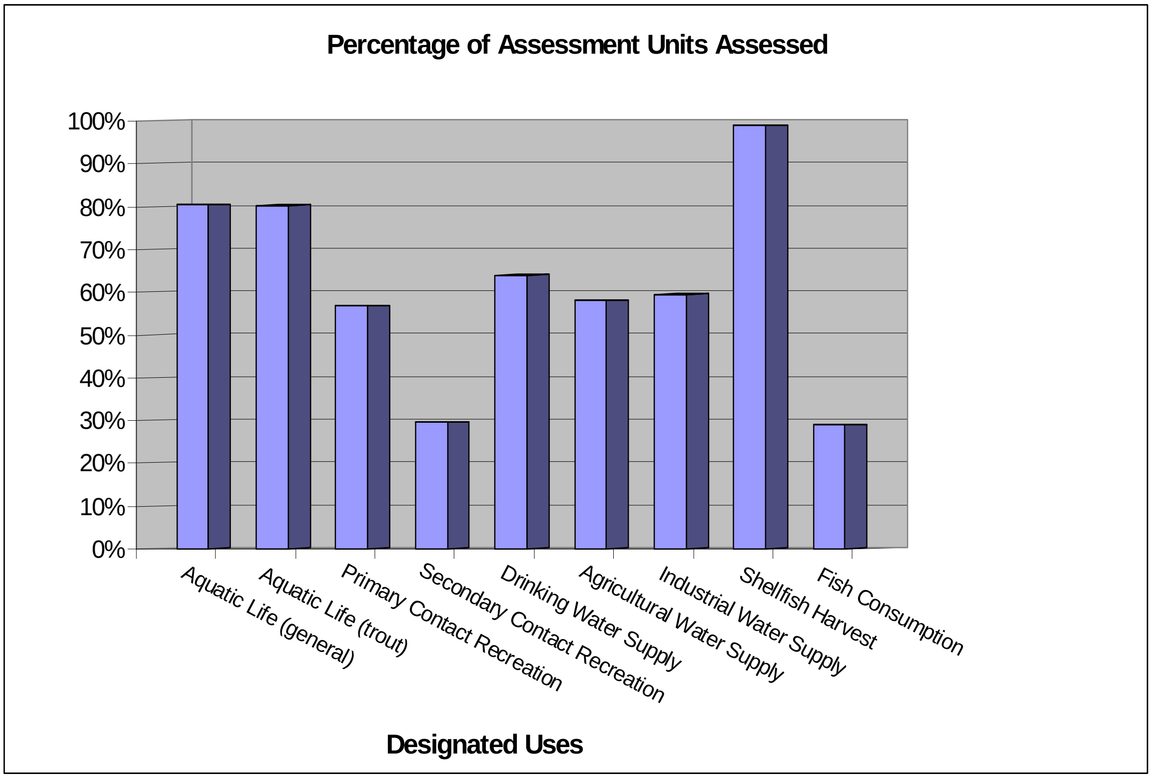
- Aquatic Life (General) - All Waters
- Aquatic Life (Trout) – FW1 & 2, PL, classified as Trout Production or Trout Maintenance
- Primary Contact Recreation - FW1 &2, PL, SC, SE1
- Secondary Contact Recreation - All Waters*

* The term “All Waters” means all waters of the State classified as FW1, FW2, PL, SC, SE1, SE2 and SE3

- Drinking Water - FW2, PL
- Agriculture Water Supply - FW2, PL,
- Industrial Water Supply - FW2
- Fish Consumption - All Waters
- Shellfish Harvest - SC, SE1

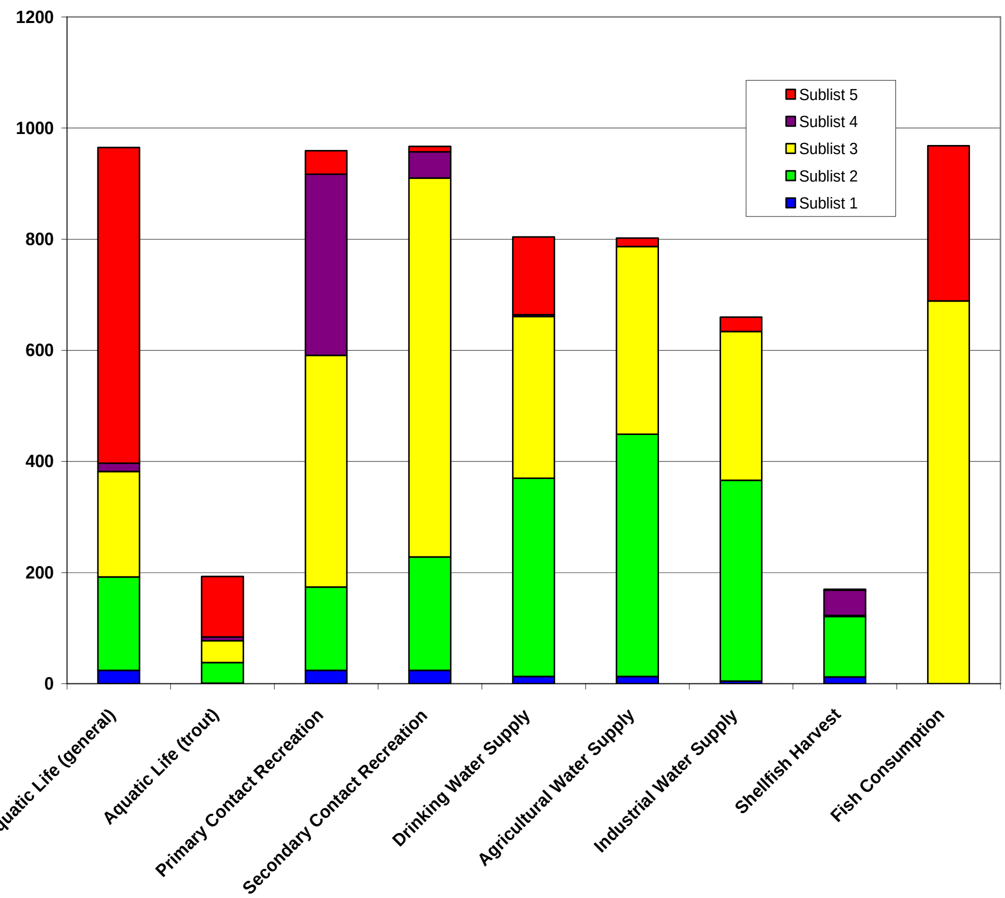
The goal is to assess all 970 assessment units for all relevant designated uses. There was sufficient data to assess 241 (25%) assessment units for all designated uses except for fish consumption. Twenty-four of the 241 assessment units were found to be in full attainment for all uses (except fish consumption) and were placed on Sublist 1. This means that every designated use applicable to that assessment unit was fully assessed and attained. There were 88 (10%) of 970 assessment units that were fully assessed for all designated uses including fish consumption. The percentage of assessment units that have been assessed for each applicable designated use is summarized in Figure 4.8-3.

Figure 4.8-3: Percentage of Assessment Units Assessed Per Designated Use



With 970 assessment units, and multiple uses assessed within each assessment unit, there were a total of 6,488 individual designated use assessments conducted for the Integrated Listing process. Each assessment unit was placed on one of the five sublists for each designated use. Figure 4.8-1 on the following page summarizes the number of assessment units for rivers and coastal waters on each sublist for each designated use.

Figure 4.8-1: Designated Use Summary for Rivers and Coastal Waters



Out of the 6,488 assessment unit/designated use assessment combinations, 1822 assessment unit/designated use combinations were placed on Sublist 2 as attaining the designated use; 1191 were placed on Sublist 5 as non-attaining. The Department has developed TMDLs for 442 assessment units/designated use combinations, which were placed on Sublist 4; 2916 assessment units were placed on Sublist 3 due to insufficient data to assess use attainment. Table 4.8-2 and Figure 4.8-2 on the following page show the overall number of assessment units placed on each of the five sublists by designated use. Table 4.8-3 on the subsequent page summarizes the miles and/or acres for each designated use by sublist.

Table 4.8-2: Number of Assessment Units Per Sublist By Designated Use

Designated Use	Number of Assessment Units					
	Sublist 1	**Sublist 2**	**Sublist 3**	**Sublist 4a**	**Sublist 4b**	**Sublist 5**
Aquatic Life (General)	24	168	190	15	0	568
Aquatic Life (Trout)	1	37	39	7	0	109
Primary Contact Recreation	24	150	417	325	1	42
Secondary Contact Recreation	24	204	682	47	0	10
Drinking Water Supply	13	357	291	3	0	140
Agricultural Water Supply	13	436	338	0	0	15
Industrial Water Supply	5	361	268	0	0	26
Shellfish Consumption	12	109	2	45	0	2
Fish Consumption	0	0	689	0	0	279
Total	**116**	**1822**	**2916**	**442**	**1**	**1191**

Figure 4.8-2: Number of Assessment Unit/Designated Use Combinations By Sublist

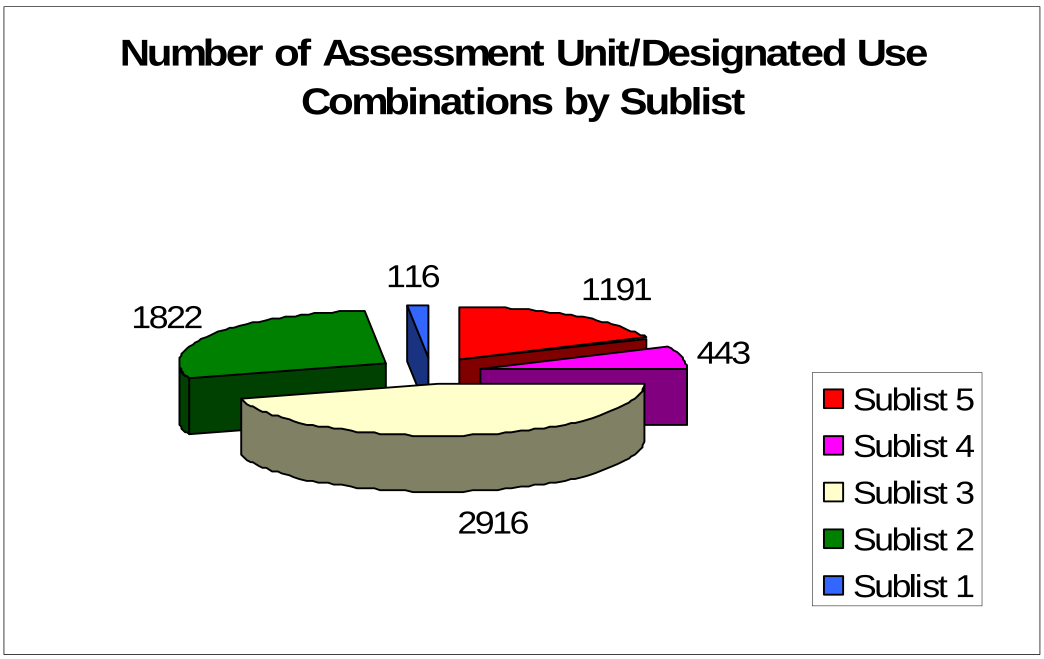


Table 4.8-3 Miles/ Acres By Designated Use For Tidal and Nontidal Waters

Designated use	Total assessed			Sublist 1			Sublist 2			Sublist 3		
	number of waterbodies	miles of stream	acres of Ocean	number of waterbodies	miles of stream	acres of Ocean	number of waterbodies	miles of stream	acres of Ocean	number of waterbodies	miles of stream	acres of Ocean
Aquatic Life general	777	14704	162137	24	1070	11357	170	3818	18850	192	3404	4247
Aquatic Life trout	145	2473	458	1	11	0	37	552	0	51	742	0
Primary Contact	543	9629	146394	27	1131	11357	145	2555	107206	419	8452	19990
Secondary Contact	284	5576	138626	32	1206	11357	195	3451	127269	685	12533	27758
Agriculture	464	8126	3884	20	329	69	429	7595	3815	339	5005	5187
Industrial	392	6500	3531	8	115	69	358	5975	3377	269	3876	4345
Drinking Water	517	8805	4309	42	721	69	328	5837	3852	288	4334	4878
Fish Consumption	278	5438	128162	0	0	0	0	0	0	692	12688	38222
Shellfish Consumption	168	5418	141284	12	845	18666	109	3166	55124	2	0	22421

Designated use	Sublist 4			Sublist 5		
	number of waterbodies	miles of stream	acres of Ocean	number of waterbodies	miles of stream	acres of Ocean
Aquatic Life general	14	223	99	569	9593	131831
Aquatic Life trout	6	104	0	101	1806	458
Primary Contact	318	5030	2432	53	913	25400
Secondary Contact	47	745	0	10	174	0
Agriculture	0	0	0	15	202	0
Industrial	0	0	0	26	410	85
Drinking Water	7	145	0	140	2102	388
Fish Consumption	0	0	0	278	5438	128162
Shellfish Consumption	45	1407	36189	2	0	31305

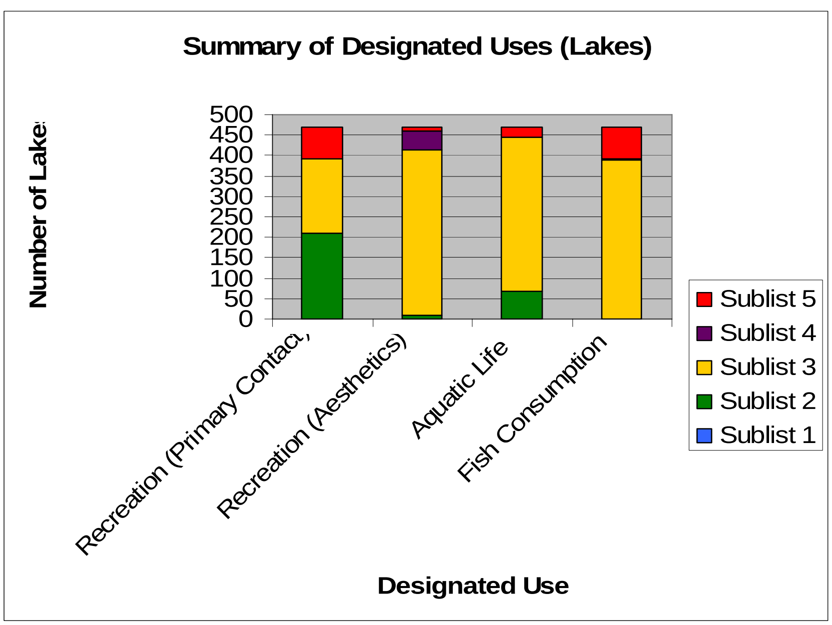
Lake Assessments

The Department has assessed 468 lakes, varying in size from two acres to 2266 acres, for the 2006 Integrated Report, compared to 320 lakes assessed for the 2004 Integrated Report. There were four designated uses assessed for lakes for this Report, for a total of 1872 individual designated use assessments for lakes. These lakes are located within the HUC-14 subwatersheds that were also assessed for additional uses such as drinking water supply. Many of these lakes will be incorporated into their respective HUC-14 subwatershed assessment units for the 2008 Integrated Report. Larger lakes that are not run-of-the-river will be assessed separately from the river coverage and will be assessed individually for all the designated uses appropriate to their classification for the 2008 Integrated Report. The number of lakes on each sublist for each designated use is summarized in Table 4.8-3 and Figure 4.8-4.

Table 4.8-3: Summary of Designated Uses for Lakes Statewide

Integrated List	Designated Uses				
	Recreation (Primary Contact)	Recreation (Aesthetics)	Aquatic Life	Fish Consumption	Total Uses
Sublist 1	0	0	0	0	0
Sublist 2	209	10	67	0	286
Sublist 3	183	405	377	390	1355
Sublist 4	0	46	1	2	49
Sublist 5	76	7	23	76	182

Figure 4.8-4: Summary of Designated Uses Per Sublist For Lakes Statewide



Use of EPA's Assessment Database* (ADB)

The Department has been working with USEPA's consultants (RTI) to populate ADB with New Jersey's assessment units and the 2006 Integrated Assessment results. The Department anticipates updating the ADB in April of 2007 with any revisions made to the final 2006 Integrated List as a result of USEPA's review and approval.

303(d) List of Waterbodies with Priority Ranking

The Department identified the pollutants causing impairment for each assessment unit/designated use combination identified on Sublist 5 (see Appendices A-1 and A-2) and developed the 2006 303(d) List of Impaired Waters with Priority Ranking (see Appendix B). When biological data alone is used to identify an assessment unit as not attaining the aquatic life designated use, the cause of the impairment was identified as "pollutant unknown" on the 303(d) List. Some waters identified as impaired on the 303(d) List may require changes to the surface water quality standards or other actions, but most are scheduled for development of a TMDL. Table 4.8-4 identifies all the pollutants identified as impaired on the 2006 303(d) List.

Table 4.8-4: Summary of Pollutants on the 2006 303(d) List

Pollutant	**# of Assessment Units**	**Pollutant**	**# of Assessment Units**
Mercury	272	Unknown Toxic	14
PCBs	252	Pesticides	14
pH	199	Turbidity	13
Phosphorus	185	Cadmium	13
Pathogens	122	Zinc	10
Dissolved Oxygen	118	Cyanide	9
DDX	118	PAHs	9
Arsenic	117	Dieldrin	7
Pollutant Unknown	111	PCE/TCE	7
Dioxin	102	Nitrate	6
Temperature	61	Nickel	4
Chlordane	58	Silver	2
Lead	49	Benzene	2
Total Suspended Solids	48	Sulfate	1
Copper	46	Thallium	1
Chromium	21	Chlorinated Benzene	1
Total Dissolved Solids	20		
33 Pollutants		**2012 Pollutant/Assessment Unit Combinations**	

* ADB is a USEPA database designed to contain assessment information from all Section 305(b) reporting entities.

There are a total of 33 pollutants identified on the 2006 303(d) List in one or more assessment units, resulting in 2012 pollutant/waterbody combinations. The top ten pollutants are responsible for 80% of the listings. Figure 4.8-5 summarizes the most frequently listed impaired pollutants and Figures 4.8-6 through 4.8-10 on the following pages demonstrate the spatial extent of some of the most frequently encountered pollutants.

Figure 4.8-5: Parameters Listed Most Frequently On The 2006 303(d) List

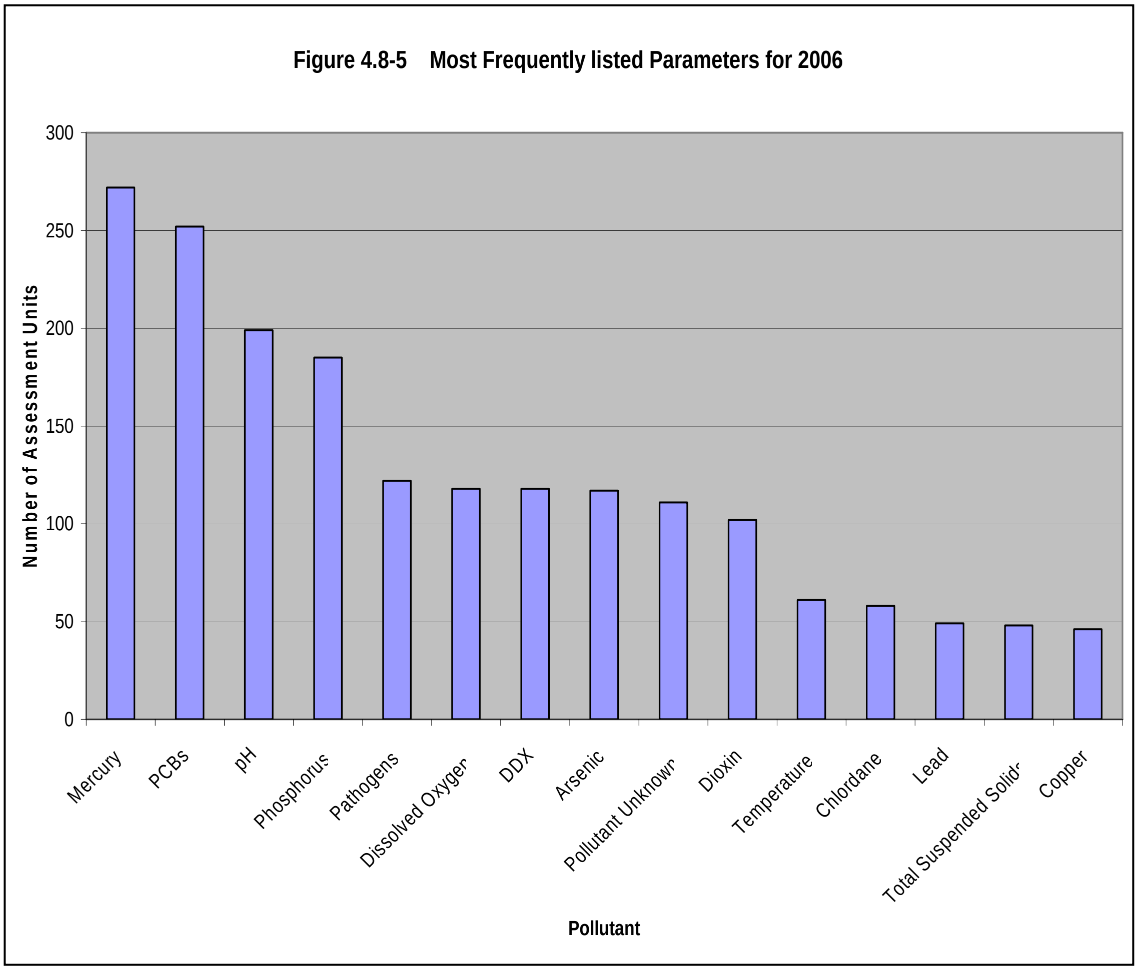
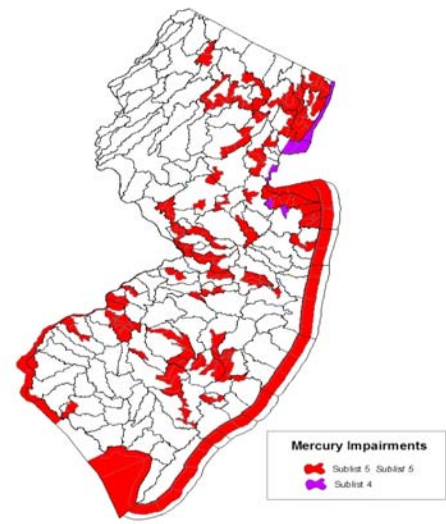


Figure 4.8-6: Mercury Impairments (excluding lakes)



<u>Mercury and PCBs</u> (polychlorinated biphenols) caused the highest number of impairments in New Jersey's waters, causing 272 and 252 impaired assessment units, respectively. (This includes 69 mercury-impaired lakes and 11 PCB-impaired lakes.) These impairments were generally associated with fish consumption advisories based on fish tissue analysis and some water column data. Figure 4.8-6 displays HUC-14 subwatersheds impaired by mercury but does not display mercury-impaired lakes due to their small size. All locations sampled to date for fish tissue have resulted in the issuance of fish consumption advisories due to excessive levels of one of these persistent and ubiquitous heavy metals. Concentrations of PCBs and chlordanes have decreased markedly compared to evaluations made a decade ago. Changes in DDX are more equivocal, with some but not all groups showing decreases. The observed decreases could be due to environmental cleanups, pollution prevention programs, or changes in the bioavailability of contaminants. Although environmental levels of some contaminants, such as PCBs, are declining, the number of listings has remained about the same because New Jersey has lowered the threshold for listing by moving to a more restrictive risk assessment methodology. (See Section 4.6 "Fish Consumption Use" for more details.)

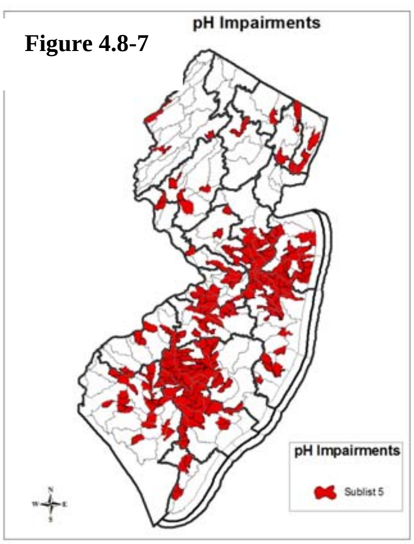


Figure 4.8-7

<u>pH</u> caused the second highest number of impairments, affecting 199 assessment units. Many of the streams listed as impaired for pH flow into and out of the Pinelands political boundary and are classified as FW2 waters. The Department will need to determine the natural boundary for low pH waters and revise stream classification or establish site-specific criteria.

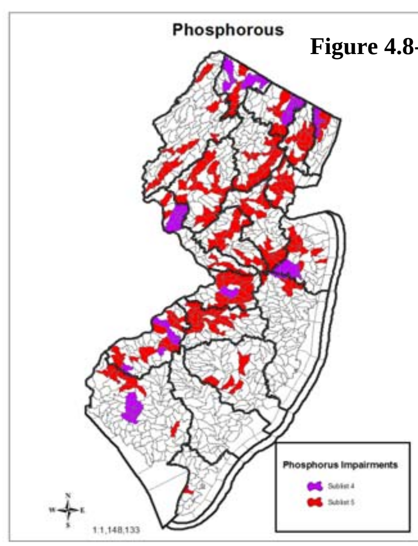


Figure 4.8-8

<u>Phosphorus</u> caused the third most frequent number of impairments, affecting 185 assessment units. For the purposes of this assessment, waters are considered impaired for phosphorus if ambient concentrations exceed the

numerical criterion of 0.1 mg/L. The Surface Water Quality Standards also include narrative criteria stating that the numeric criteria apply unless phosphorus is not limiting and does not render the waters unsuitable for the designated uses. The Department has not assessed whether the levels of phosphorus render the waters unsuitable for their respective uses. The NJPDES program is providing permitted discharge facilities an opportunity to determine whether or not the phosphorus levels present in their receiving waters render the waters unsuitable. The Department stated in the Assessment Methods that it would delist a waterbody for phosphorus if such water quality studies indicate that phosphorus levels above the numeric criterion did not render the waters unsuitable.

Pathogens caused the impairment of 122 assessment units. The presence of bacteria associated with human waste (i.e. fecal matter) is generally used to determine if waters are unsafe to swim and whether it is safe to consume harvested shellfish.

Figure 4.8-9

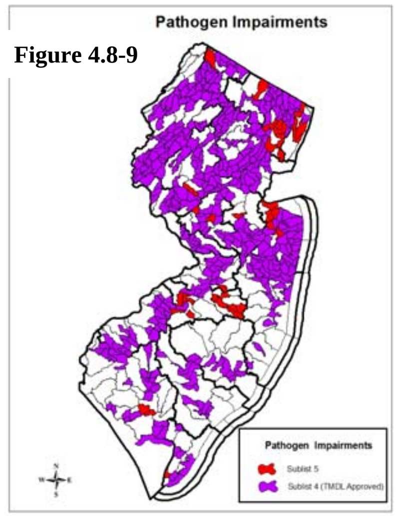


Figure 4.8-10

Dissolved oxygen (DO) caused the impairment of 118 assessment units, including 38 in ocean waters. Low DO in the ocean is due to an extensive anoxic cell that forms off the coast during the summer months and breaks up in the fall. The biological impacts of this low DO cell are currently unknown but are of increasing concern regarding potential impacts to marine biology.

Pollutant unknown is listed as the cause of impairment for 111 assessment units. The Department relies heavily upon biological monitoring to assess aquatic life use attainment. The Department must determine if a pollutant has caused the aquatic life use impairment, and if so, which pollutant(s), so that a TMDL can be developed. In many cases, physical/chemical water quality monitoring data are available and can be used to identify a pollutant. Where this information is not available or the data does not identify any exceedances of applicable surface water quality standards, the Department has listed the assessment unit on the 303(d) List as “pollutant unknown”. The Department has identified a pollutant cause for 327 biological impairments.

Section 303(d) of the Federal Clean Water Act requires states to rank and prioritize impaired waterbodies (i.e., waterbodies on Sublist 5). The goal of priority ranking is to focus available resources on the right waterbodies at the right time, in the most effective and efficient manner, while taking into account environmental, social and political factors. The pollutants are ranked as high, medium, and low. A detailed explanation of the ranking process can be found in Section 9 of the Methods Document (Appendix G). The 2006 303(d) List of Impaired Waters with Priority Ranking can be found in Appendix B.

The Department also developed a Two-Year TMDL Schedule based on these priorities, which identifies the assessment unit/parameter combinations for which a TMDL will be developed during the next 2 years. The 2006 Two-Year TMDL Schedule can be found in Appendix D.

<u>Delisting</u>
For waters listed on previous 303(d) Lists (Sublist 5), there are several possible scenarios that may result in a waterbody being removed from the 303(d) list (i.e. "delisting"). Each delisting is explained and documented in the 2006 Integrated List Delisting Report found in Appendix C. The complete methodology for delisting is outlined in the Methods Document found in Appendix G. Some scenarios that could result in the removal of a waterbody from Sublist 5 are:

1. A determination is made that the waterbody is meeting the designated use (i.e. no TMDL is required). For example:
   a) An error was made in the initial listing causing an erroneous listing;
   b) New information was received: more recent and/or more accurate data, which meets the QA/QC requirements identified in section 5 of the Methods Document, demonstrates that a designated use is being met for the waterbody, with or without a TMDL (see additional information regarding metals data in section 8.3 of the Methods Document).
   c) Revisions to the SWQS render the waterbody in compliance.

2. Reassessment of available information or data: waterbodies placed on a previous 303(d) List based on data that were insufficient to meet current data quality requirements. Examples include:
   a) New Macroinvertebrate Protocol: Macroinvertebrate data had been collected under conditions not calibrated to reference conditions specified in the sampling protocol. See Section 4.1 of the Methods Document for detailed information.
   b) Criteria were not measurable.
   c) Sufficient data were not available (i.e. frequency, number of samples, or QA/QC requirements were not met).

3. A TMDL has been completed. A waterbody will be removed from Sublist 5 and placed in Sublist 4a once a TMDL, which is expected to result in full attainment of the designated use, has been developed and approved by USEPA.

4. Other enforceable pollution control requirements are reasonably expected to result in the attainment of the designated use in the near future. These requirements must be specifically applicable to the particular water quality problem. This includes the installation of new control equipment or elimination of discharges.

5. Impairment is not caused by a pollutant. In cases of biological impairment, the Department will follow its protocol to determine the cause(s) of impairment (Stressor Identification or SI) and will evaluate if these causes are pollutants to be scheduled for TMDLs, or "pollution", whereby the waterbody will be transferred to Sublist 4c as per the current listing methodology.

6. New spatial extent – When sufficient data warrants, waterbodies previously listed on a large scale may be broken down into smaller assessment units and placed on other sublists, if appropriate.

7. Natural causes – These are waters that do not meet the designated use but it can be documented that there are no human activities causing the surface water quality standards to be exceeded (See Section 5.1 of the Methods Document for the definition for "natural").

8. Impaired waterbody no longer exists. For example, a dam was removed or breached and the impoundment or lake is gone.

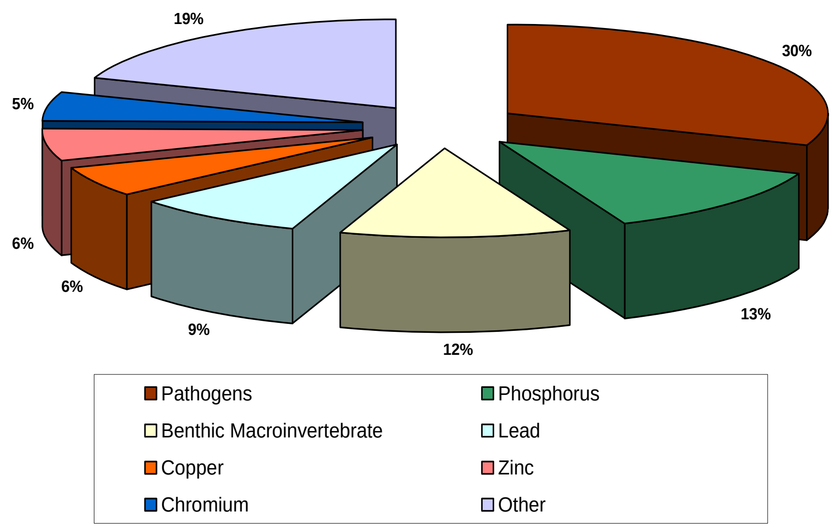
Note that beginning with this 2006 Report, "Benthic macroinvertebrate" will no longer be listed as a pollutant causing non-attainment on the 303(d) List. It will, instead, be replaced with a specific aquatic life pollutant when possible and if no pollutant is identified, it will be replaced with "pollutant unknown" or "toxic unknown".

The Department has developed a "crosswalk" that takes the 2004 303(d) List, which was based on linear segments, and identifies the 2006 assessment unit associated with the 2004 waterbody. Any parameters that were identified on the 2004 303(d) List and are not included on the 2006 303(d) List are identified along with the rational for delisting. The crosswalk is provided as Appendix C. Table 4.8-5 identifies the delisted pollutants and the number of assessment units delisted for each pollutant. Figure 4.8-11 on the following page summarizes the pollutants responsible for 80% of the delistings.

Table 4.8-5: Parameters Delisted From The 2004 303(d) List

Parameter Delisted	Number Of Assessment Units	Parameter Delisted	Number Of Assessment Units
Pathogens	76	Dissolved Oxygen	3
Phosphorus	31	Fish Community	3
Benthic macroinvertebrate	29	Silver	2
Lead	21	TCE	2
Copper	14	TSS	2
Zinc	14	Chloride	1
Chromium	13	Nickel	1
Cadmium	10	Sedimentation	1
Mercury	9	Selenium	1
Arsenic	6	Thallium	1
Temperature	6	**22 Parameters**	**246 Assessment Units**

Figure 4.8-11: Percentage of Assessment Units Delisted by Pollutant



Chapter 5: Water Quality Management

5.1 Overview of Water Quality Management Programs

The New Jersey Department of Environmental Protection (Department) is dedicated to restoring, enhancing and protecting the quality of New Jersey's natural environment, as well as ensuring equitable and beneficial uses of the State's waters. The policies expressed in the federal Clean Water Act, the New Jersey Water Pollution Control Act N.J.S.A. 58:10A-1 *et seq.*, the New Jersey Water Quality Planning Act, N.J.S.A. 58:11A-1 *et seq.*, and the New Jersey Water Supply Management Act, N.J.S.A. 58:1A-1 *et seq.*, provide the foundation for the environmental programs that protect New Jersey's waters. Other state laws also play important roles, including the Freshwater Wetlands Protection Act, N.J.S.A. 13:9B-1 *et seq*., the Stormwater Management Act, N.J.S.A. 40:55D-93 through 99, the Watershed Protection and Management Act, N.J.S.A. 58:29-1 *et seq*., the Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 *et seq*., the Wetlands Act of 1970, N.J.S.A. 13:9A-1 *et seq*., and the Coastal Area Facility Review Act, N.J.SA 13:19-1 *et seq*.

New Jersey's Water Quality Management Programs extend beyond the traditional water pollution control programs identified in the federal guidance for the Integrated Report. Therefore, this chapter includes sections on watershed-based programs, water quality management planning, point source pollution control, nonpoint source pollution control, total maximum daily loads, and other programs that constitute Water Quality Management in New Jersey.

Watershed-based Programs:

The Division of Watershed Management (Division) has primary responsibility for administering New Jersey's Statewide Watershed Management Program, including the Statewide Water Quality Management Planning Program, Nonpoint Source Pollution Control Program, Total Maximum Daily Load (TMDL) Program, three National Estuary Programs and aspects of the Highlands Region Water Resources Protection Program. The Source Water Assessment Program, administered by the Department's Division of Water Supply, and the Coastal Zone Management Program, administered by the Department's Coastal Management Office, are also watershed-based but emerged from the federal Safe Drinking Water Act and the federal Coastal Zone Management Act, respectively, rather than the federal Clean Water Act. Chapter 5 contains individual sections that summarize each of these programs, with the exception of the Source Water Assessment Program, which is described under Chapter 6, Public Health Concerns, since it relates more directly to protection of drinking water quality for public health.

The goal of the Division of Watershed Management is comprehensive water resource management on a watershed basis. Towards that end, the Division applies a two-pronged approach. The first approach is designed to prevent water quality degradation. The Stormwater Management Rules (N.J.A.C. 7:8) and the Water Quality Management

Planning Rules (N.J.A.C. 7:15) are implemented to achieve this goal. The second approach includes actions to remedy existing water quality problems. This effort employs nonpoint source pollution control (including federal Section 319(h) grant-funded projects), TMDLs, and watershed restoration. Information about these programs is provided under Chapter 5, Sections 5.5, 5.6 and 5.12, respectively. For more information on the Division of Watershed Management, go to: http://www.nj.gov/dep/watershedmgt/.

Chapter 5: Water Quality Management

5.2 Statewide Water Quality Management Planning Program

The Department's Division of Watershed Management has primary responsibility for administering New Jersey's Statewide Water Quality Management Planning Program pursuant to the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 *et seq*.), the New Jersey Water Pollution Control Act (N.J.S.A. 58:10A-1 *et seq*.), and the Statewide Water Quality Management Planning rules (N.J.A.C. 7:15). The New Jersey Water Quality Planning Act (Act) was adopted in 1977 and provided the authority needed for New Jersey to implement sections 201, 208 and 303 of the Federal Clean Water Act. The purpose of the Act is to restore, maintain and preserve the quality of the waters of the state, including both surface and ground water, for the protection and preservation of the public health and welfare, food supplies, public water supplies, propagation of fish and wildlife, agricultural and industrial uses, aesthetic satisfaction, recreation and other beneficial uses. The Act endeavors to achieve this purpose by instituting a continuing planning process through the adoption of areawide Water Quality Management (WQM) Plans, also known as "208 Plans", which integrate water quality and wastewater management plans with related federal, state, regional, and local land use plans. For the purpose of areawide planning, the State has been divided into twelve study areas and an areawide WQM Plan has been completed for each area by either the Department or by sub-state agencies (termed "designated planning agencies").

One component of the WQM Plans is the Wastewater Management Plans (WMPs) that have been adopted as amendments to the WQM Plans. WMPs identify appropriate wastewater management measures to accommodate future development without degrading surface and ground water quality. WMPs contain written and graphic descriptions of existing and future wastewater-related jurisdictions, wastewater service areas, and selected environmental features and treatment works. According to the WQM Planning rules, the Department shall not undertake, or authorize through the issuance of a permit, any project or activity that affects water quality and conflicts with the applicable sections of adopted WQM Plans or the Statewide WQM Planning rules. TMDLs are established as amendments to the WQM Plans.

In January 2000, Executive Order No. 109 (EO 109) was issued, which required future applications for WQM Plan amendments to include environmental build-out and pollutant loading analyses, to demonstrate the appropriateness of the selected wastewater management alternative(s), and assess alternatives designed to address consumptive and depletive water uses. The Department has used this authority to secure stormwater management and riparian zone protection to address nonpoint source pollution, and has used the wastewater management alternatives analysis as a means to prevent the extension of public sewers into environmentally sensitive areas. In implementing EO 109, the Department has also been evaluating new or expanded discharges to surface water with respect to the antidegradation requirements of the Surface Water Quality Standards (N.J.A.C. 7:9B). The Department's actions under EO 109 have resulted in benefits to water quality, water quantity and ecosystem health. For more information on the Statewide Water Quality Management Planning Program, go to: http://www.nj.gov/dep/watershedmgt/wqmps.htm.

Chapter 5: Water Quality Management

5.3 Water Quality Standards Program

The Department's Bureau of Water Quality Standards and Assessment in the Division of Water Monitoring and Standards is responsible for promulgating New Jersey's surface and ground water quality standards (N.J.A.C. 7:9B and 7:9C, respectively), including water body classifications, designated uses, water quality criteria, and antidegradation policies.

Surface Water Quality Standards:

The New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.) requires the State to maintain water quality in existing high quality waters and to restore water quality in impaired waters. The Department accomplishes this by developing and implementing Surface Water Quality Standards (SWQS). The SWQS establish a stream classification and an antidegradation designation for all waters of the State. The stream classifications reflect the designated uses assigned to individual waterbodies. Designated uses include drinking water supply; maintenance, migration, and propagation of fish, wildlife and biota; recreation; agricultural and industrial water supply; and shellfish harvesting. The SWQS also specify the water quality criteria that correspond with the waterbody classifications, which are necessary to achieve the designated uses.

The SWQS also assign an antidegradation designation to each waterbody, which specifies to what degree a lowering of water quality may be authorized for a new or expanded activity. The highest tier is assigned to waterbodies that qualify as Outstanding National Resource (ONR) Waters. ONR waters are maintained in their natural state and are protected from manmade activities that might cause a change in water quality. ONR waters include freshwaters in preserved open spaces (FW1) and Pinelands waters (PL). The next tier is Category One. Category One waters are protected from measurable changes in water quality. The lowest tier is Category Two, where water quality may be lowered to levels that still support all existing uses based upon a social and/or economic justification. All waters not specifically identified in the SWQS as ONR waters or Category One waters default to the antidegradation designation of Category Two.

The SWQS are utilized by New Jersey Pollutant Discharge Elimination System (NJPDES) surface water discharge permitting program in the development of water quality-based effluent limitations (WQBELs) to protect or improve the existing water quality and designated uses. The SWQS also contain policies on design flows, mixing zones, antidegradation and nutrients, which specify how the surface water quality criteria are to be applied through NJPDES permits. The Department is required, pursuant to Section 303(d) of the Clean Water Act, to identify waters that do not meet SWQS after the implementation of technology-based effluent limitations and to develop TMDLs to restore these impaired waters. The SWQS serve as water quality restoration targets to be achieved by TMDLs. (See Chapter 5, Section 5.6 for information on the TMDL Program.)

The SWQS are also utilized by the Department's Site Remediation Program to ensure that groundwater remediation activities that discharge to surface waters comply with the SWQS. The Division of Land Use Regulation, through the Freshwater Wetlands Program, the Coastal Permitting Program, and the Stream Encroachment Program, also utilizes the stream classifications and antidegradation designations adopted in the SWQS to regulate activities under the programs' respective jurisdictions. For example, wetlands along streams classified as Trout Production in the SWQS qualify as "exceptional resource value" wetlands and receive the highest level of protection under the Freshwater Wetlands Protection Act rules at N.J.A.C. 7:7A. Projects located on, or upstream of, a waterbody with a Category One antidegradation designation in the SWQS are required to maintain 300-foot buffers, as specified in the Stormwater Management rules at N.J.A.C. 7:8.

In 2002, the Department embarked upon an initiative to identify waters that qualify for additional protection under the SWQS rules. The SWQS rules provide a process by which waterways can receive an upgrade from a Category Two antidegradation classification to Category One if they provide or exhibit exceptional ecological significance, exceptional water supply significance, exceptional recreational significance, exceptional shellfish resource, or exceptional fisheries resource. The Department uses physical/chemical water quality data, aquatic macroinvertebrate biological monitoring, in-stream habitat assessments, fish assemblage information, threatened and endangered species information and landscape maps to perform an integrated ecological assessment. This information allows the Department to determine if a stream segment exhibits characteristics that are of "exceptional ecological significance."

The Category One designation provides additional protections to waterbodies that help prevent water quality degradation and discourage development where it would impair or destroy natural resources and environmental quality. The Department adopted new Stormwater Management Rules on February 2, 2004 that require 300-foot buffers for Category One streams and tributaries upstream in the same subwatershed (see Stormwater Rules at http://www.nj.gov/dep/watershedmgt/rules.htm). The 300-foot buffer requirement is triggered when an applicant proposes a new major development along a Category One stream or along tributaries upstream of a Category One stream in the same HUC-14 subwatershed.

All stream reclassifications and Category One designations occur through an administrative rulemaking process, affording the public an opportunity to comment and provide input into these decisions. The rule proposal must include a justification of why the stream is exceptional or otherwise supports the reclassification. The rule proposal is published in the New Jersey Register followed by a 60-day public comment period. During the public comment period, a public hearing is held to provide an opportunity for the public to present oral testimony. After the close of the public comment period, the Department evaluates the comments received and proceeds to adoption. The upgraded stream classification and/or antidegradation designation is published as an adopted rule in the New Jersey Register along with the Department's responses to the public comments received. The new classification and/or antidegradation designation is effective when the rule appears in the New Jersey Register. The entire process takes approximately six to nine months.

Since 2002, the Department proposed and adopted several rules amending the SWQS to upgrade stream classifications and/or antidegradation designations of the surface waters of New Jersey. Through these rulemakings, a total of 641 river miles were upgraded to Category One, of which 325 river miles were based on "exceptional water supply significance" and 316 were based on "exceptional ecological significance." In addition, several water supply reservoirs were also designated as Category One waters, totaling 8,625 acres. Details on these rule amendments, as well as maps of the Category One waters, may be viewed at: http://www.nj.gov/dep/cleanwater/c1rule.html. Prior to these rulemakings, the Department had designated 3,200 river miles and 2,354 lake acres as Category One.

Table 5.3–1: Category One Stream Segments Adopted Since 2002

Basin	**Waterbody**	**River Miles**	**Date Adopted**
Atlantic Basin	Manasquan River (Wall Township) – West Farms Road Bridge in Howell Township to the downstream boundary of Manasquan River WMA, except tributaries described separately *Tributaries:* • Bear Swamp Brook (Howell)- Headwaters to the Allaire State Park • Long Swamp Brook (Squankum) - Entire length, except segment within Allaire State Park • Marsh Bog Brook (Farmingdale) - Source to Yellow Brook Rd • Mingamahone Brook (Farmingdale) - Entire length, except tributary described separately below • East Branch (Farmingdale) - Source to mainstem Mingamahone Brook • Squankum Brook (Squankum) - Entire length, except segments in Allaire State Park • Timber Swamp Brook (Oak Glen) – Manasquan Reservoir dam to its confluence with the Manasquan River Manasquan Reservoir Tributaries (Oak Glen) - All tributaries from source to Manasquan Reservoir	58.4	7/12/04
	S. Br. Metedeconk River (Lakewood) – Entire length, except portions within the boundaries of Turkey Swamp WMA • *Tributary* - Clear Stream (Jackson) – Entire length N. Br. Metedeconk River (Freehold) – Source to Aldrich Road, including all tributaries (Lakewood) - Aldrich Road to Lanes Mills, except the tributary listed separately below (Brick) - Lanes Mills to S. Br. Metedeconk River, including the westerly tributary • *Tributaries:* • Dicks Brook (Larrabee's Crossing) - Entire length • Hay Stack Brook (Howell) - Entire length • Muddy Ford Brook (Larrabee's Crossing) - Entire length • Titmouse Brook (Howell) - Entire length Mainstem Metedeconk River (Brick) - Confluence of NB and SB to Forge Pond	160	7/12/04
	Shark River Brook (Colts Neck) - Source to Remsen Mill Rd., including all unnamed tributaries	22	6/20/05

Table 5.3-1: Category One Stream Segments Adopted Since 2002 (continued)

Basin	Waterbody	River Miles	Date Adopted
Delaware Basin	Alexauken Creek (Lambertville) - Entire length	28.7	7/12/04
	Assiscunk Creek (Columbus) - Head waters to confluence with Barkers Brook, including all tributaries	38.6	5/19/03
	Beaver Brook (Annandale) - Beaver Avenue bridge downstream to the lower most I-78 bridge	1.5	5/19/03
	Bowers Brook (Hackettstown) Source downstream to Rt. 517	0.7	11/3/03
	Flat Brook - Flatbrook-Roy Wildlife Management Area boundary to its confluence with Delaware River	8.5	5/19/03
	Harihokake Creek (Alexandria) - Entire length	29.7	7/12/04
	Little Nishisakawick Creek (Frenchtown) - Entire length	8.6	7/12/04
	Lockatong Creek (Kingwood) - Entire length	32.7	7/12/04
	Lopatcong Creek - Decker Road to Rt. 57 bridge	5.7	7/12/04
	Nishisakawick Creek (Frenchtown) - Entire length	25	7/12/04
	Paulins Kill (Hampton) - Route 15 bridge (bench mark 507) to the Balesville dam	5.9	11/3/03
	Pequest River (Townsbury) - Lehigh and Hudson River railway bridge to the upstream boundary of Pequest Wildlife Management Area (Townsbury) - Upstream boundary of Pequest Wildlife Management Area boundary to the downstream boundary	1.6	5/19/03
	Pohatcong Creek (Pohatcong) - Karrsville Bridge to Rt. 519 Bridge Shabbecong Creek (Washington) – Entire length	44	7/12/04
	Tunnel Brook (Oxford Mtn.) Entire length	3.0	11/3/03
	Wickecheoke Creek (Locktown) - Entire length	45	7/12/04
Passaic, Hackensack, and New York Harbor Complex Basin	Hackensack River (Oradell) –NY-NJ State line to Oradell dam, including Lake Tappan and all tributaries draining to the Hackensack River above Oradell Dam Cresskill Brook (Demarest) - Duck Pond Rd. bridge to Tenakill Brook Oradell Reservoir Tributaries (Oradell) - All named and unnamed tributaries that are not listed separately, that drain into Oradell Reservoir above the Oradell Dam Tenakill Brook (Demarest) - Entire length, including all tributaries, except Cresskill Brook	49.5	7/12/04
	Macopin River (Newfoundland) Echo Lake dam downstream to Pequannock River	1.8	11/3/03
	Mill Brook (trib.) (N. of Union Hill) Entire length	0.5	11/3/03
	Pequannock River (Charlottesburg) Outlet of Charlottesburg Reservoir downstream to, but not including, Macopin Reservoir	1.0	11/3/03
	Pascack Brook (Hackensack) - NY-NJ State line to the Oradell Reservoir, including Woodcliff Lake and all the tributaries	35	7/12/04
	Wallace Brook (Randolph) Source downstream to, but not including, Hedden Park Lake	1.6	11/3/03
Raritan Basin	South Branch Rockaway Creek (Clinton) - Headwaters to Lake Cushetunk, including all tributaries	22	5/19/03
	Sidney Brook (Grandin) - Headwaters to its confluence with South Branch Raritan River, including all tributaries	10.4	5/19/03

Table 5.3–2: Category One Reservoirs and Lakes Adopted Since 2002

Reservoirs	**Population Served*** (approximate)	**Acreage**	**Date Adopted**
Boonton Reservoir	235,000	772	5/19/2003
Charlottesburg Reservoir	275,000	330	5/19/2003
Doughty Reservoir	37,000 - 150, 000	160	5/19/2003
Glendola Reservoir	302,000	116	5/19/2003
Manasquan Reservoir	150,000	749	5/19/2003
Oradell Reservoir	700,000	729	5/19/2003
Lake Tappan		~655	7/12/2004
Woodcliff Lake		~155	7/12/2004
Round Valley Reservoir	750,000	2195	5/19/2003
Swimming River Reservoir	302,000	566	5/19/2003
Wanaque Reservoir	1,000,000	2248	5/19/2003

*Total population served = ~ 4,000,000 Total Acres = 8625

On October 16, 2006, the Department readopted the SWQS with amendments to the following provisions:

- **Aquatic Life Criteria for Toxics** - The Department proposed new criteria for aquatic life that would allow USEPA to remove New Jersey from the National Toxics Rule (NTR). With the exception of nickel, the new criteria are equal to or more stringent than the existing NTR. A New Jersey-specific criterion for nickel in saline waters is being adopted that is based on new scientific information rather than the current USEPA-recommended criteria.

- **Human Health Criteria for Toxics** - The Department proposed new criteria that would allow USEPA to remove New Jersey from the NTR. The existing criteria have been recalculated using the updated and more widely accepted fish consumption level of 17.5 grams per day. Criteria for possible human carcinogens (Group C) have been recalculated consistent with the methodology used in the Ground Water Quality Standards and the Soil Standards. New criteria are being adopted for several priority pollutants and MTBE. After this adoption, the Department will have promulgated human health criteria for over 100 toxic substances. Generally, the proposed criteria are more stringent than the NTR. However, the human health criteria for 21 toxics are less stringent but are based on new information.

- **Temperature** - A temperature criterion will be added for trout production waters (FW2-TP). The implementation portion of the criteria is being relocated to the policy section of the rule to improve clarity and to address long-standing NJPDES permit issues concerning implementation.

- **Pathogens** - The Department proposed changes consistent with the USEPA Beach Rule adopted November 16, 2004. In freshwaters, the Department will use *E. coli* as the indicator of pathogens, while in saline and coastal waters, the Department will use *Enterococcus*. The geometric mean will be used to assess water quality conditions, establish permit requirements, and develop TMDLs. The single sample maximum will be used to close beaches and determine where additional monitoring is needed.

- **Mercury and PCBs –** The Department proposed new provisions that would require effluent characterization monitoring, which is needed to establish a baseline at current levels; identify facilities where concentrations exceed background; and track reductions made by implementing the pollutant minimization requirements for PCBs and the Best Management Practices for dental offices using the new, more sensitive analytical methods.

- **Upgrade Stream Classifications and Antidegradation Designations –** A total of 12 river miles were proposed for upgrade to trout production and will be designated as Category One. Additional stream miles will be upgraded to trout maintenance. Both types of upgrades are based on stream sampling data collected by the Division of Fish and Wildlife.

In its September 19, 2005 proposal, the Department had also proposed significant new provisions to the antidegradation policies at N.J.A.C. 7:9B-1.5(c) that would have exempted specific activities from an antidegradation review and would have established new implementation policies for point sources. However, the proposed amendments to the antidegradation policies at N.J.A.C. 7:9B-1.5(c) and the related definitions were effectively withdrawn by a Notice of Intent to not adopt these amendments, published in the New Jersey Register on November 21, 2005 at 37 N.J.R. 4368(a). For more information about the Surface Water Quality Standards Program, go to: http://www.nj.gov/dep/wmm/sgwqt/sgwqt.html.

Ground Water Quality Standards:

The Ground Water Quality Standards (GWQS) specify the water quality criteria and designated uses for ground water in New Jersey. The criteria are numeric values assigned to ground water constituents (i.e. pollutants) and implemented to protect the ambient ground water quality and associated designated uses. The GWQS also contain technical and general policies to ensure that the designated uses are protected. The GWQS serve as the basis for setting ground water discharge standards under the Department's NJPDES Discharge to Ground Water Permit Program, and for establishing standards for ground water cleanups under the Site Remediation Program. Other relevant programs using the GWQS include, but are not limited to, those implemented pursuant to the Spill Compensation and Control Act, Solid Waste Management Act, Industrial Site Recovery Act, Underground Storage of Hazardous Substances Act, Realty Improvement Sewerage and Facilities Act, and Pesticide Control Act of 1971.

Ground water is found below the ground surface in the pore spaces between sand grains or in cracks (fractures) in rock. Almost half of New Jersey's drinking water comes from ground water. Ground water is classified according to its hydrogeologic characteristics and designated uses. Ground water within watersheds of FW1 surface waters, State-owned Natural Areas, and the major aquifers of the Pinelands Region are designated as Class I ground waters**.** The designated use for Class I ground waters is the maintenance of special ecological resources. Secondary uses include potable, agricultural, and industrial water supply. The designated use of Class II ground waters is to provide potable water supplies using conventional treatment. Both existing and potential potable water supply uses are included. Class II criteria specify the levels of constituents above which the water would pose an unacceptable risk for drinking water. Class II ground waters include all areas that are not designated as Class I or Class III. Class III ground waters can be used for anything other than for potable water. Most ground waters of the state fall under the Class II-A designation, whose primary designated use is potable water supply and conversion to potable water supply.

The specific ground water quality criteria and practical quantitation levels (PQLs) for Class II-A ground waters are found in Appendix Table 1 of the GWQS rules at N.J.A.C. 7:9C. They are also posted on the Department's Web site at http://www.nj.gov/dep/wmm/sgwqt/gwqs_table1.html. Practical quantitation levels are defined at N.J.A.C. 7:9C-1.4 as the lowest concentration of a constituent that can be reliably achieved among laboratories within specified limits of precision and accuracy during routine laboratory operating conditions. There are instances where the health-based criterion for a particular constituent cannot be quantified by certified methods. In these cases, the GWQS criterion is set at the practical quantitation level.

The Department can also establish interim specific criteria for constituents for which health-based criteria do not yet exist in the GWQS. In addition, where the Department believes that the existing specific criteria found in Appendix Table 1 should be updated based on new scientific information available on the USEPA Integrated Risk Information System database (IRIS), the Department may administratively update the criteria. Interim specific criteria and interim generic criteria are posted, along with their associated PQL, and related support documentation, on the Department's Web site at: http://www.nj.gov/dep/wmm/sgwqt/gwqs_table2.html, as they become available.

As part of the recent readoption of the GWQS in 2005, the Department updated PQLs so that compliance with the health-based criterion could be more readily determined. If a method was not available to quantify the constituent at the health-based levels, wherever possible, the PQLs were revised to be as close to the health-based criteria as possible. See Table D of the Basis and Background document for information on constituent PQLs and the analytical method on which they are based. The Basis and Background document can be found at: http://www.state.nj.us/dep/wmm/sgwqt/gwqsbb.pdf. For more information on the Ground Water Quality Standards, go to:
http://www.nj.gov/dep/wmm/sgwqt/sgwqt.html#gwqs.

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5.4 Water Pollution Control Programs (NJPDES)

The discharge of pollutants to waters of the State is regulated by the Department under the authority of the New Jersey Water Pollution Control Act (WPCA), N.J.S.A. 58:10A. The WPCA specifies, "No person shall discharge any pollutant except in conformity with a valid NJPDES permit." As a federally delegated state, New Jersey implements the NJPDES program pursuant to the National Pollutant Discharge Elimination System (NPDES) rules and the New Jersey Pollutant Discharge Elimination System (NJPDES) regulations at N.J.A.C. 7:14A. The NJPDES Program is administered by the Department's Division of Water Quality. The NJPDES Program protects New Jersey's ground and surface water quality by assuring the proper treatment and discharge of wastewater (and its residuals) and stormwater from various types of facilities and activities. To accomplish this, permits are issued limiting the mass and/or concentration of pollutants that may be discharged into ground water, streams, rivers, and the ocean. The types of regulated facilities can range from very small dischargers, such as campgrounds, schools, and shopping centers, to larger industrial and municipal wastewater dischargers.

Discharge to Surface Water Permits:

The Division of Water Quality's Bureaus of Point Source Permitting 1 and 2 regulate facilities discharging domestic and industrial wastewater directly into surface waters of the State as part of the NJPDES program. The regional structure of the two bureaus was established to facilitate watershed-based permitting. The regional boundaries are based on New Jersey's 20 watershed management areas and 5 water regions. Region 1 includes the Upper Delaware and Passaic Regions and the northern portion of the Atlantic Coastal Region. Region 2 includes the Raritan and Lower Delaware Regions and the southern portion of the Atlantic Coastal Region. Permittees include various industries; federal, state, county, and municipal facilities; private companies; private residential developments; hospitals; and schools. Collectively, the facilities regulated by these bureaus serve the wastewater treatment needs of seven million people and hundreds of industries. The two bureaus also conduct water quality, biological and toxicological analyses and thermal impact and cooling water assessments.

In Fiscal Year 2003, USEPA worked with states to develop the "Permitting for Environmental Results Strategy" to address concerns about the backlog in issuing permits and the effectiveness of state NPDES programs. The Strategy focused limited resources on the most critical environmental problems and addressed program efficiency and integrity. USEPA is currently working with states to structure their permit programs to better support comprehensive protection of water quality on a watershed basis. Some key elements of this effort include expedited issuance of high priority permits. Each year, USEPA and states define a subset of permits that have high environmental priority, including permits needed to support TMDLs and watershed plans. USEPA has asked states to develop schedules for issuing these permits and assure that 95% of the permits are current.

In New Jersey, point source permits determined to be "high priority" are as follows:
1) All major permits that have been expired for more than 2 years;
2) Minor permits that have been expired for more than 2 years, discharge into Category One waters, or discharge into waters listed as impaired on New Jersey's 303(d) list.

On December 19, 2005, the Department proposed amendments to the NJPDES rules that would require major facilities discharging to PCB-impaired waters to monitor their receiving waters for PCBs using method 1668A (see 37 N.J.R. 4723(a)). Based on the results of this monitoring, some of those facilities would be required to develop and implement a PCB Pollutant Minimization Plan (PMP). Since PCBs are no longer used in industrial processes, the Department expects that most pollutant loading will likely be from contaminated areas around the dischargers' facilities, either from old leaky equipment or from production of PCBs as an unwanted by-product. The PMP will lead to the identification and elimination of those discrete sources of PCBs.

Discharge to Ground Water Permits:

The Division of Water Quality's Bureau of Nonpoint Pollution Control regulates facilities that discharge sanitary and industrial wastewater to ground water. The pollution control requirements contained in NJPDES ground water discharge permits are those conditions necessary to restrict the discharge of pollutants to ground waters of the State and to protect the public health and the environment.

The types of discharge activities that are regulated by the NJPDES program include surface impoundments, infiltration/percolation lagoons, overland flow systems, spray irrigation systems, and various types of subsurface disposal systems that are classified as underground injection systems. The types of facilities regulated include: mines, pits and quarries; schools and hospitals; potable water treatment plants; large corporate office buildings; industrial manufacturing facilities; campgrounds and mobile home parks; food processors; and sewage treatment plants and other discharges of wastewater that can impact ground water, including dredge spoils disposed onto land.

The Department's Division of Site Remediation and Waste Management regulates discharges from past activities, such as spills, or from non-operating or closed landfills, Underground Storage Tanks, and contaminated sites. These discharges are remediated or controlled by Memoranda of Agreement (MOAs) or voluntary cleanup agreements authorized by the Site Remediation and Waste Management Programs. For more information about the Department's Site Remediation and Waste Management Programs, go to: http://www.state.nj.us/dep/srp/.

Underground Injection Control:

The Division of Water Quality's Bureau of Nonpoint Pollution Control coordinates the Underground Injection Control (UIC) Program for New Jersey. Underground injection systems include a number of different types of subsurface disposal systems such as: sanitary septic systems that do not conform to the Standards for the Construction of Individual Subsurface Sewage Disposal Systems (N.J.A.C. 7:9A), any septic system receiving industrial wastewater, true wastewater injection wells, subsurface trench systems, dry wells, seepage pits, etc. In New Jersey, the UIC program is managed under the umbrella of the NJPDES Discharge to Ground Water Program described above.

Residuals, Biosolids, Sewage Sludge:

Residuals are generated by both domestic treatment plants (sewage sludge) and industrial treatment plants (industrial residuals). Residuals are managed in a variety of ways, including the development of Marketable Residuals Products (often referred to as biosolids) used to fertilize or condition the soil. Examples include pellets, compost, and alkaline materials. Residuals are also incinerated in New Jersey and managed in a variety of ways at out-of-state facilities. Beneficial use of residuals as a fertilizer or soil conditioner is regulated under a NJPDES permit issued by the Division of Water Quality's Bureau of Pretreatment and Residuals and may require site-specific approvals, depending upon the nature of the residual. Incineration of residuals is regulated under New Jersey's Air Pollution Control Program (for more information, go to: http://www.nj.gov/dep/aqpp/). Residuals managed in other states are regulated by the receiving state.

The Bureau of Pretreatment and Residuals also oversees the Statewide Sludge Management Plan (a component of the Statewide Solid Waste Management Plan), reviews and approves long-term generator residuals management plans. Through the implementation of the Sludge Quality Assurance Regulations (N.J.A.C. 7:14C), residuals generators must test their residuals and report the results to the Department on a regular basis. This data is available to assure compliance with the appropriate residuals management criteria in much the same way that the surface water program uses effluent data to assure compliance with wastewater discharge requirements. For more information on residuals management, go to: http://www.state.nj.us/dep/dwq/bpr.htm.

Significant Industrial Users:

Some wastewater dischargers do not discharge their wastewater directly into a surface waterbody like a stream or river, but rather discharge into a sanitary sewer system or sewage treatment plant. The wastewater is transported to a local agency's treatment plant where it is treated and usually discharged into a river or stream. These dischargers are known as "indirect users". Although not all indirect users require individual NJPDES permits, all must comply with at least minimum regulatory requirements under N.J.A.C. 7:14A-21.2. When this type of discharge meets one or more specific criteria, the discharger becomes a significant indirect user (SIU), and requires a permit. The criteria include discharging from specific operations, discharging high strength or high volume wastewaters, being subject to Federal Categorical Pretreatment Standards, and failure to comply with regulatory requirements under N.J.A.C. 7:14A-21.2.

SIUs are important from a regulatory standpoint because the wastewater they produce is often much stronger than the normal domestic sewage generated by residential uses. As a result, improperly pretreated wastewater from an SIU may upset the biological processes of a treatment plant, which could cause the discharge of improperly treated wastewater that then pollutes the receiving waterbody, and it could contaminate the sludge to a level where it is unsuitable for beneficial reuse. If not regulated properly, an SIU's wastewater may also create hazardous conditions in a sewage collection system and at a treatment plant. Each local agency must develop local limits in accordance with USEPA Guidance to protect the plant, or demonstrate why local limits are not necessary.

The Department issues permits for SIUs discharging to Publicly Owned Treatment Works (POTWs). The Department may grant "delegated" status to a local agency that demonstrates to the Department that it has the legal authority, procedures, and resources to adequately administer an SIU permitting program, as required under the Federal Pretreatment Program (40 CFR 403) and NJPDES regulations. Such a program requires both setting appropriate discharge limits for SIUs and enforcing those limits to ensure compliance. Once a pretreatment program has been delegated to a local agency, SIU permits are no longer issued by the Department in that service area.

The Division of Water Quality’s Bureau of Pretreatment and Residuals is responsible for overseeing the administration of local agencies’ delegated pretreatment programs as well as for issuing SIU permits for discharges into treatment works where local agencies do not have delegated pretreatment programs. Annual reports are required to be submitted by local agencies indicating the status of dischargers to POTWs and of the local agency's pretreatment program.

On September 5, 2006, the Department issued a new rule targeted at reducing the levels of mercury discharged to POTWs. The proposed amendments to the NJPDES rule, entitled “Requirements for Dental Facilities” at N.J.A.C. 7:14A-21, were published at 38 N.J.R. 3393(a). The proposed rule is intended to reduce mercury discharge from dental facilities. Dental facilities contribute as much as 35 to 45 percent of the mercury entering POTWs. Mercury from these facilities results from dental amalgam (approximately 50 percent mercury by weight) being rinsed down the drain, where it usually enters a municipal wastewater system, and then enters the POTW, which are often not equipped to treat wastewater for such heavy metals. Mercury not removed by the POTW’s treatment process is discharged into the surface waters of the State. Mercury that is removed at the POTW by wastewater treatment is concentrated in sludge that may be incinerated, which releases the mercury into the air where it can be deposited into surface waters.

The proposed new rule would, under most circumstances, exempt a dental facility from the requirement to obtain an individual permit for its discharge to a POTW, if it implements dental amalgam best management practices (BMPs) listed in the new rule, and installs and properly operates an amalgam separator. These measures should prevent about 99 percent of the mercury-containing wastes from dental facilities being sent to the POTW. The dental facility would have one year from the effective date of the rule to begin implementing the BMPs, and two years from the effective date to install the separator. For more information on the proposed dental rule, go to: http://www.nj.gov/dep/rules/.

Combined Sewer Overflow Program:

Combined Sewer Systems (CSSs) are wastewater collection systems designed to carry sanitary sewage, industrial and commercial wastewater, and stormwater runoff in a single system of pipes to a POTW. During dry weather, all flow (composed primarily of sanitary sewage and industrial/commercial wastewater) is conveyed to the POTW for treatment and disposal. During periods of rainfall or snowmelt, the total wastewater flows entering the collection system can exceed the capacity of the system or the treatment facility. Under such conditions, CSSs are designed to overflow at predetermined Combined Sewer Overflow Points (CSO Points) and result in discharges of excess wastewater flows, known as Combined Sewer Overflows (CSOs), directly to surface water bodies such as rivers, estuaries, and coastal waters.

CSO discharges contain raw sewage consisting of a combination of untreated human waste and pollutants discharged by commercial and industrial establishments. CSOs also have a significant stormwater component that includes pollutants from urban and rural runoff. The pathogens, solids, and toxic pollutants carried by CSOs may be discharged directly to the waters of the State during wet weather events.

CSOs are a human health concern because they can create the potential for exposure to disease-causing pathogens including protozoa, bacteria, and viruses. Exposure to CSO contaminants through swimming or other contact can lead to infectious diseases such as hepatitis, gastrointestinal disorders, dysentery, and swimmer’s ear infection. Other forms of bacteria can cause typhoid and cholera. Human health can also be affected by ingesting fish or shellfish contaminated by CSO discharges.

CSOs are point sources subject to NPDES permit requirements, including both technology-based and water quality-based requirements of the Federal Clean Water Act (CWA). The National Combined Sewer Overflow Control Policy requires CSO permittees to develop Combined Sewer Overflow Long Term Control Plans (CSO-LTCPs) that include the evaluation of alternatives for attaining compliance with the CWA, including compliance with surface water quality standards and protection of designated uses of waters of the State.

The objectives of the National CSO Strategy are to: ensure that if CSOs occur, they result only from wet weather; bring all wet weather CSO discharge points into compliance with the technology-based and water quality-based requirements of the CWA; and minimize water quality, aquatic biota, and human health impacts from CSOs. The overall planning approach outlined in the National CSO Control Policy consists of three major steps: system characterization, development and evaluation of alternatives and selection and implementation of the controls.

The Department is implementing a Statewide Combined Sewer Overflow Control Program in a phased approach. Pursuant to the National Policy, owners and/or operators of CSSs are required to develop and implement Nine Minimum Control Measures (NMCs). The NMCs are all technology-based best management practices that can be readily implemented to reduce CSOs and their effects on receiving waters. In the first phase of New Jersey's program, initiated in 1990, the Department required permittees to develop and implement solids/floatables control measures, to identify and eliminate dry weather overflows, and to document the implementation of NMCs. The Department also initiated the development of system characterizations or land-based models of the CSSs.

The most significant water quality concern directly associated with CSOs is pathogens. In the second phase of the State's CSO Program, as a first step in the development of CSO LTCPs, the Department requires permittees to evaluate the feasibility of effecting pathogen controls. Permittees are also required to quantify the expected removal of other pollutants that may occur incidental to the control of pathogens. These evaluations may be integrated with the TMDL process (see Chapter 5, Section 5.6), where appropriate, to develop wasteload allocations for CSOs, establish discharge requirements and/or to support Use Attainability Analysis and Surface Water Quality Standards Reviews.

As a result of the first phase of the State's CSO program, 40 CSO Points have been eliminated. At the remaining 242 CSO Points, solids/floatables control measures were required. These control measures capture and remove or otherwise prevent the discharge of approximately 3 tons per year of solids/floatables from CSOs. Solids/floatable controls are currently operating at 146 CSO Points. Work is either under design or in construction for the remaining CSO points. When completed, these control measures will prevent the discharge of approximately 850 tons per year.

Stormwater Permitting Program:

The Stormwater Permitting Program was mandated by Congress in the 1987 amendments to the federal Clean Water Act under Section 402(p). Consistent with the corresponding federal regulations, New Jersey's Stormwater Permitting Program is divided into two sections: Industrial Stormwater Permitting ("Phase I") and Municipal Stormwater Regulation ("Phase II"). Both programs emphasize pollution prevention techniques and source control rather than "end-of-pipe" treatment. Implemented primarily through the issuance of individual permits and innovative general permits, the stormwater permitting program is the Department's most ambitious effort in making pollution prevention part of the permitting process. New Jersey's stormwater permitting program relies primarily on pollution prevention through the development, implementation, and maintenance of Stormwater Pollution Prevention Plans. These plans stress the development of reasonable and cost effective best management practices (BMPs) that eliminate or minimize the contact between source materials and stormwater, preventing pollution and saving industry money by reducing inventory and material losses.

Industrial Stormwater Permitting Program (Phase I):
USEPA defined eleven categories of industry that may be subject to regulation under the Phase I Industrial Stormwater Permitting Program. All subject facilities must apply for or have a NJPDES permit for stormwater discharge unless all of the facility's stormwater is combined with other wastewater and discharged to a POTW, or is discharged to a wastewater treatment plant that has a NJPDES Permit. Industrial stormwater permits include basic industrial stormwater general permits, industry-specific stormwater general permits and individual industrial stormwater permits.

The large majority of regulated industrial facilities currently permitted by the Industrial Stormwater Permitting Program are authorized under the Basic Industrial Stormwater General Permit (NJ0088315). In general, facilities are eligible for authorization under this general permit if exposure of all industrial materials, activities or source materials to stormwater can be eliminated through the implementation of BMPs during an 18-month period. Exposure may be eliminated by covering the materials, moving the materials into temporary structures like sheds, overhangs or canopies, or by implementing good housekeeping practices, such as regular sweeping and spill clean-up. In addition to the Basic Industrial Stormwater General Permit, the Department has developed industry-specific stormwater general permits (Scrap Metal General Permit NJ0107671, Concrete Products Manufacturing General Permit NJ0108456, Hot Mix Asphalt Producers General Permit NJ0132721, Construction and Mining Activities General Permit NJ0088323, Mining and Quarry General Permit NJ0141950). Facilities not eligible for one of these general permits must obtain an individual industrial stormwater discharge permit from the Department.

How a facility will eliminate or minimize contact of source materials with stormwater is usually described in a Stormwater Pollution Prevention Plan (SPPP). For the Basic Industrial Stormwater General Permit (NJ0088315), the SPPP is a simple plan that calls for removing pollutants from contact with stormwater. Many of the pollution prevention techniques discussed in the guidance manual may already be practiced at the regulated facility. Many companies that have implemented their SPPP have found that the cleaner and more organized work area needed to prevent stormwater contamination resulted in more efficient, safer, and cost-effective operations.

Individual NJPDES permits are issued to facilities that cannot eliminate exposure of pollutants to stormwater. These facilities have to develop and implement SPPPs to minimize or eliminate contact between pollutants and stormwater as well as comply with other permit conditions, such as monitoring stormwater discharges for pollutants. In some cases, effluent limitations may be imposed on the industrial stormwater discharge. For more information on Stormwater Discharges, go to:
http://www.nj.gov/dep/dwq/stormw.htm.

Municipal Stormwater Regulation Program (Phase II):

In January 2004, the Department promulgated amendments to the NJPDES rules to facilitate implementation of the Municipal Stormwater Regulation Program, pursuant to USEPA's Phase II stormwater rules published in December 1999. The Municipal Stormwater Regulation Program addresses pollutants entering waters of the State from many storm drainage systems owned or operated by local, state, interstate or federal government agencies. USEPA regulations refer to these systems as "municipal separate storm sewer systems" or “MS4s.”

The Municipal Stormwater Regulation Program regulates, in some form, all 566 municipalities within the State, as well as public complexes and highway systems. Municipalities within the State are designated as either Tier A or Tier B municipalities. Tier A municipalities are generally located within the more densely populated regions of the State, or along or near the coast. Tier B municipalities are generally more rural and in non-coastal regions. Public complexes include large, publicly-owned or operated military bases, colleges, and hospital complexes. Highway systems include those operated by counties or by transportation agencies such as the New Jersey Department of Transportation, Port Authority of New York and New Jersey, New Jersey Expressway Authority, and the South Jersey Transportation Authority.

On February 2, 2004, the Department issued four final NJPDES general permits: Tier A Municipal Stormwater General Permit (NJ0141852), Tier B Municipal Stormwater General Permit (NJ0141861), Public Complex Stormwater General Permit (NJ0141879), and Highway Agency Stormwater General Permit (NJ0141887). These general permits address stormwater quality-related issues associated with new and existing development and redevelopment by requiring the preparation of a stormwater management program and implementation of specific permit requirements referred to as Statewide Basic Requirements.

New Jersey's rules differ in some aspects from USEPA's Phase II stormwater rules. New Jersey's four general permits are intended to be prescriptive regarding the implementation of BMPs, providing minimum standards, measurable goals, and implementation schedules for each. The Department believes that this will ensure a consistent approach to stormwater management statewide, reduce costs for regulated entities, and provide a simple process for requesting authorization.

Statewide Basic Requirements (SBRs) address stormwater quality issues related to new and existing development and redevelopment by requiring the preparation of a stormwater management program and implementation of specific permit requirements. All permittees are required to develop and adopt stormwater management programs for new development. New development and redevelopment is addressed, in part, by requiring municipalities to adopt and enforce a municipal or regional stormwater management plan and ordinance in accordance with the Department’s Stormwater Management Rules at N.J.A.C. 7:8. In addition, permittees must develop public education programs and waste disposal controls for existing developed areas. The Tier B Permit (rural areas) concentrates on new development and redevelopment projects and public education. The Tier A Permit (urban areas) includes the requirements found in the Tier B Permit, as well as BMPs aimed at controlling stormwater pollutants from existing development. For more information on the Municipal Stormwater Regulatory Program, including the Stormwater Management Rules and the Stormwater BMP Manual, go to: http://www.njstormwater.org/.

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5.5 Nonpoint Source Pollution Control Programs

Nonpoint source (NPS) pollution is caused by precipitation moving over and through the land and carrying natural and anthropogenic pollutants into surface and ground water. Much progress has been made in controlling point source discharges of pollutants since the enactment of the federal Clean Water Act. However, due to its ubiquitous nature, progress in controlling NPS pollution has lagged behind. The Department estimates that between 40 and 70 percent of pollutant loads emanate from nonpoint sources.

NPS pollution cannot be traced back to a single point: it is diffuse in origin, can emanate from anywhere in the watershed (the total land area that contributes water to a lake, pond, river or stream is its "watershed") and is most often the result of human activity and behavior. NPS pollution may include chemicals and pathogens carried into streams by rainfall, such as oil and grease from roadways and parking lots; fertilizers from lawns, golf courses and agricultural fields; and bacteria from improperly maintained septic systems, pet waste and large congregations of water fowl. However, NPS pollution can also include impacts not typically thought of as pollution, such as increased water temperature resulting from the clearing of streamside vegetation, or significant changes in the hydrology of the stream resulting from either increased stormwater runoff, which can erode the stream bed and banks, or the loss of water in the stream during dry weather resulting from both the loss of recharge in a watershed under development or due to increased water withdrawals within a water supply watershed. Because of the diffuse and intermittent nature of these nonpoint sources of pollution, they do not lend themselves to traditional monitoring and permitting.

Addressing NPS pollution requires a comprehensive control strategy that includes source identification, establishment of best management practices, public education and cooperation among many levels of government and the local community. That strategy is articulated in the Department's 2004-2006 State of New Jersey Nonpoint Source Report, published on April 1, 2006. This report is also available from the Division of Watershed Management's NPS Web site at http://www.nj.gov/dep/watershedmgt/nps_program.htm. Below are summaries and updates of key aspects of New Jersey's NPS Program, including Section 319(h) Grants, Stormwater Management, Coastal NPS, and Agricultural NPS.

Section 319(h) Nonpoint Source Pollution Control Grants:

Since 1990, Congress has annually appropriated monetary grants to states under Section 319(h) of the federal Clean Water Act to assist states in implementing management programs to control NPS pollution. The majority of the 319(h) funds received by the State of New Jersey are passed-through to eligible entities to implement NPS pollution control projects. The Department's Division of Watershed Management administers New Jersey's 319(h) Grant Program. While early projects focused on streambank restoration, more recent projects focused on developing and implementing watershed-based plans (i.e. plans that are regional or area-wide in scope rather than a study of one location). Appendix L lists Section 319(h) grant projects funded in state fiscal years (SFY) 2003 through 2005.

For SFY 2006, the Department solicited projects to develop Watershed Restoration and Protection Plans and Watershed-based Plan Implementation Projects. Funding in this grant cycle is being focused primarily on the implementation of Department-approved Watershed-based Plans. However, this focus will be balanced with the need to continue the development of Watershed Restoration and Protection Plans in targeted watersheds.

Watershed-Based Plan Implementation Projects are NPS abatement projects that have been specifically identified as integral components of a Department-approved watershed-based plan. Funding priority will be given to projects that reduce the NPS loading of a specific pollutant for which a TMDL has been developed; address an impairment(s) currently found on Sublist 5 of the Integrated Report; or abate a specific source of NPS pollution impacting a Category One waterbody.

Watershed Restoration and Protection Plans are designed to identify specific measures to be taken to restore impaired waters and to protect and maintain unimpaired waters. These plans are intended to serve as the next level of watershed-based planning and provide blueprints for achieving the objectives of the plan. When available, these plans will utilize strategies outlined in more general plans or generic parts of TMDL implementation plans, and identify the specific tasks, geographic location, methods and responsible parties that will achieve the intent of the more general strategies. Funding priority will be given to the development of Watershed Restoration Plans for waterbodies listed as impaired on Sublist 5 of the *New Jersey 2004 Integrated Water Quality Monitoring and Assessment Report* or containing waters designated or proposed to be designated as Category One waters.

For more information on the Section 319(h) NPS Grant Program, go to: http://www.nj.gov/dep/watershedmgt/

Stormwater Management:

In February 2004, the Department adopted the first set of updates to the state's Stormwater Management Rules (N.J.A.C. 7:8) since their original adoption in 1983. The rule amendments were designed to protect water quality and preserve the integrity of drinking water supplies statewide. The Stormwater Management rules provide the basis for municipalities to develop stormwater management plans. The rules also amend the requirements contained in the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21-1.1 and establish new requirements for permits issued by the Land Use Regulation Program.

The Stormwater Management rules specify stormwater management standards that are mandatory for new major development. The New Jersey Stormwater Best Management

Practices Manual (BMP manual) has been developed to provide guidance to review agencies and the regulated community on complying with the standards in the Stormwater Management rules. The BMP manual is electronically available through www.njstormwater.org or through the Department's Office of Maps and Publications.

The Stormwater Management rules also establish performance standards for ground water recharge to increase the integrity of the state's aquifers and protect dry weather base flow in streams. The rule requires that 100 percent of the average annual ground water recharge be maintained for new development projects, to help mitigate future droughts and flooding. For the most part, these requirements are waived in urban areas. In addition to recharge standards, the rules promote smart growth techniques by requiring consideration of non-structural design methods for stormwater management. These include maintaining natural vegetation, reducing unnecessary loss of trees, minimizing existing drainage surfaces, preventing large contiguous areas of impervious surfaces, and maintaining existing drainage characteristics and patterns. Consideration of these techniques will require that stormwater management is considered early in the project design and not as a secondary concern. Once nonstructural measures have been fully integrated into the site design, any remaining water quality concerns must be addressed through the use of best management practices to reduce runoff of total suspended solids (TSS) by 80 percent and other pollutants up to the maximum extent feasible.

One of the most significant provisions of the Stormwater Management rule is the requirement for a 300-foot buffer to minimize the impact of stormwater runoff from new major development along a Category One (C1) waterbody. The rules also apply the buffer to tributaries of C1 waterbodies within the immediate watershed boundary that are not themselves designated C1 waterbodies. The Stormwater Management rules provide some flexibility on the size of the buffers in areas where regional stormwater management plans have been approved and for minor disturbances around existing and some prior-approved development within the 300-foot buffer.

Concurrent with the Stormwater Management rules, the Department also promulgated new rules to facilitate implementation of the Municipal Stormwater Regulation Program, pursuant to USEPA's Phase II stormwater rules published in December 1999. The Municipal Stormwater Regulation Program addresses pollutants entering waters of the state from many storm drainage systems owned or operated by local, State, interstate or Federal government agencies. USEPA regulations refer to these systems as "municipal separate storm sewer systems" or "MS4s". For a complete description of New Jersey's Stormwater Permitting Program, see Chapter 5, Section 5.4.

For more information about the Stormwater Management rules, go to: www.njstormwater.org.

Floatables Control:

Clean Shores Program:
The Clean Shores Program administered by the Department's Division of Watershed Management is responsible for the removal of wood, garbage and medical waste from tidal shorelines utilizing inmate labor. In 2005, the program removed 4.7 million pounds of floatables from 119 miles of shoreline bringing the total amount of wastes removed since 1989 to 109.4 million pounds. Cleaning up these wastes helps prevent the deleterious effects of marine debris upon recreational ocean bathing beaches and the coastal environment. The program is also responsible for building dune fencing and planting dune grass in several oceanfront communities and one state park. In an average year, cleanups are carried out in cooperation with 45 municipalities, seven county agencies, five private contractors, two correctional facilities, two state parks, one federal park and the Department of Corrections. The program is funded entirely from the sale of shore protection motor vehicle registration plates. The sponsoring municipalities and state/federal parks provide support to the program and lays out the initial costs of the cleanup. The program in turn reimburses the sponsors for the cost of waste disposal and contracted services incurred during cleanup activities. For more information about the Clean Shores Program, go to: http://www.state.nj.us/dep/watershedmgt/clean_shores.htm.

Adopt-a-Beach Program:
Since 1993, Adopt-a-Beach volunteers have been cleaning up litter and debris from about 60 beaches, in the spring and in the fall of each year. The goal of this program is to foster a sense of stewardship of the state's coastal beaches. The twice a year activity encourages citizens to adopt a beach and become responsible for cleaning up debris and floatables which can become harmful to marine life. During the spring and fall cleanups conducted in 2003, over 1,000 volunteers from 60 groups collected more than 58,000 items of trash that would otherwise have become pollution to our coastal waters. During the spring and fall cleanups in 2005, over 1,000 volunteers from 60 groups collected more than 30,000 items of trash. The amount of trash collected was a reduction from previous years due to rainy weather during the cleanup days. For more information about the Adopt-A-Beach Program, go to: http://www.state.nj.us/dep/watershedmgt/adopt_a_beach.htm.

PVSC Skimmer Boats:
The Passaic Valley Sewerage Commissioners (PVSC) was created in 1902 to abate pollution in the Passaic River. PVSC operates two pontoon boats that skim floating debris from the Passaic River. This material, which runs the gamut from plastic cups to tree trunks, is found in abundance after heavy rains or at high tide. The two skimmers work in tandem. The larger boat plies the channels while the smaller vessel can operate closer to the riverbank and in the shallows further upstream. To date, 2650 tons of materials have been removed. For more information about PVSC's Passaic River/Newark Bay Restoration Program, go to: http://www.pvsc.com/rr/index.htm.

Agricultural Nonpoint Source Pollution Control Program:

In some of New Jersey's more rural watersheds, agricultural land uses have been identified as a major nonpoint source of pathogens (e.g., fecal coliform) and nutrients (e.g., phosphorus). Therefore, implementing best management and conservation practices on agricultural lands to improve water quality, conserve water and energy, prevent soil erosion and reduce the use of nutrients and pesticides, is an important component of New Jersey's nonpoint source pollution control strategy. The Department continues to foster a partnership with the New Jersey Department of Agriculture (NJDA) and other agricultural organizations to achieve New Jersey's water quality goals.

<u>Farm Bill Conservation Programs</u>
The United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) provides technical and financial assistance to private landowners to improve natural resources and the environment. Much of the NRCS technical assistance is provided in cooperation with New Jerseys' 21 counties and 15 Soil Conservation Districts. NRCS also administers the conservation programs made available under the 2002 Farm Bill. Below is a brief description of each of the Farm Bill conservation programs followed by program implementation data.

- Agricultural Management Assistance (AMA): Provides cost-share assistance to agricultural producers to address risk management concerns linked to water management, water quality and erosion control issues. AMA reduces the economic risk of adopting conservation measures for limited resource, small scale and beginning farmers.

- Environmental Quality Incentives Program (EQIP): Provides technical, financial, and educational assistance to farmers/producers for conservation practices that address natural resource concerns, such as water quality. Practices under this program include integrated crop management, grazing land management, well sealing, erosion control systems, agri-chemical handling facilities, vegetative filter strips/riparian buffers, animal waste management facilities and irrigation systems. In addition to funding for technical and financial assistance, in FY 2005 New Jersey also provided funding to two cooperating entities through competitive Conservation Innovation Grants. New Jersey was one of 15 states to pilot this effort. The grants will provide a recognition system for exceptional conservation work in the Neshanic River Watershed and create a showcase equine farm that will demonstrate innovative grazing practices.

- Grassland Reserve Program (GRP): GRP offers private landowners the opportunity to protect, restore and enhance grasslands on their property. In FY 2005, in addition to execution of several 10-year contracts, New Jersey began work to develop a permanent easement on 20 acres in Salem County.

- Farm and Ranch Lands Protection Program (FRPP): FRPP provides matching funds to help purchase development rights to keep productive farmland operating in agricultural areas. Over the next two years, almost 4,000 acres will be protected from development through these agreements.

- Wildlife Habitat Incentives Program (WHIP): Assists landowners with habitat restoration and management activities specifically targeting fish and wildlife, including threatened and endangered species. WHIP provides financial assistance to develop or improve wildlife habitat in six priority areas on nonfederal lands. About half of the FY 2005 funds were obligated to individual landowners. New Jersey signed nine Contribution Agreements with cooperating partners for the remaining funds. These agreements will provide habitat improvements on nearly 3,000 acres.

- Wetlands Reserve Program (WRP): Designed to address the restoration of previously farmed wetlands. Easements are purchased for 10- or 30-year periods, or are dedicated permanently. WRP provides technical and financial assistance in exchange for retiring marginal land from agriculture in order to enhance wetlands. For FY 2005, New Jersey received a supplemental allocation for a 2,200-acre project originally funded in FY 2004 in Burlington County and will allow restoration measures to move forward.

- Conservation Security Program (CSP): CSP rewards producers who are actively protecting soil and water resources on their farm. In 2005, the Cohansey-Maurice River Watershed in Salem and Cumberland Counties was selected for participation in the national program. Successful applicants received a total of $59,648 in first-year payments, with a total of more than $300,000 to be paid over the life of their 5- or 10-year contracts.

New Jersey received $15,690,050 in FY2004 and $11,705,050 in FY2005, authorized by the 2002 Farm Bill, for eligible New Jersey landowners and agricultural producers. Table 5.4-1 shows the types of projects funded and Table 5.4-2 shows the acres implemented.

Table 5.4-1: Statewide Programs for Agricultural Nonpoint Source Pollution Control Implementation Projects (2002 Farm Bill Funds)

Program	**Funded Projects 2004**		**Funded Projects 2005**	
	Contracts (Acres)	**Amount**	**Contracts (Acres)**	**Amount**
AMA	27 (876.0)	$ 396,566	16 (225.9)	$ 349,164
EQIP	144 (3,579.0)	$4,486,786	65 (6,606.6)	$3,565,040
GRP	11 (755.5)	$ 226,348	5 (157.6)	$ 184,824
FRPP	31 (2,677.0)	$5,293,780	55 (3,902.0)	$6,153,175
WHIP	32 (866.1)	$ 342,038	35 (923.3)	$ 345,812
WRP	1 (2,200.0)	$5,000,000	Supplemented 1	$ 470,000
CSP			5 (808.9)	$ 307,107

Table 5.4-2: Accomplishments of Statewide Programs for Agricultural Nonpoint Source Pollution Control Implementation Projects

Accomplishment	Applied 2004	Applied 2005
Conservation Planning on Cropland (Acres)	10,039	21,862
Nutrient Management (Acres)	5,058	6,081
Wildlife Habitat (Acres)	1,778	813
Wetland Restoration (Acres)	78	110
Grazing Lands (Acres)	2,109	1,060
Comprehensive Nutrient Management Plan (#)	12	22

Conservation Reserve Enhancement Program

The Department, along with the New Jersey Department of Agriculture and the United States Department of Agriculture's Farm Service Agency jointly developed a Conservation Reserve Enhancement Program (CREP) proposal for New Jersey. The New Jersey CREP is designed to help farmers reduce nonpoint source pollution caused by agricultural runoff in an effort to improve water quality in New Jersey. Under NJ CREP, farmers receive financial incentives from the USDA's Farm Service Agency and the New Jersey Department of Agriculture to voluntarily remove marginal pastureland or cropland from agricultural production and convert the land to native grasses, trees and other vegetation. The vegetation can then serve as a buffer to filter or contain agricultural runoff and prevent polluted stormwater runoff generated by farms from reaching neighboring water bodies.

New Jersey seeks to enroll 30,000 acres of agricultural lands under NJ CREP to improve the quality of runoff from these lands. NJ CREP encourages farm owners and operators to voluntarily implement one or more conservation practices on their land by offering financial incentives. The program provides a 10-year enrollment period and targets the installation of riparian buffers, filter strips, contour buffer strips and grass waterways. Farmers enroll their land under NJ CREP by installing conservation practices under 10-or 15-year rental agreements and/or permanent easement contracts.

As of February 2006, seven NJ CREP contracts were approved enrolling 16 acres into the program. Total Conservation Reserve Program (CRP) figures, including general signup CRP contracts (which fund cool and warm season grasses, trees and wildlife habitat), continuous CRP contracts (which are dedicated small, environmentally sensitive acreage), and NJ CREP, equal 141 approved contracts statewide with 2,336 acres enrolled. Even though NJ CREP is still in its infancy and is sharing the same slow start that other state CREPs experienced, it is expected to enjoy the same successful outcome that other state CREPs have had. In fact, interest is growing in Salem County where the first NJ CREP contract was signed. For more information about NJ-CREP, go to: http://www.nj.gov/dep/watershedmgt/crep.htm.

Soil Erosion and Sediment Control Act Implementation

Over the past few decades, a rapid shift in land use has been occurring in New Jersey. Land that was traditionally agriculture and rural was developed into non-agricultural and urban uses. The construction of houses, industrial facilities, and commercial sites caused major land disturbances. The extensive development of land throughout much of New Jersey has often been accompanied by damage to our natural resources. One of the most serious of these problems is the erosion of soil by both wind and water. When soil is displaced unintentionally in this manner, problems are created in the area where the soil comes from and in the area where it is deposited. In the area where the erosion originates, topsoil is lost, along with all the vegetation that may have been growing in it. Where soil is deposited, silting of the downstream water body or drainage facility increases the potential for flooding. Suspended soil particles lower the dissolved oxygen levels in receiving waters and block out sunlight, choking aquatic life and burying benthic habitat. All of these effects lower water quality, or have the potential to do so. The cost of correcting the resulting physical damage and pollution is much greater than the cost of preventing soil erosion.

The Soil Erosion and Sediment Control (SESC) Act is implemented through the Chapter 251 Certification Program administered by the state's 15 Soil Conservation Districts (SCDs). The SCDs provide technical assistance to private landowners as well as conservation education, watershed planning and regulatory enforcement. The SCDs review development and site plans to ensure that they are in compliance with SESC standards. Once the plans satisfy the standards, they are certified by the district. When work begins on a project, staff routinely inspect the site to make sure the soil erosion and sediment control measures in the plan are carried out in the correct construction sequence on the site. When construction is finished, inspectors perform a final site inspection to ensure that the site has been properly and permanently stabilized.

Table 5.4-3 below shows the number of site plan applications received, and, of those, the number of plans that were certified by the districts and the number of acres represented in all of the certified plans for all of New Jersey's 15 Soil Conservation Districts in each State Fiscal Year.

Table 5.4-3: Site Plans Certified by New Jersey's Soil Conservation Districts

SFY	# of Applications Received	Certifications Issued	Acres Under Development
2003	4,478	4,360	33,843
2004	4,752	4,686	32,378
2005	5,225	4,832	36,372

Since the inception of the SESC Program on January 1, 1976 through June 30, 2005, 97,477 applications were received and 94,214 certifications were issued on projects involving more than 734,714 acres of land. Utilizing the USDA Revised Soil Loss Equation computer model, it is estimated that through implementation of the Chapter 251 Program in New Jersey since 1976, nearly 23 million tons of soil were prevented from causing damage to streams, lakes and downstream properties. This represents an estimated 95% reduction in potential soil loss. It is important to acknowledge the vital role of the Chapter 251 Program in New Jersey's nonpoint source pollution control strategy to protect water quality.

Resource Conservation and Development

The North Jersey, South Jersey and Liberty Resource Conservation and Development (RC&D) Councils work with local and regional partners to address issues related to: water quality and water resource protection, sustainable farming and farm communities, and managing natural hazards. The New Jersey RC&D Councils assist in watershed management activities, including coordination and implementation of riparian buffer programs, and provide technical assistance to farmers to manage agricultural chemicals to protect water quality through integrated pest management and pasture management.

NJDEP Memorandum of Agreement with NJDA

A Memorandum of Agreement (MOA) entitled "Agricultural Point and Nonpoint Source Pollution Prevention and Abatement" was signed between the New Jersey Department of Environmental Protection and the New Jersey Department of Agriculture (NJDA) on July 27, 2005. Under this MOA, $175,000 in Corporate Business Tax (CBT) funds will be transferred from the Department to NJDA for the express purpose of targeted education to landowners whose operations are possible sources of nonpoint source pollution.

As part of the work under this MOA, some funds were allocated to educate producers throughout the Raritan River Watershed, the federally chosen 2006 Conservation Security Program (CSP) Priority Watershed for New Jersey, about the CSP and all the federal Farm Bill programs administered through NRCS. The Raritan River is phosphorus-impaired and a phosphorus TMDL is being developed by the Department. Significant agricultural acreage may be contributing to the total phosphorus load. Program enrollment in the Raritan River Watershed would go a long way toward implementing the TMDL and reducing water quality impairments caused by phosphorus.

For more information on the Farm Bill programs in New Jersey, go to: http://www.state.nj.us/agriculture/grants/farmbill.html. For more information about all USDA programs, go to: www.nrcs.usda.gov/programs.

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5.6 Total Maximum Daily Load Program

The Division of Watershed Management's Bureau of Environmental Analysis and Restoration is charged with establishing Total Maximum Daily Loads (TMDLs) for impaired waterbodies. TMDLs represent the assimilative or carrying capacity of the receiving water taking into consideration point and nonpoint sources of pollution, natural background water quality, and surface water withdrawals. A TMDL identifies the sources contributing a pollutant of concern and sets load reductions needed to meet surface water quality standards. TMDLs are required, under Section 303(d) of the federal Clean Water Act, to be developed for the pollutant(s) of concern in waterbodies that cannot meet surface water quality standards after the implementation of technology-based effluent limitations. In New Jersey, the Department is responsible for establishing TMDLs for all impaired waters identified on the Section 303(d) List of Impaired Waterbodies, in accordance with a priority ranking (see Appendix B for the 2006 303(d) List). Each TMDL is first proposed as an amendment to the applicable areawide Water Quality Management Plan (see Chapter 5, Section 5.2) and published in the New Jersey Register, followed by a public comment period. Together with the response to comments, a TMDL is established upon submittal to USEPA for approval. Once USEPA approves the established TMDL, it is adopted into the applicable Water Quality Management Plan pursuant to N.J.A.C. 7:15.

The Department has committed to establishing TMDLs in accordance with timeframes that USEPA describes as "expeditious." Since 2000, New Jersey has established 282 TMDLs, 279 of which were for impairments caused predominantly by nonpoint sources of pollution. These included nonpoint sources of stormwater that are now regulated as point sources under the Municipal Stormwater Regulation Program (see Chapter 5, Section 5.4). Significant load reductions from nonpoint sources are needed to attain water quality criteria and designated uses. Each TMDL includes an implementation plan, which identifies a suite of completed, ongoing, and planned activities needed to achieve the identified load reductions. In many cases, the completed and ongoing projects have been made possible through USEPA 319(h) grant awards. This funding is used in conjunction with state funds, other federal funds (EQIP, CRP and CREP), and local funds to address nonpoint sources of pollutants. New Jersey will continue to rely on 319(h) funding as a key element for accomplishing NPS reductions through TMDL implementation and thereby restoring water quality and designated uses. Additional information on 319(h) NPS Pollution Control Grant Program is provided in Chapter 5, Section 5.5.

The Department has committed to establish TMDLs by March 31, 2011 for all pollutant/waterbody combinations listed on the 1998 303(d) list that remain listed as impaired. The Department has exceeded its commitments for establishment of TMDLs for years 2003 through 2006. A status report is provided in Appendix K for all the TMDLs scheduled for development in the 2004 Integrated Report Two-Year TMDL

Schedule. For more information on the Department's TMDL Program, go to: http://www.nj.gov/dep/watershedmgt/tmdl.htm.

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5.7 Coastal Management Program

Concerted coastal management efforts began in New Jersey in 1970 with the passage of the Wetlands Act of 1970, N.J.S.A. 13:9A, followed by the Coastal Area Facility Review Act (CAFRA), N.J.S.A. 13:19, in 1973. In response to the 1972 passage of the federal Coastal Zone Management Act, New Jersey developed and gained federal approval of the New Jersey Coastal Management Program, which addresses the complex coastal ecosystem as a whole. The Coastal Management Program defines goals and standards for the purpose of integrating protection and enhancement of natural resources, appropriate land use and development, and public access to, and use of, New Jersey's coastal resources. The program, which was first approved in 1978, brings together the above laws as well as the Waterfront Development Law, the Public Trust Doctrine for access to, and use of, state-owned tidelands, and the regulatory activities of the New Jersey Meadowlands Commission These laws establish a set of over-arching policies that guide implementation of the New Jersey Coastal Management Program.

The regulatory authority of the Coastal Management Program has evolved over the years through amendments to the Coastal Zone Management (CZM) Rules, N.J.A.C. 7:7E, and the Coastal Permit Program Rules, N.J.A.C. 7:7. In addition, the Freshwater Wetlands Protection Act (N.J.S.A. 13:9B) and implementing rules (N.J.A.C. 7:7A) have been incorporated into the Coastal Management Program. The non-regulatory Coastal Nonpoint Pollution Control Program, recently developed as required by the Coastal Zone Act Reauthorization Amendments, is also being integrated into the program.

Since the inception of the New Jersey Coastal Management Program, there have been sweeping reforms to the coastal regulations, policies and administration of the program in response to increased growth in the coastal area and pressures on our coastal resources. However, the base program has remained reliant on the three major coastal statutes: the Wetlands Act of 1970, the Waterfront Development Act (N.J.S.A. 12:5-3), and CAFRA, and, more recently, the Freshwater Wetlands Protection Act.

The Coastal Management Program is comprised of a network of offices within the Department that serve distinct functions yet share responsibilities that influence the state of New Jersey's coast. Through the Coastal Management Program, the Department manages the state's diverse coastal area that includes portions of 17 counties and 245 municipalities. The Coastal Nonpoint Pollution Control Program applies statewide. A primary mission of the Coastal Management Program is ensuring that coastal resources and ecosystems are conserved as a vital aspect of local, state, and federal efforts to enhance sustainable coastal communities. The coastal boundary of New Jersey encompasses the CAFRA Area and the New Jersey Meadowlands District. It also includes coastal waters to the limit of tidal influence, including the Atlantic Ocean (to the limit of New Jersey's seaward jurisdiction); Upper New York Bay, Newark Bay, Raritan Bay and the Arthur Kill; the Hudson, Raritan, Passaic, and Hackensack Rivers, and the tidal portions of the tributaries to these bays and rivers. The Delaware River and Bay, and other tidal streams of the Coastal Plain, are also in the coastal area as is a narrow band of adjacent uplands in the Waterfront Development Area beyond the CAFRA Area.

New Jersey is required by the federal Coastal Zone Management Act to assess its Coastal Management Program every five years and provide a strategy for program enhancements in nine areas. The required assessment areas are aquaculture, coastal hazards, coastal wetlands, cumulative and secondary impacts, energy and government facility siting, marine debris, ocean resources, public access, and special area management planning. The New Jersey Coastal Assessment and Strategy for fiscal years 2006-2010 was approved by the National Oceanic and Atmospheric Administration (NOAA) on August 17, 2006. This five-year strategy ranked the following enhancement areas as either high or medium priority: coastal hazards, cumulative and secondary impacts, ocean resources, and public access. To view either the Assessment or the Strategy, go to: http://www.nj.gov/dep/cmp/309_combined_strat_7_06.pdf. For more information on New Jersey's Coastal Management Program, go to: http://www.nj.gov/dep/cmp/index.html.

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5.8 Atmospheric Deposition Reduction Strategies

New Jersey Mercury Reduction Activities:

In 1993, the Department convened its first Mercury Task Force. This Task Force recommended a stringent reduction in mercury emissions from municipal solid waste (MSW) incinerators, which was subsequently implemented by the Department and resulted in a greater than 90 percent reduction from this source category. A second Task Force was convened in 1998, triggered by a concern that additional significant sources existed and that energy deregulation would increase mercury emissions from Midwestern power plants. The Task Force subsequently reported that air emissions sources were the largest contributors of mercury to the environment in New Jersey, but that some of these emissions left the State via air transport. Atmospheric deposition (wet and dry) was the most significant source of mercury directly entering New Jersey's lands and waters, followed by water-borne and potentially water-borne sources. Potentially significant water-borne sources include point source discharges of wastewater and nonpoint sources, such as septic tank leachate, and land applied sludge.

The 1998 Mercury Task Force advocated a long-range goal of the virtual elimination of anthropogenic sources of mercury. Towards this goal, a two-step milestone was recommended: 1) a 75% reduction in air emissions below 1990 levels by 2006, and 2) an 85% reduction below 1990 levels by 2011. The Task Force reviewed all local and regional mercury sources and recommended reductions in all sources, as practicable. New Jersey expects this effort to eventually result in the attainment of water quality standards, given the scientific and quantitative basis of the current recommendations combined with the successful track record of the first Mercury Task Force. The Report of the Mercury Task Force can be viewed on the Department's Web site at http://www.state.nj.us/dep/dsr/mercury_task_force.htm.

In a continuing effort to carry out the recommendations of the Task Force, the Department is engaged in the following activities:

- On December 6, 2004, New Jersey adopted regulations establishing new requirements for municipal solid waste (MSW) incinerators, hospital/medical/infectious waste (HMIW) incinerators, iron or steel melters, and coal-fired boilers. These regulations are intended to prevent or decrease emissions of mercury from such operations by requiring MSW incinerators to further reduce their mercury emissions, by ensuring that the mercury emissions from HMIW incinerators will be maintained at low levels, and by requiring the mercury emissions from iron or steel melters and coal-fired boilers to be reduced. These rules are located at: http://www.state.nj.us/dep/aqm/Sub27-120604.pdf.

- The Department supported the Mercury Switch Removal Act of 2005, which became effective March 23, 2005. This law requires manufacturers of motor vehicles sold in New Jersey to develop and implement a plan to remove mercury-containing switches from end-of-life vehicles. The law also requires a $2 payment to recyclers for each switch removed and

$0.25 per switch to the Department to help cover the Department's costs in assisting with implementation. The Department approved the auto manufacturers' plan on April 11, 2006 and implementation of the plan is currently underway. Implementation of the plan is augmented by a requirement of the law that, by 30 days after plan approval (i.e., by May 11, 2006), all vehicle and scrap recyclers are required to remove mercury switches before end-of-life-vehicles are crushed or shredded.

- New Jersey also banned the sale of certain mercury thermometers, under N.J.S.A. 13:1E-99.91-93, which became effective on April 26, 2005. This statute prohibits the sale or promotional offering of basal, oral or rectal mercury thermometers. The ban does not apply to thermometers utilized in research and development, for professional health care purposes, or for industrial, manufacturing, or commercial purposes.

- The Department is part of the Regional Greenhouse Gas Initiative (RGGI), which was officially launched in December 2005 to reduce CO_2 emissions from power plants. Reductions in greenhouse gas emissions achieved through RGGI and through the introduction of renewable energy sources should also be accompanied by reductions in mercury emissions.

- The Department promulgated rules to reduce air emissions of mercury that became effective January 7, 2005 (revised November 4, 2006). These rules are expected to lead to substantial reductions of mercury emissions from coal-burning power plants, municipal solid waste incinerators, and iron and steel manufacturing facilities, and to ensure that emissions from medical waste incinerators remain low.

- To reduce the levels of mercury discharged to the surface waters, the Department proposed a new rule on September 5, 2006. The proposed rule, known as the "dental rule", is intended to reduce mercury discharge from dental facilities, which contribute 35 percent or more of the mercury entering publicly owned treatment works (POTWs). Mercury from these facilities results from dental amalgam (approximately 50 percent mercury by weight) being rinsed down the drain, usually to a municipal wastewater system, and then to the POTW. Mercury not removed by the POTW's treatment process is discharged into receiving waters. Mercury that is removed at the POTW by wastewater treatment is concentrated in sludge that may be incinerated, which releases the mercury into the air where it can be deposited into surface waters (see Chapter 6, Section 6.2: Consumption Advisories).

- The Department continues to advocate strong standards for coal combustion at the national level. In 2006, New Jersey participated, along with a number of other states, in a legal challenge to recently proposed federal rules affecting coal-burning power plants. The challenge argues that a greater degree of control of mercury emissions from these power plants is both possible and necessary. On July 14, 2006, New Jersey adopted rules for coal-fired boilers to provide a one-year extension of the compliance deadline in case additional time is necessary for adjustment, optimization, and alternative reagent evaluation necessary to enable a coal-fired boiler to consistently meet the emission standards in the rules. To view an unofficial copy of the rules, go to: http://www.nj.gov/dep/aqm/Sub27.pdf.

- On November 17, 2006, New Jersey submitted a plan for the Control of Mercury Emissions from Coal-Fired Electric Steam Generating Units required by Clean Air Mercury Rules. Its primary regulatory component is New Jersey's mercury rule. Other regulatory components of the plan are included in the Department's air permit regulations. The plan shows that New Jersey's existing coal fired power plants will emit less than the USEPA allocations to New Jersey based on application of the Department's mercury rule and operating permit limitations. The Department requested that USEPA not include New Jersey in the mercury emission-trading program adopted by EPA, and that all mercury allowances allocated to New Jersey be retired. It is estimated that by 2018, over 2000 pounds of mercury will additionally be reduced by New Jersey's plan.

The Department has completed a major study of atmospheric deposition of mercury and a number of other contaminants through the New Jersey Atmospheric Deposition Network. The Department has funded research to investigate historic and current trends in mercury deposition in water bodies as reflected in sediment concentrations and surface waters, and also continues to monitor mercury levels in fish and to issue fish consumption bans and health advisories. For more information regarding these studies and other mercury-related research, see http://www.state.nj.us/dep/dsr/mercury/.

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5.9 New Jersey Environmental Infrastructure Financing Program

Clean Water Projects:

In the 1987 amendments to the Clean Water Act (CWA), Congress required states to establish a Clean Water State Revolving Fund (CWSRF) program to qualify for federal capitalization grants. The CWSRF provides financial assistance for the construction of projects that protect, maintain and improve water quality. Established in 1988, New Jersey's CWSRF program is included in the Environmental Infrastructure Financing Program.

The New Jersey Environmental Infrastructure Financing Program (NJEIFP) is a revolving loan program administered through a partnership between the Department and the New Jersey Environmental Infrastructure Trust (EIT), an independent state financing authority. This program offers local government and private water purveyors low-cost financing for construction of wastewater and drinking water infrastructure, landfill construction and closure, and stormwater management and nonpoint source pollution control projects. Nonpoint source projects may include open space acquisition and remedial action, such as a brownfields cleanup, that produce a water quality improvement. (See Chapter 5, Section 5.10 “Land Acquisition for Water Quality Protection” for more details on NJEIFP funds for open space acquisition.)

The NJEIFP provides loans to local government agencies for wastewater treatment plant upgrades or improvements; facilities for the treatment and disposal or beneficial reuse of sewage and water treatment system sludges; collection and conveyance facilities; on-site system rehabilitation; infiltration/inflow correction; combined sewer overflows; and interconnection/cross-connection abatement projects. Also eligible are stormwater management/nonpoint source pollution control projects (e.g., stormwater basins, equipment purchases, and streambank stabilization), landfill closure and new cell construction, land acquisition and conservation, remedial action activities, well sealing, and others.

NJEIFP borrowers receive two loans, a 0% interest loan from the Department and a market rate loan from the sale of the EIT’s AAA rated tax-exempt bonds. Some projects will receive 75% of the total loan from the Department and 25% from the EIT, making their loan ¼ of the market rate. Projects that qualify for 75/25 financing include: projects serving a designated Urban Center or Urban Complex, Brownfield Development Areas, Transit Villages, as well as combined sewer overflow (CSO) abatement projects, septic system repair/replacement, and open space land acquisition projects. All other projects receive 50% of the total loan from Department and 50% from the EIT, making their loan ½ of the market rate. Borrowers benefit from reduced costs due to the economies of scale of a pooled bond issue; bond insurance is rarely needed; interest may be capitalized and principal payments deferred during construction; and the debt service reserve fund is capitalized by the State. NJEIFP loans are not limited and can be used to supplement grants and other loan programs.

A priority ranking system was created to decide which clean water projects get funded in a given funding cycle. The system was first developed in 1982 and is constantly evolving. Every year the Department develops a "Proposed Priority System, Intended Use Plan, and Project Priority List" as required by federal and State law. After the public has had an opportunity to comment on its proposal, the Department submits a final "Priority System, Intended Use Plan, Project Priority List, and Response Document" to USEPA for approval. The Priority System (PS) describes the ranking methodology for the municipal water pollution control projects that are eligible for financial assistance through the NJEIFP. The Intended Use Plan (IUP) provides information on funds available through the clean water component of the NJEIFP, including all federal funds allotted to the State under the CWA and available to the CWSRF. The Priority List identifies projects targeted for financial assistance from the CWSRF and identifies the estimated total eligible building costs under the appropriate project category.

The Department ranks projects based on the nature of the wastewater problem. Historically, the state's highest priority was to upgrade primary treatment plants to achieve secondary levels, thereby significantly reducing pollutant discharges. With the elimination of primary facilities in New Jersey, the primary discharge category has been deleted from the priority system - a major milestone that signals progress is being made under the state's financing programs to clean up New Jersey’s waters.

The ranking system now gives higher priority to projects that address discharges of raw, diluted, or inadequately treated sewage to the State’s waters during rain events, including projects to abate CSOs and major pipe rehabilitation to stop discharges of raw sewage and reduce infiltration and inflow (I/I) from sanitary sewer systems that overflow. These types of problems are frequently found in older urban areas, where pollution impacts streams and rivers near large population centers and the cost to correct these problems is a serious concern. Discharges from combined sewer systems impair water uses and can lead to the closing of beaches and shellfish beds. Priority is also placed on projects in coastal areas where pollution impacts from outdated sewage treatment and conveyance systems can harm the shore environment and the tourism industry. Projects to remediate overflows of sanitary sewage contribute to water quality improvements and result in improvements to the health, safety, aesthetic value and recreational attributes of the State’s waters.

Projects discharging to surface waters receive points that reflect the existing uses of the waterway. These uses include drinking water supplies, boating, fishing, swimming, and water used for industrial or agricultural purposes. The point values reflect the relative priority of the water uses, with drinking water and recreational uses being the highest priorities. Points are also given to projects that would eliminate failing septic systems, which are a public health threat. Projects also receive points based on the disparity between an area's existing water quality and the Department's water quality standards for that waterbody. The more polluted an area is, the more points it receives. After a project's discharge, water use and water quality points have been compiled, it is placed on a priority list in rank order. In the case of a tie, areas designated by the State Planning Commission receive highest priority and, if still tied, the higher priority is given to the project that serves the greater number of people.

In order to be eligible for funding through the NJEIFP, projects must be listed on the Project Priority List. Additionally, project sponsors must meet established planning, design and application deadlines as identified in the Priority System, Intended Use Plan and Project Priority List for the applicable funding cycle. Funding from the NJEIFP is made available to projects in the order they appear on the list. While a project's rank is important, a lower ranked project may still be able to secure financing if it meets planning, design, and loan application dates or, if sufficient monies are not available, it may be able to receive "pre-award approval" to start construction and receive loans for reimbursement of costs in a future year. Table 6.2-3 summarizes the Clean Water Loan Awards issued in State Fiscal Years 2003 and 2004. Changes to the priority system have been promulgated since these awards were issued; however, they correspond with a different timeframe than this report. Such changed will be explained in the Program Description section of the 2008 Integrated Report.

Table 5-3: Clean Water Loan Awards SFY 2003-2004

SFY	Type of Projects	Number of Loan Awards	Amount of Loans Awarded
2003	Clean Water	32	$159,986,264
2003	CW-Land Acquisition	6	$ 9,650,652
2003	Drinking Water	18	$ 52,536,219
	2003 Totals:	**58 Loans for 65 Projects**	**$222,173,135**

SFY	Type of Projects	Number of Loan Awards	Amount of Loans Awarded
2004	Clean Water	19	$ 99,484,899
2004	CW-Land Acquisition	4	$ 2,484,093
2004	Drinking Water	9	$ 46,152,523
	2004 Totals	**32**	**$148,121,515**

The Department's Priority System has recognized that environmental infrastructure emergencies may occur that endanger public health and welfare and can result in substantial environmental damage. Such circumstances require an immediate response for which a complete technical and environmental review in advance of construction is not possible. On July 15, 2005, the Department issued a generic Environmental Decision Document for environmental emergency response projects and on January 3, 2006, amendments to the program's rules at N.J.A.C. 7:22 were adopted to allow the EIFP to fund certain emergency projects. The generic EDD and the rule changes identify the specific types of projects and conditions that must exist to qualify under the emergency project provisions of the Financing Program. With the EDD and the rules as guidelines, the Department has developed a process to respond rapidly when emergencies occur, obtain basic project information, make an eligibility determination and issue a pre-award approval so that owners/operators can undertake the needed repairs and maintain eligibility for those expenditures through the EIFP. For ranking purposes, projects that qualify as emergency projects will receive funding priority over all other projects on the Project Priority List.

For more information on the NJEIFP, go to http://www.state.nj.us/dep/dwq/cwpl07_p.htm

New Jersey Pinelands Infrastructure Trust Financing Program:

Established by the Pinelands Infrastructure Trust Bond Act of 1985, the Program provides funding for infrastructure projects needed to accommodate existing and future needs in the 23 designated Pinelands Regional Growth Areas. Funding is available for the construction of new collection systems, interceptors, and the expansion/upgrade of wastewater treatment facilities. Projects certified under this program generally receive a grant for 40 percent of the allowable project costs and a loan for 20 percent of the allowable project costs from the Department. Loans for the remaining project costs may also be received from the Trust.

New Jersey Sewage Infrastructure Improvement Act Grants:

The New Jersey Sewage Infrastructure Improvement Act establishes comprehensive requirements for the Department and municipalities/authorities to address combined sewer overflows and stormwater management. The Department provides grants for planning and design for up to 90 percent of the costs involved for combined sewer overflow control projects throughout the state to eliminate dry weather overflows and to control the discharge of solids and floatables from combined sewers. In addition, the correction of interconnections/cross-connections in stormwater systems located in Atlantic, Cape May, Ocean and Monmouth counties are also eligible. Loans for the construction of these projects are available through the Environmental Infrastructure Financing Program.

Coastal Grants:

New Jersey recently enacted Public Law 2005, Chapter 301, which appropriates $30,000,000 for Department-issued grants to local government units for wastewater treatment system projects. The New Jersey Combined Sewer Overflow (CSO) Control Program will benefit significantly from this action. The legislation provides a total of $3,000,000 for 24 entities to fund up to 20% of the cost for development and evaluation of pathogen control alternatives and cost performance analyses for combined sewer systems required by the NJPDES permit program. The legislation also provides $24,180,000 for financing up to 20% of the construction costs for wastewater treatment system projects. The funds will be used for a wide variety of wet weather water quality improvement projects, including separate sanitary and stormwater sewer systems, combined sewer systems, and nonpoint source pollution abatement. In addition, the legislation appropriated $2,820,000 to two local government units to finance up to 20% of the project cost for wastewater effluent reuse/recharge projects.

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5.10 Land Acquisition for Water Quality Protection

Open space preservation is essential to protecting and enhancing the quality of life in New Jersey's communities. Uncontrolled, haphazard development is rapidly devouring New Jersey's open space. Poorly designed development threatens our precious water supplies and other vital natural resources by increasing the amount of pavement and impervious cover, and preventing rainfall from replenishing underground aquifers. New roads and large, scattered housing sites create currents of stormwater runoff that carry trash, road salts, oil, and other contaminants into our streams and rivers. Preserving open space protects land from development, safeguards our water supplies and other natural resources, and provides outdoor recreational opportunities.

As of January 1, 2005, there were 1,122,460 acres of land statewide being used for conservation and public recreation purposes. Of this land, federal, state, county, and municipal agencies have preserved 1,056,374 acres for public recreation and open space uses. The rest is preserved by private conservation interests. The statewide total does not include 149,414 acres of preserved farmland acreage. The National Park Service and the United States Fish and Wildlife Service manage over 113,000 acres of land or 10 percent of the State's open space. State government agencies administer 696,934 acres or 62 percent of New Jersey's preserved recreation land and open space. County and municipal governments are responsible for 197,007 acres or 18 percent of public parkland across the State. Nonprofit conservation organizations have preserved 66,086 acres of land statewide. Conservation organizations managed 5 percent of New Jersey's open space.

The Green Acres Program:

The Green Acres Program (Green Acres) was created in 1961 to meet New Jersey's growing recreational and conservation needs. As the principal land acquisition agent for the Department, Green Acres acquires land for state parks, forests, natural areas, and wildlife management areas. The program also provides matching grants and low interest (two percent) loans to municipal and county governments to acquire open space and develop outdoor recreation facilities. To date, Green Acres has protected more than 605,000 acres of open space and developed hundreds of public parks, bringing the statewide system of preserved open space and farmland to more than 1.3 million acres. Green Acres also administers the "Tax Exemption Program," which provides exemption from local property taxes to eligible nonprofit organizations that own recreation or conservation lands and allow public access. The Green Acres Program acquired a total of 46, 832 acres of land for preservation between July 1, 2002 and June 30, 2005.

New Jersey has long recognized the importance of protecting headwater areas of rivers, streams, lakes, reservoirs, wetlands and associated buffers, and coastal waters. These lands protect ecological resources and water quality, provide water-based recreational opportunities, and serve as linear open space linkages. Public Law 2002, Chapter 76, directs the Green Acres State Land Acquisition Program to prioritize land for acquisition for the protection of water resources and flood prone areas. As a result of this legislation, the Green Acres Program has revised the ranking system used to evaluate state land projects based on water resource features, biodiversity, etc. The new ranking system assigns three times the weight for water resource lands and two times the weight for flood prone areas as compared to other priority criteria. While the protection of water resources through land preservation has been a goal of the Green Acres Program since its inception, the new legislation further focuses Green Acres preservation efforts on lands that protect important water resources.

The Green Acres Program has also published *The Land Preservation Plan for 2005-2007*, which explains the criteria and process by which Green Acres considers land for acquisition, and sets forth policy to guide Green Acres in its state land acquisition efforts. During the preparation of this plan, several other plans and studies were consulted and reviewed to ensure that the State was undertaking a comprehensive approach in its water resource and open space planning. While the plan does not list individual parcels, it clearly identifies areas of New Jersey that are considered priorities for state land acquisition. The identification of these areas will establish a basis for decision-making by the Green Acres Program when both reacting to land offerings and targeting lands for preservation. State land acquisition activities covered in this plan include all the methods employed by the State to preserve land, fee simple acquisition, the purchase of easements and development rights, and the acceptance of donated land. The Green Acres program works with property owners in the municipalities identified for land acquisition. For more information go to: http://www.nj.gov/dep/greenacres/sitemap.htm#l and click on “Land Preservation Plan (2005-2007)”.

New Jersey Environmental Infrastructure Financing Program:

The New Jersey Environmental Infrastructure Financing Program (EIFP) is a partnership between the Department and the New Jersey Environmental Infrastructure Trust (see Chapter 5, Section 5.9). The Legislature created the program to offer local governments and private water purveyors low-cost financing for the construction of wastewater and drinking water infrastructure, landfill construction and closure, and stormwater management and nonpoint source pollution control projects. Nonpoint source projects may include open space acquisition and remedial action such as a brownfields cleanup that produce a water quality improvement.

Land acquisition financed through the EIFP must demonstrate a water quality benefit. Headwaters, stream corridors, wetlands, watershed protection, and aquifer recharge areas are among the types of land that would qualify. While lands purchased through the EIFP cannot be developed, they may be used for passive recreational activities such as hiking, fishing, and horseback riding. Application of a conservation easement on funded parcels assures that the water quality benefits are preserved. The EIFP works closely with the Green Acres Program to maximize a community’s limited funds for land acquisition. Through this partnership, municipalities can receive the resources necessary to purchase larger and/or more expensive parcels before they are lost to development. If only a portion of a parcel is eligible for EIFP financing, the remaining portion of the land can be financed through open space acquisition programs such as Green Acres or local programs funded by county and municipal open space taxes. In state fiscal year (SFY) 2003, $9,650,652 in loans were awarded for six land acquisition projects. In SFY 2004, $2,484,093 in loans were awarded for four land acquisition projects. For more information on the Clean Water Financing for open space preservation, go to: http://www.state.nj.us/dep/dwq/cwpl.htm.

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5.11 Water Education and Outreach

In recognition that some water pollution problems, such as nonpoint source pollution, require approaches other than the traditional regulatory approach (i.e., discharge permits with numeric effluent limitations), the Department administers a cadre of nonregulatory programs and initiatives for water quality restoration, protection, and enhancement. Many of these programs are administered by the Division of Watershed Management; however, some of the Department's water pollution control programs also employ nonregulatory elements, such as education and outreach, either in lieu of, or in tandem with, other permit requirements.

Recognizing the need to promote stewardship of our state waterways, the Division of Watershed Management's Office of Watershed Education, Estuaries and Monitoring has developed many programs and materials for stormwater, nonpoint source pollution, and watershed education and outreach. The **New Jersey Watershed Ambassadors Program** is an environmentally-oriented AmeriCorps program that places a trained Watershed Ambassador in each of the New Jersey's twenty watershed management areas. These Ambassadors work with local volunteers to monitor local rivers through Visual Assessment and Biological Assessment protocols. They also promote watershed stewardship and provide information through presentations at community organizations and schools.

The **Watershed Watch Network** is a service provider for training, assistance in quality assurance protocols, and overall data collection, for volunteer water monitoring groups and associated non-profit organizations. A four-tiered approach has been developed to allow volunteer monitors to select their level of involvement based on the purpose of their monitoring program, the intended use of the monitoring data, and the intended data user. The goal of the program is to provide guidance and acceptable methods to assist volunteers in designing and building upon their existing monitoring programs and to assist data users in gathering sound monitoring data commensurate with their desired use.

The Division of Watershed Management administers a number of watershed-focused public education and outreach programs. The **"Clean Water Raingers"** program offers educators a number of teaching materials for their students as well as background information on watersheds and nonpoint source pollution. Educators who participate are provided with free booklets and associated materials for elementary school-age students. **"Project WET"** (Water Education for Teachers) is a national program that offers teachers a better understanding of the world's water resources through hands-on, multi-disciplinary lessons. Project WET teaches about the importance and value of water in our every day life while offering specialized programs about New Jersey's water resources and watersheds. The **Harbor Watershed Education And Urban Fishing Program** educates young students living in the Newark Bay Complex about the hazards of eating contaminated fish and helps them to enjoy and respect their local water resources by focusing on healthier fishing and shellfishing alternatives in their community. This intensive four-day program gives students the opportunity to experience the New York-New Jersey Harbor Estuary first-hand through storm drain marking and fishing activities.

The Department's Division of Watershed Management and Division of Water Quality jointly developed a public information campaign aimed at reducing nonpoint source pollution, focusing on stormwater runoff. This campaign included a radio ad campaign, posters, leaflets sent to every municipality in the State, and Web sites targeted at specific audiences, including "Clean Water NJ" (www.cleanwaternj.org), the Department's public information Web site for stormwater. Technical information regarding the Department's Stormwater Permitting, Stormwater Management, and Nonpoint Source Pollution Control Programs is found at the "Stormwater and Nonpoint Source Pollution" Web site (www.njstormwater.org). For more information about these programs, see Chapter 5, Sections 5.4 and 5.5.

The Clean Water NJ Web site includes information about "stormwater pollution" and what citizens can do to help reduce it in their homes, cars, and communities. The Web site also provides links to educational resources for teachers and for the general public. The Division of Watershed Management's outreach and education Web site (http://www.nj.gov/dep/watershedmgt/outreach_education.htm) offers many tools for stormwater, nonpoint source pollution, and watershed education efforts. These include newsletters and brochures for the community at large, as well teacher workshops, free classroom presentations through the Watershed Ambassadors Program and the Harbor Watershed Education and Urban Fishing Program, and publications for students and teachers.

In addition, the Department's Environmental Education Program has developed a nationally acclaimed Web site, the "State Environmental Education Directory" (SEEDS) Web site, which provides educational materials and links to additional educational resources on many environmental topics, including water pollution, conservation, and stewardship. For more information about SEEDS, go to: http://www.nj.gov/dep/seeds/.

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5.12 Regional Water Quality Initiatives

Highlands Region Water Resource Protection Program:

The historic Highlands Water Protection and Planning Act (Highlands Act) was signed into law (N.J.S.A. 13:20-1 et seq.) on August 10, 2004. The purpose of the Highlands Act is to preserve an essential source of clean and plentiful drinking water for one-half of the State's population, and to protect the State's great diversity of natural resources. The Highlands Region supplies drinking water to over 5.4 million people or approximately 379 million gallons of drinking water daily. In addition to water resources, the northern New Jersey 800,000-acre Highlands Region contains exceptional natural resources such as contiguous forest lands, wetlands, pristine watersheds, and plant and wildlife habitat. The region contains many sites of historic significance and provides abundant recreational opportunities.

The Highlands Act documents the geographical boundary of the Highlands Region in New Jersey and establishes a Highlands Preservation Area (Preservation Area) and a Highlands Planning Area (Planning Area), each of roughly 400,000 acres. Additionally, the Highlands Act required the Department to establish regulations in the Preservation Area and created a Highlands Water Protection and Planning Council to develop a regional master plan for the entire Highlands Region.

The Highlands Act sets forth requirements for major Highlands development projects in the Preservation Area, to be implemented by the Department. The Department is charged with issuing a "Highlands Preservation Area Approval" to ensure compliance with all of its regulatory programs, including those implemented pursuant to: Freshwater Wetlands Protection Act, Flood Hazard Area Control Act, The Endangered and Non-Game Species Conservation Act, Water Supply Management Act, Water Pollution Control Act, The Realty Improvement Sewerage and Facilities Act (1954), Water Quality Planning Act, and Safe Drinking Water Act.

In addition, the Highlands Act immediately withdrew approved sewer service area designations in the Preservation Area where wastewater collection systems were not installed by August 10, 2004, except that this withdrawal did not affect any project specifically exempted from the requirements of the Highlands Act. The Department was also required to amend any areawide Water Quality Management Plan as necessary to reflect the withdrawal of sewer service area designations.

On May 9, 2005, the Department adopted the Highlands Water Protection and Planning Act rules at N.J.A.C. 7:38 to implement the enhanced environmental standards established in the Highlands Act. The rules established a consolidated Highlands permitting review and approval process for activities constituting major Highland development. The rules include the following standards and provisions for the Highlands Preservation Area:

- Establishes a septic density standard to prevent the degradation of water quality in consideration of deep aquifer recharge;
- Prohibits development, other than linear development, on slopes of 20% or greater and establishes standards for development on slopes between 10 and 20 %;
- Prohibits development that disturbs upland forest areas;
- Restricts impervious surface (not to exceed 3%);
- Limits forest clearing to within 20 feet of structures and 10 feet of driveways;
- Requires a 300-foot buffer from all surface water features for new major Highlands development;
- Prohibits new or expanded point source discharges to surface or ground water in the Preservation Area;
- Requires new or expanded point source discharges to surface or ground water in the Planning Area to maintain existing water quality;
- Reduces the threshold for obtaining a Water Allocation Permit to 50,000 gallons per day; existing unused allocations and allocations for nonpotable uses may be revoked if conservation measures are not maximized; new or increased diversions for nonpotable purposes that are more than 50% consumptive require equivalent reductions in water demand within the same drainage basin;
- Prohibits the construction of new public water systems or extension of public water systems to serve development in the Preservation Area;
- Imposes a 0% net fill in flood hazard areas; and
- Establishes waiver provisions that provide flexibility in any one of the standards as necessary to avoid taking of property, allow for redevelopment, or as necessary to protect the public health and safety.

The Highlands Water Protection and Planning Act rules were readopted on November 1, 2006.

As a prerequisite for Department permit applications for Highlands Preservation Area development proposals, the Division of Watershed Management makes Highlands Applicability determinations (including project exemption status) and Water Quality Management Plan consistency determinations. These determinations identify regulated activities in the Highlands preservation area, determine exemption status of these activities, and determine if the activities are consistent with the Water Quality Management Plan, to guide the course of permitting for the Department under the Highlands Act. For more information on the Highlands Act and its implementation, go to: http://www.nj.gov/dep/highlands/.

National Estuary Programs:

Estuaries are places where rivers meet the sea and where fresh water and salt water mix. Estuaries are vital ecosystems that are critical to early life stages of many species of fish and are critical to the health of coastal environments and to our enjoyment of them. Congress established USEPA's National Estuary Program in 1987 to improve the quality of estuaries of national importance. Section 320 of the federal Clean Water Act directs USEPA to develop plans for attaining or maintaining water quality in an Estuary. This includes protection of public water supplies; protection and propagation of a balanced, indigenous population of shellfish, fish, and

wildlife; allows recreational activities in and on water; and requires control of point and nonpoint sources of pollution.
There are 28 National Estuary Programs across the country that are authorized under the federal Clean Water Act to protect, preserve, and restore the nation's estuaries. Each National Estuary Program is a partnership of federal, state, and local government agencies, non-profit groups, academics and individual citizens that is was charged with creating and implementing a Comprehensive Conservation and Management Plan (CCMP) that addresses all aspects of environmental protection for the Estuary, including issues such as water quality, habitat, living resources, and land use. The CCMP is based on a scientific characterization of the Estuary, and is developed and approved by a broad-based coalition of stakeholders. The CCMP establishes priorities for action, research, and funding, and serves as a blueprint to guide future decisions and activities related to the Estuary.

The Department's Division of Watershed Management oversees New Jersey's three National Estuary Programs, specifically the New York/New Jersey Harbor Estuary Program, the Barnegat Bay Estuary Program, and the Delaware Estuary Program.

Barnegat Bay Estuary Program:

The Barnegat Bay – Little Egg Harbor Estuary is located along the central New Jersey coastline within the Atlantic Coastal Plain physiographic province. The 75-square-mile, environmentally sensitive estuarine system consists of aquatic vegetation, shellfish beds, finfish habitats, waterfowl nesting grounds and spectacular vistas. Its 660-square-mile watershed encompasses most of the 33 municipalities in Ocean County as well as four municipalities in Monmouth County. Although long recognized for its great aesthetic, economic, and recreational value, this back bay system is now affected by an array of human impacts that potentially threaten its ecological integrity.

The entire watershed has undergone dramatic growth since 1950. During the 1990s', the municipalities surrounding the bay reported population expansions that, on average, exceeded 20 percent. Now home for approximately 500,000 people, the current population more than doubles during the summer season. The development accompanying the increasing population growth has resulted in land use changing from principally undeveloped and agricultural to suburban. Boat traffic, including personal watercraft, has also significantly grown on the bay, raising concerns with respect to both use conflicts and the cumulative impacts on the bay's water quality. An assessment of the Estuary indicates that human activities in the watershed and Estuary, particularly new development spurred by increased population growth, have led to measurable degradation of water quality, destruction of natural habitats, and reduction of living resources in the system.

The Barnegat Bay National Estuary Program (BBNEP) is "a partnership of federal, state, and local interests" overseeing the development and implementation of a management plan for the entire Barnegat Bay Watershed. The BBNEP is made up of subcommittees that oversee the various aspects of the management plan: the Science and Technical Advisory Committee (STAC), the Advisory Committee, and the Policy Committee.

The BBNEP has completed a characterization report for the Barnegat Bay-Little Egg Harbor Estuary and watershed, followed by the Comprehensive Conservation and Management Plan (CCMP) for the Estuary and watershed, which was approved by USEPA on May 15, 2002. The CCMP is divided into four major action plans: Water Quality/Water Supply; Habitat and Living Resources; Human Activities and Competing Uses; and Public Participation and Education. The plan also identifies and prioritizes action items for each of the four action plans that are needed to protect the Barnegat Bay Estuary. Some of these action items are highlighted below:

<u>CCMP Action Items:</u>

- **GIS Based Tool for Riparian Zone Health:** In partnership with the Grant F. Walton Center for Remote Sensing and Spatial Analysis (CRSSA) at Rutgers, The State University of New Jersey, the BBNEP is funding a project that defines and characterizes the health of streamside riparian areas within the Barnegat Bay Watershed, and identifies those areas in the greatest need of restoration. The objectives of the project are threefold:
  1. To define riparian areas within the Barnegat Bay Watershed based on soils and hydrology;
  2. To characterize the relative health of these areas and generate a map of riparian areas ranked by health; and
  3. To develop a targeting tool to identify those subwatersheds and riparian corridors that should be priority targets for restoration.

- **Demographic Investigation of Submerged Aquatic Vegetation (SAV) in Barnegat Bay with Assessment of Potential Impacts of Benthic Macroalgea and Brown Tides:** This project is being funded by the BBNEP and the Rutgers University Institute of Marine and Coastal Science. Its major objective is to determine the changes that occur in the demographic characteristics and spatial habitat distribution of SAV over an annual growing period in the Barnegat Bay. The species composition, relative abundance, and potential impacts of benthic macroalgea and brown tide blooms, and their potential shading effects on SAV, are being targeted.

- **Metedeconk River Basin Study:** The BBNEP is working with Brick Township Municipal Utilities Authority and other key partners such as USEPA, The Trust for Public Land, and Ocean County, to implement watershed management activities in the Metedeconk River Basin, including land use analysis, water quality studies, and point and nonpoint source pollutant loading analyses, to protect the drinking water supplies and natural resources of the Metedeconk River. The project will involve development of specific resource protection alternatives for each municipality located within the Basin.

- **Toms River Water Quality and Land Use Study:** The Toms River Study is a joint effort conducted by USGS and the Department using federal Section 319(h) Nonpoint Source Pollution Control Program funding. The study's findings, thus far, conclude that nonpoint source pollution in the Toms River Basin is a major cause of water quality degradation. Chemical constituents from diffuse nonpoint sources are transported to the river by ground water and storm water runoff. Restoration efforts will focus on improvement of water quality to support shellfish harvesting and primary contact recreation (i.e., bathing) designated uses of waters within the Basin.

- **Barnegat Bay Marine Sewage Pumpout Boats:** Three pumpout boats now operate in Barnegat Bay during the boating season. These boats empty the holding tanks of recreational boats free of charge. The mobile nature of the service makes it much more accessible and convenient to boaters than stationary pump-out facilities. As of fall 2003, approximately 100,000 gallons of wastewater were removed from recreational vessels since the first pumpout boat began operation in 1998. Operational funds are provided by the County of Ocean, in partnership with the Ocean County Utilities Authority and the Ocean County Prosecutor's Office. The boats were purchased with grants from the New Jersey Clean Vessel Act Program. The pumpout boats provide an important service to vessel owners who might not otherwise have reasonable access to a marine sewage pumpout device. For more information on pumpout stations in New Jersey, go to: http://www.state.nj.us/dep/fgw/cvadir.htm.

- **Barnegat Bay Marine Sewage Pumpout Facilities:** More than 70 marine sewage pumpout facilities have been funded and installed in Barnegat Bay through the New Jersey Clean Vessel Act Program, as of 2005. The federal Clean Vessel Act of 1992 was passed to provide funds to states for the construction, renovation, operation, and maintenance of pumpout stations and dump stations and for implementation of boater education programs. In New Jersey, the Clean Vessel Act Program provides 100 percent of the costs to install sewage pumpout facilities. For more information about the New Jersey Clean Vessel Act Program, go to: http://www.state.nj.us/dep/fgw/cvahome.htm. For information on the federal Clean Vessel Sewage Discharge Program, go to: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.

- **Ocean County College "Experimental Watershed" Project:** The BBNEP sponsored the Ocean County College (OCC) "Experimental Watershed" Study in 2004, utilizing $30,000 in funds provided by the Ocean County Planning Department. The Project created a long-term resource management and nonpoint source pollution control/storm water management program on the 275-acre college campus, operated in conjunction with the OCC administrative departments, the Environmental Science Department, faculty and students, as well as outside partners. The Project included use of "grass carp" to control algal growth in the campus pond; various Canadian Geese management techniques to reduce nutrient and fecal coliform loadings on the college campus; weekly water quality monitoring of the OCC lake for conventional parameters (fecal coliform, temperature, pH, dissolved oxygen, precipitation, total phosphorous and total Kjeldahl nitrogen (TKN)) and a watershed assessment that consisted of the identification of potential pollutant sources within the Experimental Watershed Project Area (including OCC campus).

- **“Impacts to Coastal Systems” Symposium:** Rutgers Institute of Marine and Coastal Sciences (IMCS), the Jacques Cousteau National Estuarine Research Reserve (JCNERR), and the Barnegat Bay National Estuary Program, hosted an "Impacts to Coastal Systems" symposium in April 2004 to gather ideas on managing resource impairments in the Barnegat Bay Watershed. The objectives of the symposium were threefold:

  1. To identify new action items to improve nutrient management of the Barnegat Bay/Little Egg Harbor and Mullica River/Great Bay systems for incorporation into the BBNEP CCMP and the JCNERR Management Plan;
  2. To determine how new information can be used to implement existing action items in the CCMP; and
  3. To identify best management measures to help communities implement the Phase II Municipal Stormwater Regulations.

  Additional information about the symposium, including abstracts, photos, updates and a summary document, can be found on the JCNERR Coastal Training Program's Web site at: www.jcnerr.org/coastal_training.

- **Barnegat Bay Environmental Indicators:** BBNEP has developed a descriptive list of “primary” and “secondary” indicators to gauge the success of implementation of CCMP Action Items. The indicators are sufficient to serve as monitoring measures for all of the action items within the CCMP. The primary indicators were used for reporting progress to the BBNEP partners and the public, through the *State of the Bay* Report, released in August 2005. Six primary indicators were used:

  1. SAV Distribution, Abundance, and Health:
  2. Land Use/Land Cover Change
  3. Shellfish Beds:
  4. Bathing Beaches
  5. Harmful Algal Blooms
  6. Freshwater Inputs

- **Barnegat Bay Water Supply/Hydrologic Database Study:** The USGS is conducting a water supply study in the Barnegat Bay Watershed. The overall study objectives are to develop an improved hydrologic database and analytical tools for management of water supplies in the region and to apply these tools to improve upon the present understanding of factors controlling ground water flow and saltwater movement in confined and unconfined aquifers. Results of this investigation will provide the Department and other agencies with an improved understanding of the regional hydrologic system in coastal central New Jersey and its response to changes in withdrawal stresses.

- **Water Quality Monitoring in Barnegat Bay Using Data Loggers:** The BBNEP is coordinating a major initiative to provide accurate and comprehensive measurements of water quality parameters in the Barnegat Bay-Little Egg Harbor Estuary, as specified in the CCMP. The BBNEP, working together with the Rutgers University Institute of Marine and Coastal Sciences (IMCS) and the Department’s Bureau of Marine Water Monitoring, has established two sampling stations in the Barnegat Bay (Seaside Park and Little Egg Harbor) for long-term water quality monitoring. The project is being led by IMCS, which has a great deal of experience using YSI 6600-M automatic data logger units for estuarine water quality monitoring. Parameters are measured every 30 minutes and include: temperature, salinity, pH, dissolved oxygen, and turbidity, all of which greatly influence biotic communities in the Estuary.

For more information about the Barnegat Bay Estuary Program, go to: www.bbep.org.

The Delaware Estuary Program:

The Delaware Estuary is part of the Delaware River Basin. The Delaware Estuary stretches from Trenton, New Jersey and Morrisville, Pennsylvania south to mouth of the bay between Cape May, New Jersey and Cape Henlopen, Delaware. In addition to its remarkable natural habitats, the Delaware Estuary maintains the world's largest freshwater port, as well as a strategic military port. The port is home to the second largest refining-petrochemical center in the United States, providing 70% of gasoline and heating oil for the entire East Coast. The Basin also contains six nuclear reactors and one of the world's great concentrations of heavy industry. The entire watershed for the Estuary covers roughly 6,747 square miles of land that drains into 134 miles of the Delaware River and Bay, and it has an average depth of 21 feet. The entire Delaware River Basin is 13,539 square miles, draining parts of Pennsylvania (50.3%), New Jersey (23.3%), New York (18.5%), and Delaware (7.9%). The Delaware River itself is the longest undammed river east of the Mississippi; it is fed by 216 tributaries and extends 330 miles to the mouth of Delaware Estuary.

The watershed of the Delaware Estuary continues to undergo shifts in land use. Between 1970 and 1990, developed land within the watershed increased by 19.6%. Developed lands are forecast to continue to substantially increase by 36%, roughly 275,000 acres, between 1990 and 2020. This rapid growth in developed land is predicted to outpace population growth for the Estuary region, which is forecast to undergo only a modest increase of 10.9% from 1990 to 2020. All this suggests that the predicted growth will be associated mainly with urban sprawl. Such changes in land use patterns in the three states within the Estuary present major challenges for environmental managers, as natural lands and farmlands are converted for residential and commercial use. Changes in land use patterns have customarily been associated with increased stormwater runoff, which carries higher concentrations of nutrients, toxics and heavy metals to the Estuary. Pollution from land-based activities, loss of habitat, and the disruption of hydrologic functions are attributable to land use alteration in the watersheds of the Delaware Estuary.

As a former center for the Industrial Revolution in the New World, the greater Philadelphia region also contains a pollution legacy lasting more than 300 years; much of the present pollutant runoff can be attributed to past industry. Chlorinated organic compounds, such as polychlorinated biphenyls (PCBs), chlordane, and DDT, have been found in the tissues of fish and shellfish in the Delaware Estuary, which has resulted in fish consumption advisories being issued for the entire Estuary. In addition to the human health risks from consuming contaminated fish, PCBs also represent a direct ecological risk to wildlife and aquatic biota in the Estuary.

Elevated levels of PCBs, DDT and its metabolites, and chlordane have been detected in Peregrine Falcon eggs from the Estuary.

The Delaware Estuary Program (DEP), established in 1998, is the only tri-state effort among the National Estuary Programs and is overseen by The Partnership for the Delaware Estuary. The DEP is currently in its 9th year of implementing the Comprehensive Conservation and Management Plan (CCMP) for the Delaware Estuary. The Department participates on the Steering Committee, the Implementation Committee, the Technical Workgroup, the Information Management Advisory Committee, the Public Participation Implementation Team, the Toxics Advisory Committee, and the Monitoring Advisory Committee.

<u>CCMP Action Items:</u>

The DEP CCMP contains 77 Actions Items, 67 of which have been implemented or initiated to date. Highlights of additional programmatic accomplishments within the Partnership over the past two years include the following items:

- In 2003, the National Fish and Wildlife Foundation initiated the Delaware Estuary Grant Program (DEGP). This competitive grant program provides financial and technical assistance to support community-based projects that contribute toward the water quality, habitat protection, and living resource goals contained in the CCMP. To date, over $1 million in grant awards and another $3 million in leveraged funds have been allocated to 58 conservation-related projects in the Estuary. Funded activities include on-site stormwater retrofits and stream restoration in 40 locations; outreach to 20 watershed marinas and 10,000 Delaware boaters to implement pollution control BMPs, and restoration of over 1000 acres of estuarine emergent wetlands, inter-tidal marsh upland, tidal/non-tidal wetland habitats and other lands.

- In October 2004, the *"Delaware Estuary Monitoring Report"* was released by DRBC in cooperation with the Monitoring Advisory Committee. The report covered monitoring activities and data collected or reported during 1999 – 2003 and continues to fulfill a program element of the CCMP.

- In early 2005, the Partnership convened a science and management conference to summarize the current state of science and identify and prioritize science and management needs for the Estuary. The conference generated a "White Paper on the Status and Needs of Science in the Delaware Estuary".

- In 2005, the bi-state Delaware Bay Oyster Restoration Work Group secured $750,000 in federal and state (New Jersey) funding. For 2006, the oyster revitalization project in the Delaware Bay received an additional $2 million from Congress. The money is being used to rejuvenate the dwindling oyster populations of the Estuary.

- An ad-hoc committee has been formed to help address the Estuary's habitat and living resource issues. The committee will employ the National Vegetation Classification System to describe over 160 of the Estuary's natural communities. The classification and community descriptions will then provide the foundation for the Estuary's habitat and living resources strategy, which will include a prioritized ranking of acquisition and restoration projects.

- The Corporate Environmental Stewardship Program provides corporations within the Delaware Estuary with the opportunity to protect fish and wildlife habitat and improve biodiversity. There are currently 24 corporations actively participating in protecting the Delaware Estuary.

- The "Delaware River to Sea Network" is being created to promote ecotourism in the Delaware Estuary. The Network will be a collection of "special places" in the Estuary where people can experience, first-hand, life and culture in the region. These special places include parks, wildlife refuges, museums, historic sites, and trails.

<u>DEP TMDL Study:</u>

USEPA developed the DEP TMDL study in cooperation with Delaware, Pennsylvania, and New Jersey, to address impairment of the Delaware Estuary from elevated levels of PCBs in the tissue of fish caught in parts of the Delaware River from Trenton to the Delaware Bay. USEPA established the TMDL on behalf of the three states, based on the work of the Delaware River Basin Commission. The 85-mile segment of the Delaware River from Trenton, New Jersey downstream to the head of the Delaware Bay, near Liston Point, Delaware was divided into four segments, each with its own TMDL.

The PCB TMDLs address all potential sources of PCBs, including stormwater runoff and runoff from Superfund sites, which are the major contributor of PCBs into the river. USEPA, the three states, and other stakeholders are in the process of developing pollution reduction strategies to address these major sources. The TMDLs also impact 142 permitted discharges from municipal wastewater and industrial facilities along the river that were identified as potential sources. These facilities will be required to identify how and where PCBs are entering their systems, and then devise a strategy to capture the PCBs so they do not pass through to the Delaware River.

For more information on the Delaware Estuary Program, go to: www.DelawareEstuary.org.

New York-New Jersey Harbor Estuary Program:

The New York-New Jersey Harbor Estuary includes the waters of New York Harbor and the tidally influenced portions of all rivers and streams that empty into the Harbor. The "core area" of the Harbor, which is generally the most degraded, extends from the tidal waters of the Hudson-Raritan Estuary from Piermont Marsh in New York State to an imaginary line (the Sandy Hook-Rockaway Point Transect) connecting Sandy Hook, New Jersey, and Rockaway Point, New York at the mouth of the Harbor. This core area includes the bi-state waters of the Hudson River, Upper and Lower New York Bays, the Arthur Kill, the Kill Van Kull, and Raritan Bay. In New York, the area includes the East and Harlem Rivers and Jamaica Bay, and in New Jersey, it includes the Hackensack, Passaic, Raritan, Shrewsbury, Navesink, and Rahway Rivers, and Newark and Sandy Hook Bays. The New York Bight is the ocean area extending approximately 100 miles offshore from the Sandy Hook-Rockaway Point Transect to the Continental Slope. Almost 240 miles of sandy shoreline, extending from Cape May, New Jersey to Montauk Point, Long Island, form its landward border. There are several back bays that are located behind the barrier beaches outside the core area of the Harbor. Some of the larger back bays adjacent to the Bight are the Great South Bay, Shinnecock Bay, and Moriches Bay in New York, and Barnegat Bay, Great Bay, Great Egg Harbor, and Little Egg Harbor in New Jersey.

Although the focus of the Harbor Estuary Program is on the Harbor and Bight, the watershed of the Estuary encompasses about 16,300 square miles, including much of eastern New York, northern New Jersey, and small parts of western Connecticut, Massachusetts, and Vermont. The quality of the Estuary's waters is affected not only by activities occurring directly in the Harbor and Bight but also by industrial, agricultural, land use, and other individual practices throughout this larger watershed. As rainwater moves over the land in the watershed, it carries with it many potential pollutants that eventually end up in the Estuary – including oil dumped down storm drains, pesticides from farms, lawn fertilizers, oil and gasoline from highway runoff, sewage from failed septic tanks, and sediment from construction projects.

The Harbor Estuary Program (HEP) was authorized in 1987, under the National Estuary Program, as a partnership (called the Management Conference) of federal, state, and local governments, scientists, civic and environmental advocates, the fishing community, business and labor leaders, and educators. The mission of the Management Conference was to develop a plan to protect and restore the Estuary. In 1987, Congress also required the preparation of a restoration plan for the New York Bight, the ocean area extending approximately 100 miles beyond Harbor waters. Because the Harbor and Bight are inextricably linked within the larger ecosystem, the two plans were joined. The New York-New Jersey Harbor Estuary was designated as an "Estuary of National Significance" in 1988 by USEPA in response to a request by the two state governors.

The primary planning document produced by the HEP is the *Comprehensive Conservation and Management Plan* (CCMP), which was completed in March of 1996 and signed by the Governors of New York and New Jersey in the fall of 1997. The vision governing the development of the plan is to establish and maintain a healthy and productive Harbor/Bight ecosystem with full beneficial uses. The areas of concern outlined in the CCMP are: habitat and living resources, toxic contamination, nutrients and organic enrichment, pathogenic contamination, floatable debris, and rainfall-induced discharges. The program is currently working on implementing a number of key CCMP actions, including developing a habitat acquisition and restoration plan and a plan to reduce the sources of toxic materials to the Harbor Estuary. Recent milestones and initiatives of the HEP are outlined below:

<u>CCMP Action Items:</u>

- **Health of the Harbor: The First Comprehensive Look at the State of the New York/New Jersey Harbor Estuary:** This report was produced for HEP by the Hudson River Foundation in April 2004 and assesses the environmental conditions of the Harbor Estuary. It tracks trends in a series of indicators that shed some light on whether conditions in the Estuary are improving. According to the report, the overall condition of the Estuary has improved dramatically; levels of contaminants in sediments have decreased to one-tenth of those observed 30 years ago; levels of contaminants in fish have dropped significantly; losses of wetlands and near-shore habitats have slowed considerably; dissolved oxygen levels in the Harbor have greatly improved; and sewage-related pathogenic contamination has been notably reduced.

However, even with these improvements, significant environmental challenges remain. Combined sewer overflows still contribute raw sewage to waterways when it rains. In terms of toxic contaminants, the waters of Newark Bay and the Kills separating Staten Island and New Jersey are of special concern. Some species of fish are in decline; advisories against eating fish and shellfish from the Estuary remain in effect; and some shellfish beds have remained closed for decades. For more information go to:
http://www.seagrant.sunysb.edu/hep/reports/harborh.htm.

- **Hudson-Raritan Estuary Ecosystem Restoration Study:** In 1999, Congress directed the U.S. Army Corps of Engineers (Corps) to conduct an estuary-wide environmental restoration study throughout the New York and New Jersey Harbor Estuary, which is linked to the dredging and deepening of the Port complex. This study, known as the Hudson-Raritan Estuary Ecosystem Restoration Study, or simply the HRE Study, is co-sponsored by the Corps and the Port Authority of New York and New Jersey. The goal of the study was to develop a long-term Comprehensive Restoration Plan, or CRP, of environmental improvements that would help restore the ecological value and richness of this nationally important resource. The CRP will be the driving force for most, if not all, of the major environmental conservation, and restoration done in the New York/New Jersey Harbor Estuary for many years to come.

  The HRE Study provides a vehicle to implement many of the HEP CCMP recommendations. As part of the study, the Harbor Estuary Program Management Committee has agreed to adopt the HRE's CRP to map out the restoration opportunities that can contribute toward revitalizing the Estuary and its ecological connectivity. This plan will essentially be a "master plan" that any group or organization can use to advance selected restoration initiatives.

  Since 2004, two environmental roundtables were held to discuss efforts made toward restoring the Estuary. Spearheaded by the Port Authority of New York and New Jersey and the Environmental Defense Fund, the roundtable consisted of many representatives of agencies and environmental stakeholder groups who gathered to share their thoughts and opinions on the status of ecological improvements in the Estuary The participants concluded that environmental improvements in the Estuary have not kept pace with port and navigation improvements. To correct this imbalance and achieve the vision of a world-class estuary, the participants determined a need for common ground among all stakeholders on environmental restoration goals, objectives and commitments. To accomplish this, they would need to identify specific future restoration actions that all stakeholders would collectively support.

  In 2006, the Corps started working in collaboration with technical experts from the Department and other government agencies to determine the process of development and implementation of the CRP. The details of how the CRP will be developed and implemented will be presented in a publication that will be completed in late 2006. This publication will discuss the goals of the plan, the tasks to be performed to develop a technically viable plan, the necessary steps towards the plan's implementation, and how HEP will measure and monitor success.

- **New York – New Jersey Harbor Estuary Stewardship Program:** a new initiative to promote and enhance stewardship within the Harbor Estuary. The goal of the Stewardship Program is to develop and fund collaborative projects address mandated CCMP goals and targets, and to promote stewardship within the Estuary. Approximately $90,000 is available to support projects through the Stewardship Program in 2006. Priority will be given to those projects that reflect the overall goal of the Stewardship Program. To be considered for funding, projects must: 1) target specific audiences; 2) reach across geographic and political boundaries; 3) lead to specific behavior changes and/or ecosystem improvements; and 4) help the HEP reach its CCMP goals and targets.

- **Interactive Habitat Site Map:** HEP is working with the New York City Open Accessible Space Information System Cooperative (OASIS) to provide information about HEP priority habitat acquisition and restoration sites. OASIS is a partnership of more than 30 federal, state, and local agencies, private companies, academic institutions, and nonprofit organizations and is charged with creating a one-stop, interactive mapping and data analysis application via the Internet to enhance the stewardship of open space in New York City and portions of northern New Jersey. The OASIS Web site is supported by the U.S. Forest Service and created by NYPIRG's Community Mapping Assistance Program. HEP priority habitat acquisition and restoration sites are areas of important ecological value to the Harbor Estuary. Over $30,000,000 has been focused on acquisition of 1,700 acres, and $64,000,000 on restoration of 650 acres. For more information about this initiative, go to: http://www.seagrant.sunysb.edu/hep/reports/harborh.htm.

- **No Discharge Zones:** Pumpout stations were created in the Harbor to help reduce water pollution associated with boating activities, such as increased levels of pathogens through the discharge of human sewage. Under the Clean Vessel Program, boats cannot discharge sewage into waters designated as No Discharge Zones (NDZs). Pumpout stations provide boaters a safe and sanitary way of removing and treating sewage. There are various types of pumpout stations (e.g., stationary units, portable units on vessels) at various locations, mostly at marinas. New Jersey also utilizes pumpout boats, including one that covers the Navesink and Shrewsbury Rivers and Sandy Hook Bay.

  Harbor NDZs:
  - Hudson River (153-mile stretch between Battery Park in Manhattan and the City of Troy Dam in Rensselaer County, NY - applies only to the NY side of the Hudson River)
  - Navesink River (Monmouth County, NJ)
  - Shrewsbury River (Monmouth County, NJ)

  For more information on pumpout stations in New Jersey, go to: http://www.state.nj.us/dep/fgw/cvadir.htm.

For more information about the federal Clean Vessel program, go to: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.

- **New York/New Jersey Harbor Estuary Monitoring Program:** The water quality monitoring for this study, started in 2005, will allow the Department and the New Jersey Harbor Dischargers Group (NJHDG) to evaluate the long-term water quality in the aforementioned water bodies. The data collected will allow the Department and the NJHDG to develop a realistic understanding of water quality in the New Jersey portion of the Harbor, including regions where water quality standards may not be achieved on a routine basis. This program will also allow water quality professionals to validate water quality model results by comparing model results with multiple ambient measurements. This information will also be utilized in developing TMDLs for the New Jersey portion of the Harbor Estuary.

  There is currently limited long-term water quality data characterizing the waters in the New Jersey portion of the Harbor Estuary and the New Jersey tributaries to the Harbor. The purpose of this long-term water quality monitoring program is to develop baseline ambient water quality data for portions of the Hackensack, Hudson, Passaic, Rahway, and Raritan Rivers, Newark Bay, Upper New York Harbor, Raritan Bay, and the Arthur Kill. The goals of this long-term monitoring program are to:

  1) provide information on current water quality in the New Jersey portion of the Harbor relative to New Jersey water quality standards;
  2) document seasonal changes in water quality, and changes associated with episodic events;
  3) provide a basis for comparing the relative importance of pollution from upstream sources versus pollution from POTW discharges and combined sewer overflows, and;
  4) document water quality improvements resulting from the implementation of pollution control programs.

  To accomplish these goals, each of the 33 sampling sites will be monitored weekly from May through September, and twice monthly from October through April. These sites have been selected for specific reasons. Some are historical sites with a wealth of background data, some are easily accessible from bridges, and some are either directly upstream or downstream of discharge points.

  The following water quality parameters will be quantified at each site during each sampling event: dissolved oxygen (DO), pH, total suspended solids (TSS), fecal coliform bacteria, E*nterococcus* bacteria, Secchi depth, salinity (where applicable), temperature, total Kjeldahl nitrogen (TKN), ammonia (NH_3), nitrite + nitrate (NO_3 + NO_2), total phosphorus (TP), orthophosphorus, 5-day carbonaceous biochemical oxygen demand ($CBOD_5$), chlorophyll α, and dissolved organic carbon (DOC). The primary contaminant of concern is fecal coliform bacteria.

- **Contamination Assessment and Reduction Project:** Another component of HEP, the Contamination Assessment and Reduction Project (CARP), is attempting to understand the fate and transport of contaminants discharged into the entire Estuary and use this information to take necessary action to reduce these discharges. The primary objectives of CARP are to identify the sources, transport, and fate of the polluting organic chemicals discharged to Harbor. The main objectives of CARP arise from the current problems associated with the management of contaminated dredged material in the Estuary and the development of solutions to reduce this contamination in the future. Key objectives include:

1) Identify and quantify sources of contaminants of concern to the Harbor Estuary from a dredged material standpoint.
2) establish baseline levels of contaminants of concern in water, sediments, and fish tissue.
3) predict future conditions (bioaccumulation, sediment concentrations, and toxicity) in light of various reduction scenarios.

Phase 1 of the New Jersey component of CARP includes ambient water quality sampling of the five major New Jersey tributaries to, and three major estuarine waterbodies within, the Harbor. In addition, discharges from all twelve of the municipal wastewater treatment plants and selected combined sewer and stormwater systems have been sampled. The toxic contaminants of concern include dioxins/furans, PCBs, pesticides, PAHs, and metals. In addition, hydrodynamic measurements of tidal elevation, current velocities, suspended sediment levels, and particle size distributions have been collected synoptically with the ambient water quality sampling and at fixed stations over longer periods of time.

The CARP sampling program, which started in the summer of 1999, has now collected and analyzed the water, sediment, biota, and physical data identified in the initial work plans. Current sampling and data analysis activities focus on detection of low concentrations (trace amounts) of the chemicals of concern present in the waters of the Harbor and discharged from sewage treatment plants and combined/stormwater sewers into the Harbor. These data will be used to develop and calibrate the CARP sediment and contaminant fate and transport model to be used for TMDL development, as well as guide source track down and remediation/restoration efforts. For more information about CARP, go to: http://www.carpweb.org/main.html.

For more information about the New York/New Jersey Harbor Estuary Program, go to: http://www.seagrant.sunysb.edu/hep/about.htm.

Chapter 5: Water Quality Management

5.13 New Jersey's Wetlands Protection Program

In New Jersey, the chemical, physical and biological integrity of wetlands is protected under both federal and state laws. Federal protection is provided under sections 303, 401, and 404 of the federal Clean Water Act (the Act). Section 303 provides protection through the antidegradation provisions of the Surface Water Quality Standards. (New Jersey's Surface Water Quality Standards include wetlands in the definition of "surface waters". When USEPA approves the state standards, they become the federal standards for state waters.) Section 401 is designed to allow the State to control any discharges to its waters, which may result from the issuance of a federal permit or license, through a certification process. Section 404 addresses and regulates the discharge of dredge and/or fill material into wetlands and other waters of the state. In 1994, New Jersey began implementing its state program in place of the Section 404 program after being granted the authority by USEPA pursuant to Section 404(g) of the Act.

Several New Jersey statutes provide various levels of protection to wetlands including the New Jersey Water Quality Planning Act (N.J.S.A. 588:11A-1), the Flood Hazard Area Control Act (N.J.S.A. 58:16A-50 et seq.), and the New Jersey Water Pollution Control Act (N.J.S.A. 58:10A-1). Specific protection is provided for New Jersey tidal wetlands through the Wetlands Act of 1970. In addition, since July 1, 1988, the State has protected its "inland" wetlands through the Freshwater Wetlands Protection Act (FWPA) (N.J.S.A. 13:9B-1 et seq.). Prior to enactment of the FWPA, several different state laws afforded various levels of protection to "inland" wetlands. One of the goals of the Act was to consolidate the protection of wetlands into one program. It should be noted, however, that the FWPA does not affect wetlands previously regulated under the Wetlands Act of 1970. In addition, the FWPA exempted areas under the jurisdiction of the Hackensack Meadowlands Development Commission. Therefore, activities in the Hackensack area do not require a State freshwater wetlands permit nor are they subject to transition area requirements. However, in areas under the regulation of the Pinelands Commission, freshwater wetland requirements are implemented, but applicants must also comply with the Pinelands Comprehensive Management Plan.

New Jersey protects coastal waters and the land adjacent to them under a variety of laws, including the Waterfront Development Law (N.J.S.A. 12:5-3), the Coastal Area Facility Review Act (N.J.S.A. 13:19), and the Wetlands Act of 1970 (N.J.S.A. 13:9A). The Department applies the New Jersey Coastal Permit Program Rules (N.J.A.C. 7:7) and the Coastal Zone Management Rules (N.J.A.C. 7:7E) to determine what may or may not be built pursuant to the above laws.

Extent of Wetland Resources:

Based on the Geographic Information System (GIS) coverage for the 1995 Land Use/Land Cover data set, the Department estimates that there are 1,033,471 acres of wetlands in New Jersey (see Tables 5.13-1 and 5.13-2 on the following pages), comprising approximately 21% of the total state land base of 4,986,205 acres (NJDEP, Bureau of Geographic Information and Analysis). This represents a loss of 15,798 acres from 1986. More recent data regarding the amount of freshwater wetlands in New Jersey is not yet available. At this time, the Department is in the process of updating its GIS data, based on 2002 aerial photography. Portions of the State have been completed at this time, but are not available for distribution. The resolution of the 2002 imagery is much finer (one-foot pixels as compared with one meter in 1995/97) and the photos will be color infrared. From this updated aerial photography, an updated Land Use/Land Cover GIS coverage is being developed. This Land Use/Land Cover data set will contain updated information that should reflect an estimate of the amount of wetlands that have been lost between 1995/1997 and 2002 as a result of permitted as well as non-permitted activities. For more information regarding the extent of permitted losses of wetlands in the State of New Jersey, please refer to the "*State of New Jersey Annual Reports to the United States Environmental Protection Agency (USEPA), Region II for State-Assumed Freshwater Wetlands Regulatory Program*" available from USEPA Region II, Division of Environmental Planning and Protection, Water Programs Branch, 290 Broadway, New York, NY 10007-1866.

Table 5.13-1: New Jersey Wetlands Acres (Freshwater and Tidal) by County (NJDEP, Land Use/Land Cover, Bureau of Geographic Information and Analysis)

County	Acres based upon 1986 Data	Acres based upon 1995 Data	Net Change
Atlantic	124,113	123,729	-385
Bergen	10,626	10,311	-316
Burlington	162,368	160,765	-1,603
Camden	21,141	20,881	-260
Cape May	84,202	83,601	-601
Cumberland	101,185	99,667	-1,517
Essex	6,892	6,734	-158
Gloucester	37,339	36,878	-461
Hudson	2,210	2,157	-52
Hunterdon	25,581	25,240	-341
Mercer	25,495	24,737	-758
Middlesex	45,784	43,895	-1,889
Monmouth	73,266	70,083	-3,182
Morris	45,945	44,980	-964
Ocean	103,719	102,980	-739
Passaic	9,386	9,012	-373
Salem	67,347	67,019	-328
Somerset	28,944	27,693	-1,251
Sussex	48,035	47,670	366
Union	3,352	3,198	-154
Warren	22,339	22,240	-99
State Total:	**1,049,269**	**1,033,471**	**-15,798**

Table 5.13-2: New Jersey Wetlands Acres by Watershed Management Area (NJDEP, Land Use/Land Cover, Bureau of Geographic Information and Analysis)

Watershed Management Area	Acres based upon 1986 Data	Acres based upon 1995 Data	Net Change
1: Upper Delaware	49,437	49,109	-327
2: Wallkill	22,740	22,541	-198
3: Pompton, Wanaque, Ramapo	15,065	14,535	-531
4: Lower Passaic & Saddle	4,830	4,558	-272
5: Hackensack & Pascack	7,942	7,828	-115
6: Upper Passaic, Whippany, & Rockaway	40,779	39,975	-804
7: Arthur Kill	5,332	4,999	-333
8: No. & So. Branch Raritan	27,692	27,291	-401
9: Lower Raritan, South River, Lawrence	47,027	44,233	-2,794
10: Millstone	37,188	36,158	-1,031
11: Central Delaware	25,702	25,102	-600
12: Monmouth	46,532	44,336	-2,196
13: Barnegat Bay	92,141	91,338	-803
14: Mullica	135,353	135,173	-180
15: Great Egg Harbor	111,047	110,748	-299
16: Cape May	75,921	75,318	-603
17: Maurice, Salem & Cohansey	163,135	161,207	-1,928
18: Lower Delaware	34,064	33,165	-899
19: Rancocas	65,856	64,973	-884
20: Assiscunk, Crosswicks & Doctors	41,485	40,885	-600
State Total:	**1,049,269**	**1,033,471**	**-15,798**

Regulatory Basis of Wetland Protection in New Jersey – Statute Specific:

<u>The Coastal Area Facility Review Act (CAFRA) (N.J.S.A. 13:19)</u>
CAFRA applies to projects near coastal waters in the southern part of the State. The CAFRA area begins where the Cheesequake Creek enters Raritan Bay in Old Bridge, Middlesex County. It extends south along the coast around Cape May, and then north along the Delaware Bay ending at the Kilcohook National Wildlife Refuge in Salem County. The inland limit of the CAFRA area follows an irregular line drawn along public roads, railroad tracks and other features. The CAFRA area varies in width from a few thousand feet to 24 miles, measured straight inland from the shoreline.

CAFRA divides the land into zones and regulates different types of development in each zone. CAFRA regulates almost all development activities involved in residential, commercial, and industrial development, including construction, relocation, and enlargement of buildings or structures; and all related work, such as excavation, grading, shore protection structures, and site preparation. CAFRA contains exemptions for certain minor activities such as maintenance, plantings, decks or similar structures, at a residence. Activities involving rebuilding a damaged structure on the same building footprint (if it was damaged after July 19, 1994), and enlarging a dwelling without increasing its footprint or number of units may also qualify for an exemption under CAFRA.

As amended in February 6, 2006, the Coastal Zone Management rules also address the following:

- N.J.A.C. 7:7E-3.2(d) (Shellfish Habitat): aims to protect the marine ecosystem while accommodating the recreational needs of waterfront property owners.
  - Requires that the contribution of pollutants to the State's waters associated with docks, piers and boat moorings constructed under the Shellfish Habitat rule are significantly reduced or eliminated.
  - Requires that non-polluting materials must be utilized for all docks, piers and boat moorings constructed under N.J.A.C. 7:7E-3.2(d).
  - Requires that the size and location of the structure minimize, to the extent practicable, the area of shellfish habitat condemned and adverse impacts to the marine ecosystem, and that compensatory mitigation be performed.
  - Required mitigation consists of restrictions governing existing and new shoreline protection structures as well as the payment of a mandatory monetary contribution to a dedicated account for Shellfish Habitat Mitigation.
- N.J.A.C. 7:7E-3.3: Stringent criteria for sand mining and beach replenishment that further protect surf clams (*Spisula solidissima*).
- N.J.A.C. 7:7E-3.15: Standards for dredging and mitigation within intertidal and subtidal shallows.
  - Requires a financial assurance and monitoring of the project to ensure the successful completion of the project.
  - All proposed intertidal and subtidal shallows mitigation projects are also subject to stringent design requirements.
- N.J.A.C. 7:7E-3B: Standards for mitigating impacts to coastal wetlands, including submittal of a water budget, goal statement, detailed landscape plans, financial assurance, and performance standards for each year of monitoring.
- N.J.A.C. 7:7E-3.38 and N.J.A.C. 7:7E-3C (Endangered or Threatened Wildlife Habitat): Require the use of the Department's "Landscape Maps of Habitat for Endangered, Threatened and Other Priority Wildlife" (also known as the "Landscape Maps") and contain standards for habitat impact assessments. The Landscape mapping is designed to delineate critical habitats for imperiled species within New Jersey. These maps show the location of critical habitat for species that are listed as threatened or endangered at the State or Federal level as well as habitat for populations of species that are not listed but have experienced a declining population trend. The Department is currently using Version 2.0 of the Landscape Maps.
- N.J.A.C. 7:7E-3.46 (Wild and Scenic River Corridors): Standards for development within these corridors where there is no adopted management plan. Also includes standards regarding the construction of docks, piers, moorings, shore stabilization, linear development, cell towers, bridges and culverts.
- N.J.A.C. 7:7E-4.2(f) - (g) (Dredging): Requirements to protect coastal wetland resources including standards for reprofiling and propwash dredging.
  - Maintenance dredging is limited to areas that are actively used for navigation or mooring of vessels and the area must have been dredged within the past ten years.
  - New dredging requires chemical and physical analysis of the proposed dredge material prior to commencement.

  - Bioassay and bioaccumulation testing may also be required depending upon the results of the pre-dredging analysis.
- N.J.A.C. 7:7E-4.21 (Artificial Reefs): Standards for the siting of reefs, the materials to be used, deployment and maintenance. A management plan for each artificial reef must be developed and all reefs must be incorporated into nautical charts.
- N.J.A.C. 7:7E-8.2 (Marine Fish and Fisheries): Standards for the construction of submarine cables and sand mining for beach nourishment and establishes "Aquaculture Development Zones".
- N.J.A.C. 7:7E-8.22: Requires coastal development to comply with applicable State and Federal regulations, standards and guidelines for handling and disposal of solid and hazardous waste materials.

Tidelands Act (N.J.S.A. 12:3)
Tidelands, also known as "riparian lands" are lands now or formerly flowed by the tide of a natural waterway. This includes lands that were previously flowed by the tide but have been filled and are no longer flowed by the tide. These lands are owned by the people of the State of New Jersey. Permission is required from the State to use these lands, in the form of a tidelands license, lease or grant, and a fee is also required.

The Waterfront Development Law (N.J.S.A. 12:5-3)
The Waterfront Development Law, passed in 1914, seeks to limit problems that new development could cause for existing navigation channels, marinas, moorings, other existing uses and the environment. If development is proposed within a tidally-flowed waterway anywhere in New Jersey, it requires a Waterfront Development Permit. Examples of projects that need a Waterfront Development Permit include docks, piers, pilings, bulkheads, marinas, bridges, pipelines, cables and dredging. The Waterfront Development Program exempts the repair, replacement or reconstruction of some legally existing docks, piers, bulkheads and buildings, if the structure existed before 1978 and if other conditions are met. Also, there are exemptions for single family homes or structures (including additions up to 5,000 square feet to existing structures), if they are located more than 100 feet inland from the mean high water line.

For development outside of the CAFRA area, the Waterfront Development Law regulates not only activities in tidal waters but also the area adjacent to the water, extending from the mean high water line to the first paved public road, railroad or surveyable property line. At a minimum, the zone extends at least 100 feet but no more than 500 feet inland from the tidal water body. Within this zone, the Department must review construction, reconstruction, alteration, expansion or enlargement of structures, excavation and filling.

Wetlands Act of 1970 (N.J.S.A. 13:9A)
The Wetlands Act of 1970 requires the Department to regulate development in coastal wetlands. The land immediately adjacent to tidal waters often contains coastal wetlands. These wetland areas are a vital coastal resource serving as habitat for many creatures. The wetlands also serve as buffers that protect upland areas from the flooding and damage caused by storms. The regulated coastal wetlands are shown on maps prepared by the Department. Unlike the Department's freshwater wetlands maps, the coastal wetlands maps are used to determine jurisdiction. These maps are available for public inspection at each county clerk's office. A

coastal wetlands permit must be obtained to excavate, dredge, fill or place a structure on any coastal wetland shown on the maps.

The Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A)

The Freshwater Wetlands Protection Act sets the standards and procedures the Department uses to issue permits allowing, among other activities:

– Filling, construction, paving, destruction of vegetation in freshwater wetlands;
– Filling, construction, paving, destruction of vegetation in transition areas or "buffers" surrounding wetlands; and
– Placement of fill in open waters.

The Department also uses the rules to implement the Federal 404 (Wetlands) Program in non-tidal wetlands and waters in New Jersey. The Freshwater Wetlands rules provide for three basic types of approvals:

- *Individual permits*
  - No acreage limit but mitigation is required if the permit is approved
  - Require a finding that there is no practicable alternative to disturbing the wetland
  - High standard to meet - about 50 are issued per year, totaling about 50 acres of impact;
- *General permits*
  - Activity specific
  - Each general permit includes limits specific to the activity (e.g., length of road crossing)
  - Maximum permitted impact is one acre
  - Combined general permits are generally limited to one acre of impact
  - This is the most common type of approval – about 125 acres of impacts per year; and
- *Transition area waivers*

  Note: Transition areas are areas of upland buffers adjacent to a freshwater wetland that minimize adverse impacts to the wetland or serve as an integral component of the wetland ecosystem. Permits for activities within a transition area are only issued if it is determined that the activity will not impair the transition area's ability to protect adjacent freshwater wetlands.
  - Most general permit activities may be done in a transition area under a transition area waiver
  - Also may "average" the transition area, increasing it in one place and decreasing it in another
  - Standard is whether the development will impair the transition area's ability to protect adjacent freshwater wetlands

The Freshwater Wetlands Protection Act rules (rules) were modified significantly on September 4, 2001. Some of the significant changes to the rules include:

- Combined freshwater wetlands and floodplain permit for utility lines, road crossings, outfalls, streambank stabilization and stream cleaning.
- Six new general permits were added for certain activities that have environmental or safety benefits that compensate for any wetlands disturbance involved:
  - Landfill closure and maintenance, to reduce dangerous conditions at uncontrolled landfills;

  - Movement of livestock watering areas away from streams in order to prevent trampling of streambanks;
  - Stream cleaning, for removal of debris and sediment, and flooding reduction;
  - Redevelopment of one extra acre of brownfield areas, to reduce development pressure on pristine areas; and
  - Tree cutting around public airports to comply with FAA and NJDOT airport safety rules.
- Amendments to existing general permit:
  - Allows underground utility lines in exceptional resource value wetlands, if threatened or endangered species habitat will not be impacted;
  - Allows longer road crossings, if impact is 1/8 acre or less, and requires an onsite alternatives analysis for many road crossings;
  - Allows NJPDES permitted outfalls (former general permit only allowed stormwater outfalls);
  - Restricts the types of wetlands that may be destroyed during lake dredging;
  - Encourages participation in federal wetlands restoration programs;
  - Allows trails and boardwalks on private property, adds ¼ acre limit on total disturbance;
  - Allows removal of unsafe dams; and
  - Requires use of environmentally beneficial bioengineering techniques, when possible, to control stream bank erosion.
- Mitigation: Expands mitigation options, including 1) the purchase of mitigation credits from a mitigation bank and 2) the preservation (via donation to either the State or a nonprofit agency) of wetlands and adjacent uplands. Automatic increase in the mitigation obligation if the mitigator fails to comply with deadlines for performing their mitigation.

On July 15, 2002, the Department adopted amendments to the Freshwater Wetlands Protection Act rules within the resource value classification process (N.J.A.C. 7:7A-2.4(c)) to include New Jersey's Landscape Project method (described later in this document) for the identification of habitat for threatened and endangered species.

On October 7, 2002, the Department adopted amendments to the Freshwater Wetlands Protection Act rules for conditions that apply to all general permit authorizations (N.J.A.C. 7:7A-4.3(b)16) and for authorization under Statewide General Permit Number 6 for non-tributary wetlands (N.J.A.C. 7:7A-5.6) and at N.J.A.C. 7:7A-5.27 (redevelopment of previously disturbed areas). Under the adopted amendment at 4.3(b)16, the Department prohibits the use of any general permit in a vernal habitat, as defined at N.J.A.C. 7:7A-1.4, or in a transition area adjacent to a vernal habitat. The Court subsequently struck down this provision as it relates to general permit 6 for non-tributary wetlands. In addition, the Department adopted amendments to the rules at N.J.A.C. 7:7A-5.6 and 5.27 that reduce the acreage of disturbance authorized under a Statewide General Permit Number 6 and Number 27, respectively, from one acre to one half acre in waters of the United States.

The Freshwater Wetlands Protection Act rules at N.J.A.C. 7:7A-4.3(b)5 were amended to include conditions that apply to all general permit authorizations and at N.J.A.C. 7:7A-12.2(l) for USEPA review. The adopted rules and amendments relate to the identification and consideration of historic resources in the Freshwater Wetlands Protection Act program permitting process. These include: amendments to the standard conditions for general and individual permits to reflect the current procedures for freshwater wetlands permits that will adversely affect historic resources; new rules establishing a checklist of wetlands permit application categories presenting a high probability of the presence of historic and archaeological resources; and new procedures for coordinating with the freshwater wetlands review process with Federal Section 106 review, or the State's review procedures for projects encroaching upon New Jersey Register properties.

On January 21, 2003, the Department again revised the Freshwater Wetlands Protection Act rules to add a new subchapter 17 to address the taking of property without just compensation. The subchapter implements N.J.S.A. 13:9B-22 of the Freshwater Wetlands Protection Act and addresses the process and timing for applicants who claim that their property was taken without just compensation.

Mitigation:

Compensatory mitigation is required for all individual permits as well as for general permit activities in wetlands that involve investigation, cleanup, or removal of hazardous materials; installation of underground utility lines; closing of landfills; or redevelopment projects. Mitigation of wetlands can be achieved through wetland creation, restoration, and enhancement. Other forms of mitigation include: upland preservation to benefit a freshwater wetland ecosystem; purchase of mitigation credits from a wetland banker who has performed wetland creation, restoration, and/or enhancement; monetary contribution to the Wetland Mitigation Fund for wetland restoration; or donation to the Freshwater Wetland Mitigation Council of land that is a valuable component of a wetland or surface water ecosystem.

Every permit that requires compensatory mitigation includes performance standards that define a successful wetland mitigation project. The Department has established a checklist of standard requirements for submittal of a wetland mitigation proposal as well as standard monitoring requirements when conducting wetland creation, restoration and/or enhancement. In order for a mitigation project to be approved it must have a high probability of long-term success and, at a minimum, this requires the following: adequate dedicated financial resources to complete the project; a design that takes advantage of and fits into the watershed; adequate hydrology; adequate soils to support a hydric community; and long term stewardship to maintain the mitigation area.

The Department has established a Wetland Mitigation Unit. The Unit is responsible for overseeing the development of rules related to mitigation; the establishment of consistent wetland mitigation conditions that are attached to permits; mitigation permit compliance; the review of wetland restoration grants from the wetland mitigation fund; and management of the State’s wetland permit/mitigation database. The database currently contains information on over 500 wetland mitigation sites. Once complete, the database will also include extensive mitigation-related data for individual mitigation sites as well as mitigation banks. Some of the data available will include site name, number, and location; mitigation bank name, number of credits, wetland type; number of credits still available, and used credits; and closing date for the bank. Plans are in place to add a table for mitigation site evaluations that will allow the analyst to enter data based on a checklist from a site evaluation completed three to five years after the mitigation project is initiated. This will help ensure that New Jersey is successfully achieving functionally equivalent wetlands to what are lost in the State.

Wetlands Mitigation Council:

The Freshwater Wetlands Protection Act establishes a Wetlands Mitigation Council (Council). The Council is comprised of seven members: the Commissioner of Environmental Protection or his/her designee (who shall serve ex officio) and six members from the general public to be appointed by the Governor (two appointed from persons recommended by recognized building and development organizations, two appointed from persons recommended by recognized environmental and conservation organizations, and two appointed from institutions of higher learning in the State). The Council is responsible for the management and disbursement of dollars from the Wetland Mitigation Fund to finance mitigation projects. The Council has the power to purchase land to provide areas for enhancement or restoration of degraded freshwater wetlands, to engage in the enhancement or restoration of degraded freshwater wetlands on any public lands, including public lands other than those acquired by the Council, and to preserve freshwater wetlands and transition areas determined to be of critical importance in protecting freshwater wetlands. Over the past few years, the Council has awarded $2,303,344.00 in wetland mitigation grants from the Wetland Mitigation Fund. The grants have been used to preserve land and restore as well as enhance wetland ecosystems throughout New Jersey.

Wetlands Research:

New Jersey has an active wetlands assessment program to monitor and manage wetlands and associated resources. In September 2004, the Department included wetlands as waters of the State in the *New Jersey Water Monitoring and Assessment Strategy 2005-2014* (see Appendix G). Concurrently, New Jersey is conducting research to ascertain whether further quantitative methods can be developed to assess wetland function in a practicable manner for the State. Another goal of this research is to determine if methods can be developed to relate wetland quality and water quality for watershed assessment, resource preservation, source, and causes of impairment and restoration applications. A Wetlands Research Advisors Group meets as needed to help provide scientific and program peer review to assist in guiding development of a comprehensive wetland monitoring and assessment program, including guidance on specific research projects as they develop.

As described in the 2004 Integrated Report, the Department developed the Freshwater Wetland Mitigation Quality Assessment Procedure (WMQA) as an assessment tool to evaluate the relative probability that a constructed wetland will develop into a natural wetland system over time. The standardized rating index can be used in combination with professional judgment to provide a consistent measure of relative mitigation success. This procedure does not allow direct measurement of wetland functions and it is not intended to provide a numerical value that can be used to establish absolute quality of an individual wetland mitigation project. Nor is the rating index to be used as a surrogate for more quantitative procedures that evaluate mitigation success. Currently, this method is being used to provide the Department with some relative indicators of a constructed mitigation's potential to establish a new wetland that is properly functional as a wetland.

In 2004, the Department published two research studies as a follow-up to the WMQA study. The first field-tested the WMQA method at both natural and mitigated wetlands in the Upper Passaic, Whippany, and Rockaway River Watersheds and the second field-tested seven other methods at the same natural wetlands plus some sites in the Rancocas River Watershed. These studies are available at http://www.state.nj.us/dep/dsr/wetlands2/.

To fulfill the USEPA mandate for states to establish wetlands monitoring programs by 2014 for waters of the United States, and to explore metrics for water quality reporting (rather than qualitative assessment methods), the Department, in collaboration with Rutgers University, is undertaking research focusing on quantitative wetland biological assessment methods. A goal of this research is to explore development of a wetlands index of biotic integrity (IBI) for New Jersey. To date, the research has focused on riparian forested wetlands, primarily vegetative species and macroinvertebrates, including possibly linking to The Department's macroinvertebrate monitoring network for streams (AMNET). Since riverine systems are not flooded predictably, nor do they support extended periods of standing water, leaf litter macroinvertebrate sampling has been pursued. Initial results were published in 2006 and are available at: http://www.state.nj.us/dep/dsr/wetlands/ .

The Department is currently conducting research and assessment of rare and vulnerable wetland types through the Natural Heritage Program under several Wetlands Protection Development Grants received from USEPA pursuant to Section 104(b)(3) of the federal Clean Water Act. Each of three research projects include Level 3 Intensive Site Assessments and have components of inventory, ecological community classification, and baseline monitoring of vegetation and hydrology.

Described below are additional activities performed by the Department's Endangered and Nongame Species Program (ENSP) that are considered in monitoring, assessment, and management of New Jersey's wetlands resources:

Landscape Project: ENSP, in collaboration with multiple partners, continues to update its Landscape Project: a landscape level approach to protect imperiled species and critical wildlife habitat, including wetlands species and associated habitats. ENSP has developed maps that identify critical areas for imperiled species by landscape (Skylands, Delaware Bay, Piedmont Plains, Pinelands and Coastal) based on their habitat and land-use classification. Mapping products are currently being updated from 1995 to 2002 aerial photography and models are being adapted to a finer classification of land cover type.

Herpetofauna Projects: The Department’s ENSP has three citizen-science based herpetofauna conservation projects to identify wetlands-associated species. Herpetofauna serve as surrogates for water quality. Through peer-review journal publications, it is quite clear that most amphibians and some reptiles are excellent bio-indicators for water quality.

- The **New Jersey Herptile Atlas**, through the efforts of ENSP and many volunteers, is collecting data on the specific location and abundance of all reptile and amphibian species throughout the State. With over 300 volunteers participating in this project statewide, these data will be used to map the critical habitat, abundance and distribution of New Jersey's reptiles and amphibians. Maps created as part of this project will provide ENSP with the necessary information to inform planning agencies of the status of New Jersey's native herptile species, thus allowing all agencies to better plan for our state's wildlife conservation.

- The **Calling Amphibian Monitoring Program** uses volunteers to survey for frogs and toads along 63 transects throughout the State. Each transect consists of 10 georeferenced survey points along a driving survey route that is a maximum of 15 miles long. Transects are surveyed three times a year (between March and July) and the data collected allow for trend analysis of New Jersey's frog and toad populations.

- The **Vernal Pool Survey Project** uses trained volunteers to confirm locations of vernal habitats and survey these locations for herpetofauna. Rutgers University's Center for Remote Sensing and Spatial Analysis (CRSSA) has identified over 13,600 potential vernal pools throughout the State and has developed a website featuring interactive maps with potential vernal pool data layers. ENSP staff and volunteers have collected data on approximately 4,041 vernal habitats and have increased the number of certified vernal habitats from 341 in 2002 to 847 to date.

For more information on the Department's Wetlands Programs, go to: http://www.nj.gov/dep/landuse/

Chapter 6: Public Health Concerns

6.1 Source Water Protection:

As a requirement of the 1996 Amendments to the Safe Drinking Water Act, all states were required to establish a Source Water Assessment Program (SWAP). The purpose of SWAP is to provide for the protection and benefit of public water systems and to increase public awareness and involvement in protecting the sources of public drinking water. New Jersey's SWAP Plan incorporates the following four fundamental steps:

1. Determine the source water assessment area of each ground and surface water source of public drinking water.
2. Inventory the potential contamination sources within the source water assessment area.
3. Determine the public water system sources' susceptibility to regulated contaminants.
4. Incorporate public education and participation.

The Department, in conjunction with the United States Geological Survey (USGS), performed source water assessments to predict the susceptibility of source water for all community water systems in New Jersey as well as those noncommunity water systems using surface water.

Susceptibility is a measure of the **potential** exposure of a drinking water source to contamination. Susceptibility is a function of hydrogeologic sensitivity and contaminant use intensity within the area contributing water to the wells and surface water intakes. Hydrogeologic sensitivity consists of items related to the construction of potable wells (i.e., well depth) and naturally occurring factors (i.e., geology). Contaminant intensity includes factors related to human activities on the earth's surface. Intensity factors consist of point (i.e., leaking underground storage tanks) and nonpoint (i.e., land use) sources.

The Department and USGS determined each source's susceptibility to the following contaminant categories: nutrients (i.e., nitrates), pathogens, pesticides, volatile organic compounds (VOCs), inorganics (i.e., metals), radionuclides/radon, and disinfection byproduct precursors. Each source received a susceptibility rating of "low" (less than one-tenth of New Jersey's drinking water Maximum Contaminant Level (MCL)), "medium" (less than one-half of the MCL), or "high" (greater than one-half the MCL) for each contaminant category. Sources with high susceptibility ratings will not necessarily exceed the drinking water standard.

To determine the susceptibility of a source to contamination, the Department and USGS developed a framework that included statistical modeling, evaluation of past studies, and water sample data. The models were developed using water quality data from ground water and surface water samples collected and analyzed by USGS. These models were applied to each public water system's well or intake. The results of the susceptibility models show that, for ground water and surface water, land use (from 1970, 1986, and 1995) is the most common intensity variable found to determine susceptibility. Of the land use coverages, urban land use and agricultural land use were most often linked to determining a source's susceptibility rating.

For ground water, confinement status was found to be the most frequently occurring sensitivity variable to determine susceptibility. Therefore, confinement status was used in each of the susceptibility models for each of the contaminant categories. The Department and USGS determined confined wells to be of low susceptibility to contamination that occurs at the earth's surface. For unconfined wells, depth to the top of the open interval of the well was found to be the most common sensitivity variable to determine a well's susceptibility rating. The Department and USGS determined that the shorter the distance to the earth's surface, the greater the likelihood that the potable well would be affected by contaminants resulting from land use activities.

For ground water/**unconfined** wells, the three contaminant categories in which the highest percentage of sources received a high susceptibility rating were nutrients (67%), VOCs (61%), and radon/radionuclides (50%/49%).

For ground water/**confined** wells, only the disinfection byproduct precursors contaminant category contains wells that received a high susceptibility rating (27%). For the remaining contaminant categories, 0% of the wells received a high susceptibility rating. When reviewing the results of the medium susceptibility ratings for confined wells, the three contaminant categories in which a high percentage of the wells rated medium are disinfection byproduct precursors (70%), inorganics (47%), and radionuclides (39%).

For surface water, the three contaminant categories in which the highest percentage of sources received a high rating are inorganics (81%), disinfectant byproduct precursors (98%), and pathogens (100%). Surface waters are subject to various sources of microbial contamination runoff containing fecal matter. For the purpose of the source water assessments, the drinking water derived from all surface water intakes was assumed to be highly susceptible to contamination by pathogens. Therefore, all surface water intakes received a high rating for pathogens (100 %).

The Department has generated individual reports for each of the 606 community water systems and those noncommunity water systems relying on surface water. These reports provide the susceptibility ratings for each of the water system's sources to each contaminant category. The reports and supporting documents are available to the public and can be obtained by contacting the public water system, or on the Department's Web site at: http://www.nj.gov/dep/swap/assessments.htm.

Source water assessments provide the foundation for source water protection. Source water protection focuses on preserving and protecting the public drinking water source, particularly from the contaminants to which the source is most vulnerable, as identified in the source water assessments. The information developed from the SWAP will provide communities with the tools necessary to begin protecting their valuable drinking water source. To start source water protection, it is essential to develop a source water protection plan.

A source water protection plan consists of two key elements: contaminant source management and contingency planning. Contaminant source management is developed to prevent potential contaminants from being in close proximity to the drinking water source. Protecting the drinking water source may be accomplished by developing zoning ordinances to control future activities and development within the source water assessment area that may negatively affect the drinking water supply. Contaminant source management also consists of land acquisition, conservation easements, and hazardous waste collection programs. Contingency planning is also very important in source water protection efforts. A contingency plan should be established in the event that a potential contaminant source becomes a contaminant source.

Source water protection plans must also include an educational component The educational component can inform the public about their drinking water source, how their daily activities affect the quality of their drinking water, and encourage local residents to recycle, limit pesticide use, and dispose of chemicals properly.

Source water protection is a long-term dedication to clean and safe drinking water. Many people worry about the cost of source water protection, but in fact starting a source water protection plan today may cut cost in the long run. It is more cost effective to prevent contamination than to address contamination after the fact. Every member of the community has an important role in source water protection. Source water protection is an excellent way for the community to come together to protect the environment, the drinking water, and the public's health. While the 1996 Amendments to the Federal Safe Drinking Water Act do not require the development of a source water protection plan, the Department strongly encourages the development of a plan for the protection of drinking water.

For more information about the Source Water Protection Program, go to: http://www.nj.gov/dep/swap/askswap.htm.

Chapter 6: Public Health Concerns

6.2 Consumption Advisories

Fish and shellfish consumption advisories due to toxic chemical contamination were first announced in New Jersey in the 1980s. Data from studies conducted by the Department's Division of Science, Research and Technology (DSRT) revealed that unacceptable risks existed for eating certain species of fish and shellfish from some waters of the State. These advisories are of particular importance to pregnant women, nursing mothers and young children, because polychlorinated biphenyls (PCBs), dioxin, and mercury have been shown to cause a number of serious health effects, including effects on the immune system, nervous system, developmental problems, and/or cause cancer. Current advisories are listed on the Department's Web site at: www.FishSmartEatSmartNJ.org.

Toxics Monitoring:

A statewide "Routine Monitoring Program for Toxics in Fish" has been developed by the DSRT. The primary goal of the Routine Monitoring Program is to update the human health consumption advisories for certain foodfish species and/or geographic areas. Where possible, the Routine Monitoring Program has been designed to meet the Department's data quality objectives and maximize benefits for each individual program. The results of this monitoring effort will enhance the existing contaminant database used to develop fish consumption advisories and identify chemical contaminant levels.

Consumption advisories are developed on a pollutant-specific basis and, when multiple pollutants are present, are based on the contaminant resulting in the most restrictive advisory. Advisories are typically issued for elevated mercury, PCBs, chlorinated pesticides, or dioxin compounds. Fish tissue samples are often analyzed for specific contaminant(s) in order to gain a more complete picture of potential contaminants in multiple trophic levels. For example, the current consumption advisories for freshwater fish are predominantly for elevated mercury concentrations. However, current research has shown that certain lower trophic level freshwater species (i.e., common carp, catfish, and American eel) can accumulate a variety of chlorinated organic contaminants as well. Currently, a limited number of these lower trophic level freshwater species are being analyzed for PCBs (as congeners) and chlorinated pesticides (chlordane, DDX, and others). In addition, some freshwater fish samples collected from several specific locations are being analyzed for dioxin and furan compounds. All marine and estuarine species of fish are analyzed for chlorinated organic contaminants, and in 2002, an initial series of samples were analyzed for PBDE (flame retardant) compounds.

The Department has published "statewide" advisories in coastal waters for striped bass, bluefish, and American eel; and in freshwaters for largemouth bass, smallmouth bass, chain pickerel, yellow bullhead, brown bullhead, and sunfish. The Department has used "waterbody-specific" fish advisories to identify waterbodies impaired for fish consumption in the Integrated Report (see Chapter 4, Section 4.6 "Fish Consumption Use").

***Vibrio parahaemolyticus* – A Bacterial Pathogen Of Concern:**

On two occasions between 2002 and 2005, New Jersey closed roughly 100-square miles of the Delaware Bay to shellfish harvest due to the presence of a naturally occurring[1] bacterial pathogen called *Vibrio parahaemolyticus*. In July 2002, the New Jersey Department of Health and Senior Services declared an illness outbreak when two confirmed cases of *Vibrio parahaemolyticus* were attributed to New Jersey oysters harvested from Delaware Bay. Another closure occurred in June of 2005 when routine monitoring showed that levels of *Vibrio parahaemolyticus* in oysters in a portion of Delaware Bay exceeded the federal Food and Drug Administration (FDA) guidance levels for that pathogen.

It is important to emphasize that this pathogen is not related to pollution. It is normally present in low numbers in coastal waters throughout the country. Under certain conditions, the pathogen thrives and increases its presence in the oysters. Factors that favor the pathogen's growth are not fully understood. However, research has shown that elevated temperature (both in the water and in the oyster after it is harvested) plays a significant role. The Department has implemented a number of temperature control measures, such as restricting harvesting during the warmest times of the day and covering harvested shellfish with tarps, to reduce exposure to heating by the sun. These measures, along with the precautionary closure of certain shellfishing waters, appear to be working. There have been no confirmed *Vibrio parahaemolyticus* illnesses attributed to New Jersey oysters since 2002.

1 Naturally occurring means that this pathogen is not related to human waste or pollution. It is an organism that is normally present in bay waters in low numbers. Under ideal conditions (primarily warm temperatures), this organism thrives both in the water and in the shellfish tissue after harvest of the shellfish.

Chapter 7: Cost/Benefit Analysis

New Jersey contains a wide variety of water resources. Within the state's 7,788 square miles are 127 miles of coastline, 7,840 miles of rivers and streams and 69,920 acres of lakes and ponds larger than two acres. In addition, there are 1,482 square miles of fresh and saline marshes and wetlands and 1,069 square miles of coastal waters. New Jersey faces no single greater challenge than providing a clean, safe and plentiful supply of drinking water for our growing population. Recent drought emergencies have provided sobering lessons about the consequences we face if we fail to protect our streams, rivers and reservoirs. We must guarantee a steady supply of water to support both our burgeoning population and our ecosystems.

The USEPA Guidance for Year 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act (July 29, 2005) requires New Jersey to provide, as part of the Section 305(b) component of the Integrated Report, "an estimate of the environmental, economic, and social costs and benefits needed to achieve the objectives of the CWA and an estimate of the date of such achievement." However, as USEPA acknowledges, this information is difficult to obtain due to the complexities of the economic analysis involved. Therefore, USEPA recommends that, until such time as comparable procedures for evaluation costs and benefits are in wider use, states should provide a brief narrative that includes specific information, where available, on costs associated with construction, implementation, and operation and maintenance of pollution control measures and the associated benefits derived from the extent of streams and lakes improved from impaired to attainment, increased fishing and swimming use of streams, lakes and beaches, as well as reduced cost of drinking water treatment where intake water quality has improved.

Costs Associated With Water Pollution Control Activities:

The Department is responsible for implementing most of New Jersey’s Water Pollution Control Activities. As described in Chapter 6.2, many of these programs are located in the Department’s Division of Watershed Management, and the Water Monitoring and Standards Program. In addition, the Division of Water Quality is responsible for administering the New Jersey Pollutant Discharge Elimination System ("NJPDES") program that regulates the discharge of pollutants to the surface and ground waters of the State. The Department's authority is derived from the New Jersey Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., pursuant to which New Jersey qualifies for and has primary responsibility under the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.) for the administration of the NJPDES permitting program.

The Department is authorized to "establish and charge reasonable annual administrative fees, which fees shall be based upon, and shall not exceed, the estimated cost of processing, monitoring and administering the NJPDES permits." Fees are assessed to cover the Department's costs to issue and manage NJPDES permits, including water quality monitoring, modeling, inspections, compliance evaluations, and general administrative costs of the NJPDES program including regulatory support, data processing, and budgeting.

Revenue from NJPDES permit fees, New Jersey's Corporate Business Tax, and federal funds are used to cover the State's costs associated with implementing most of the water pollution control activities. In State Fiscal Year (SFY) 2006, NJPDES fees were expected to cover 193 Full Time Equivalents (FTEs) for a total cost of over $18 million. The Enforcement component of the State's Water Pollution Control Program for SFY06 will cover an additional 26 FTEs, at a cost of $2.4 million. The Corporate Business Tax and federal grant funds will be used to cover 120 FTEs, at a cost of $9.2 million.

Table 7-1: Cost of New Jersey Water Pollution Control Activities, SFY 2006

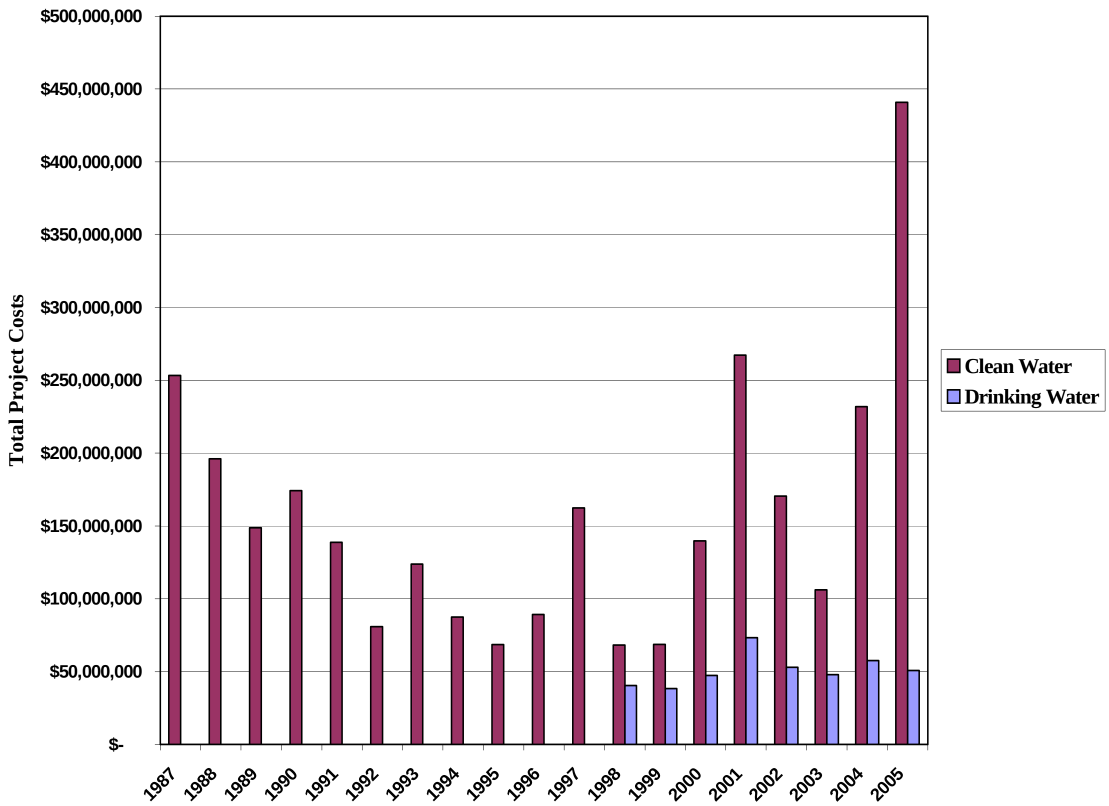
Programs*	FTEs	Cost (in millions)
NJPDES Program	193	$18
Enforcement	26	$2.4
Other(DWM/WMS)	120	$9.2
Total	**339**	**$29.6**

*This does not include the Division of Water Supply, NJGS, EIT or Green Acres.

Public investment to improve water quality in New Jersey has been substantial. Since 1987, more than $3 billion has spent to upgrade wastewater treatment facilities, reduce infiltration/inflow, control discharges from Combined Sewer Overflows (CSOs), construct sludge handling facilities, improve stormwater runoff, and close landfills (see Figure 7-1 on the following page). The State has assisted New Jersey municipalities, counties and sewerage entities with grants or loans for sewage treatment projects through the State's Environmental Infrastructure Trust. Starting with 1998, the Environmental Infrastructure Trust (NJEIT) provided funding to improve drinking water quality.

In 2004, the NJEIT granted loans totaling $99.4 million to 19 entities for Clean Water projects, $2.48 million for four Clean Water land acquisitions and $46.1 million to nine entities for Drinking water projects (see Chapter 5, Section 5.9 for more information about the NJEIT).

Figure 7-1: Environmental Infrastructure Trust Financing
Loan History 1987-2005



Benefits of Water Pollution Control Measures:

Unlike the costs of cleanup, the benefits of improved water quality are not easily measured in monetary terms. Maintenance of high quality potable water supplies is critical to the health and economic well being of every resident. Clean water for swimming, fishing, and boating are quality of life issues that also have clear economic benefits associated with recreation, marine industries and resultant tax revenues. Cleaning up abandoned and contaminated urban sites has broad implications for the health of nearby residents, the economic revitalization of New Jersey's cities, and the protection of sensitive wetlands and water resources.

Economic benefits of water quality improvements, while difficult to quantify, include increased opportunities for water-based recreational activities, enhanced commercial and sport fisheries, recovery of damaged aquatic environments, and reduced costs of water treatment to various municipal and industrial users.

Recently, a trend analysis of some important water quality characteristics was conducted for the time period 1985 through 2004 at 36 monitoring sites located around the State. These sites were selected because they were identified as monitoring sites with available long-term data for the study's 20-year time period. All of the sites are in the USGS/NJDEP Ambient Surface Water Monitoring Network and were sampled at least quarterly. The following water quality characteristics were assessed in the trends analysis: dissolved oxygen, nutrients (total nitrogen, total ammonia, nitrate, and total phosphorus), dissolved solids, and specific conductance.

Results from the assessed stations show that levels of nutrient and dissolved oxygen are improving and/or are stable. Excess nutrients can accelerate the growth rate of aquatic algae and vegetation. Dissolved oxygen is necessary for almost all aquatic life; consequently concentrations of dissolved oxygen in water provide one indicator of the health of aquatic ecosystems. Water bodies affected by excessive primary production are characterized by significant algae and weed growth and can experience episodes of low dissolved oxygen. Low dissolved oxygen episodes can occur when algae die off and bacteria consume the dissolved oxygen in the process of decomposition.

These results are consistent with expected improvements to water quality primarily from upgrades to wastewater treatment plants. Nutrient loads have been reduced through more extensive wastewater treatment. While the results show an improving or stable trend, the 2006 Integrated Report indicates 37% of the assessed subwatersheds are still impaired for phosphorus.

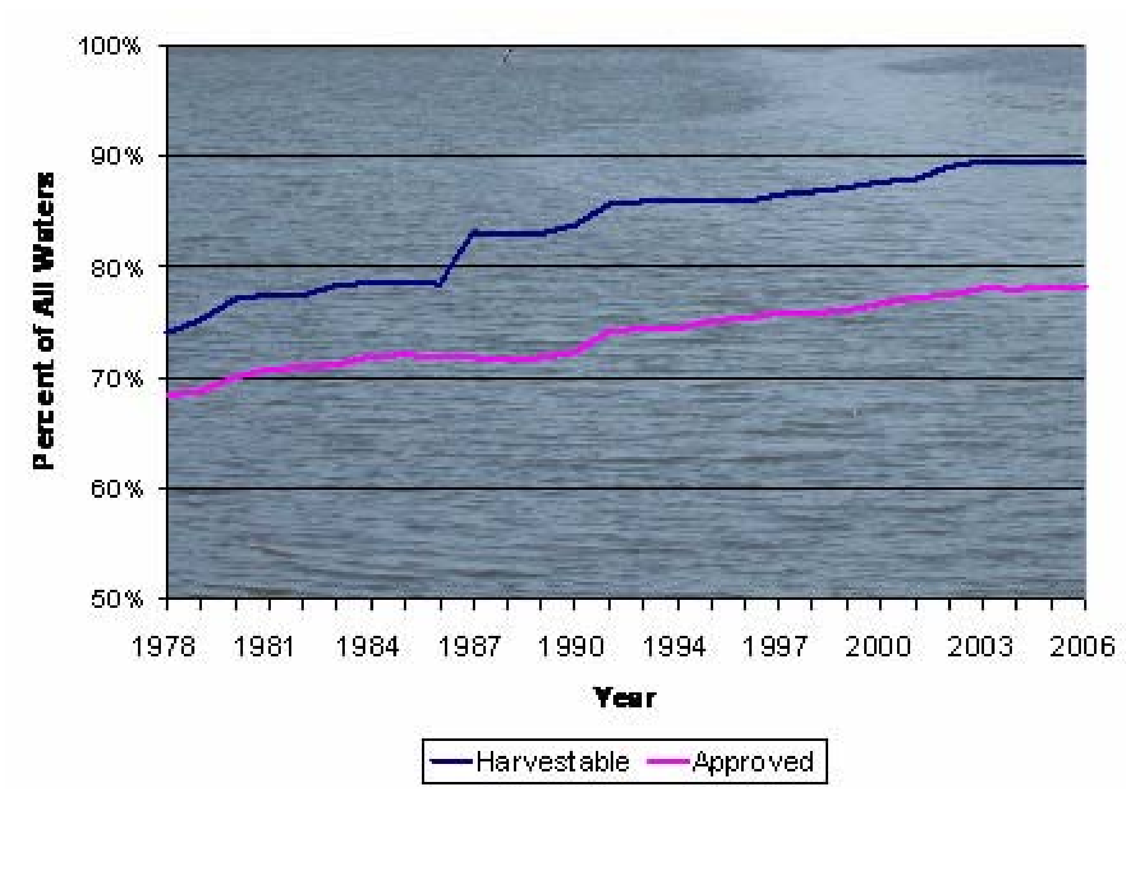
Pathogens impact recreational uses and shellfish harvest. Sources include stormwater runoff, Combined Sewer Overflows (CSOs), wildlife, failing septic systems and broken sewer lines. CSO permittees have invested over $300 million in infrastructure improvements to control the discharge of solids/floatable materials in CSO discharges and/or eliminate dry weather overflows. These efforts have resulted in a reduction in the frequency and duration of some CSO discharges and the elimination of 40 CSO discharge points; thereby reducing the discharge of pathogens to the receiving waters. Control measures required for the remaining CSO discharges are either under design or under construction.

Solids/floatable control measures have been completed and are operating for 146 CSO discharges. When all of the required solids/floatable control facilities are in operation, approximately 850 tons of solids/floatable material will have been captured or otherwise prevented from entering the waters of the State. These CSO discharges are located in the New York-New Jersey Harbor Estuary and the Delaware River Estuary around Camden. These waters are not currently designated for primary contact recreation due to high levels of pathogens. The Department is engaged in a comprehensive TMDL process to determine appropriate designated uses, water quality criteria to protect the designated uses, and actions needed to meet water quality goals. As part of this process, the Department will be evaluating whether these waters can be upgraded to support the primary contact recreational use.

Another measure of water quality improvement is the number of non-trout streams that have been documented as supporting trout production and trout maintenance. Since 1993, the Department has upgraded 70 streams from freshwater non-trout (FW2-NT) to freshwater trout-production (FW2-TP) and 27 streams from FW2-NT to freshwater trout-maintenance (FW2-TM). These upgrades expand the number of streams available for highly desirable trout fishing in the State.

A third measure of water quality improvement is the percent of shellfish waters open for harvest. The shellfish industry represents a significant portion of New Jersey's coastal economy with an estimated dockside value of about $80,000,000 per year. In 1998, the Department established a target of 90% by 2005 for shellfish waters classified as safe to harvest. This includes shellfish waters classified as fully approved, seasonally approved and special restricted. The Department achieved this goal in 2003. Approximately 78% of the designated waters are fully approved for unrestricted shellfish harvest based on water quality.

Figure 7-2: Percentage of New Jersey's Waters Approved For Shellfish Harvesting Over Time



Chapter 8: Public Participation

Summary of The Public Participation Process For The 2006 Integrated List:

Public Submission of Data:

Public participation for each Integrated Report begins with a public request for data submissions. The Department provides several avenues for announcing its intent to seek water quality-related data and information from the general public, including publication of notices in the New Jersey Register, in Department-generated newsletters, and via direct or electronic mailing to a host of interested entities. The public notice of the request for data for the 2006 Integrated Water Quality Monitoring and Assessment Report was published in the January 18, 2005 New Jersey Register and concurrently on the Department's Web site (see http://www.state.nj.us/dep/wmm/sgwqt/wat/2006-datasolicitation.pdf). An article explaining the data solicitation process was published in the Department's *Watershed Focus* and *New Jersey Discharger* newsletters (combined circulation over 3000), and was also distributed to volunteer monitoring organizations via the Department's Watershed Watch Network and the New Jersey Council of Watershed Association's automatic mailing list server (over 5000 recipients). In addition, the Department directly contacted numerous groups and organizations known to have collected water quality data, including local, state, and federal agencies, members of the public, and academic institutions (see Table 8-1 for the Department's complete mailing list used for this data solicitation).

The Department endeavors to continuously interact with other data collecting organizations and facilitate the exchange of information. To that end, the New Jersey Water Monitoring Coordinating Council was established on October 24, 2003, which serves as a statewide body to promote and facilitate the coordination, collaboration, and communication of scientifically sound, ambient water quality and quantity information to support effective environmental management. The Council consists of representatives from various Divisions and Programs within Department, USEPA Region 2, the Delaware River Basin Commission, the Pinelands and Meadowlands Commissions, various members of academia, and volunteer monitoring groups. The Council provides a forum for information and data exchange among its participants.

The deadlines for submitting data for use in the Integrated Report are specified in the public notice. The Department generally allows six months for the submission of data subsequent to the publication of the data solicitation notice. The reporting period (usually data collected within the preceding five years) is also identified in the public notice. The 2006 Integrated Report includes data collected between January 1, 2000 and December 31, 2004. Data collected through December 31, 2004 were accepted until July 15, 2005 for the development of the 2006 Integrated List. As such, the 2006 Integrated Report will report the status of New Jersey's waters through 2004. This is consistent with the neighboring states of Delaware and Pennsylvania, as well as the Delaware River Basin Commission. A "cut-off" date for data submission is necessary to allow the timely completion of a draft Integrated List that can be distributed for public review and comment before the Integrated Report is completed. Data collected after December 31, 2004 and data submitted after July 15, 2005 will be considered for subsequent Integrated Reports.

Public Review of Draft Documents

Once the Department has completed its review of the data submitted by other entities and incorporates the results as appropriate, the Department provides an opportunity for public review of the Integrated Water Quality Monitoring and Assessment Methods Document and the Draft Integrated List. The Department publishes a notice in the New Jersey Register, on the Department Web site, and in newspapers of general circulation throughout the state, announcing the availability of these documents for public review and comment. Adjacent states, federal, and interstate agencies are also notified, as appropriate.

On September 19, 2005, the Department published a public notice announcing availability for review of the updated (2006) Integrated Water Quality Monitoring and Assessment Methods Document. This document includes a description of the quality assurance requirements as well as the rationale for the placement of waterbodies in Sublists 1 through 5 of the Integrated List. A thirty-day public comment period was provided. After review and consideration of comments received, the Department finalized the Methods Document (Appendix G).

A public notice announcing the availability for review of the draft 2006 Integrated List was published in the New Jersey Register on May 1, 2006 (38 N.J.R. 1878(b)) followed by a 30-day public comment period. A public information session outlining the changes in the methodology used to develop the Integrated List was held on May 4, 2006. The Department received requests for an additional information session, which was held on June 1, 2006. To allow for comments after this information session, the Department extended the comment period an additional two weeks (from May 31 to June 16, 2006). Responses to comments on the draft 2006 Integrated List are provided in Appendix E.

Table 8-1: Mailing List for Data Solicitation

ORGANIZATION	FIRST NAME	LAST NAME	ADDRESS	CITY	STATE	ZIP CODE
Camp Dresser & Mckee	Peter	Nese	Raritan Plaza I Rari	Edison	NJ	08818-
Environmental Engin	Richard E	Fini, PE	20 White Pine Drive	Sewell	NJ	08080-2818
Environmental Resou	Dean	Ritts, PE	250 Phillips Blvd Su	Ewing	NJ	08618-
F.X. Browne, Inc.	Fred	Gaines	PO Box 401	Landsdale	PA	19446
IT Corp	Michael	Murray	101 Fieldcrest Ave	Edison	NJ	08837-3628
Killam Associates	Gerard	Murphy	27 Bleeker St. PO B	Millburn	NJ	07041-
Lan Associates	Richard	Woostbrock	445 Godwin Ave	Midland Park	NJ	07432-
Najarian Associates	Tavit	Najarian	Industrial Way West	Eatontown	NJ	07724-
Omni Environmental	Raymond	Ferrara	321 Wall Street	Princeton	NJ	08540-1515
Omni Environmental	Peter L.	Kallin	321 Wall Street	Princeton	NJ	08540-1515
Sadat Associates	J.B.	Wiley	1545 Lamberton Rd	Trenton	NJ	08611-3517
Taylor Wiseman & Ta	Robert	Anastasia	124 Gither Dr Suite	Mt Laurel	NJ	08054-
Biology Dept Georgi	Michael	Loss	900 Lakewood Ave	Lakewood	NJ	08701-
Camden County Colle	Philip	Winkie	College Drive	Blackwood	NJ	08012-
Center For Earth Sc	Paul	Rockman	Kean College	Union	NJ	07083-
Center For Envtal C	Erin	Beare	31 Pine Street	New Brunswick	NJ	08901-
Cook College Dept.	Andy	Rowan	College Farm Road	New Brunswick	NJ	08903-
Cook College Dept.	George	Nieswand	PO Box 231	New Brunswick	NJ	08903-
Dept Of Biology	Michael	Sebetich	William Patterson Co	Wayne	NJ	07470-
Dept Of Ecology, Ev	Theodore B	Shelton, RCE	80 Nichol Ave	New Brunswick	NJ	08901-2882
Dept. Earth Science	Philip	Justus	Fairleigh Dickenson	Madison	NJ	07940-
Div Of Nat Sci & Ma	Paul	Russo, Ph.D.	467 Franklin ST	Bloomfield	NJ	07003-
IMCS Cook College	Michael	Kennish	Dudley Rd	New Brunswick	NJ	08903-
Institute Of Marine	Janice	Mc Donnell	PO Box 231	New Brunswick	NJ	08903-0231
Marine Academy Of S	Captain Bruce	Boyd	BLDG 305	Sandy Hook	NJ	07732-
Meadowlands Envtal	Dr Francisco J	Artigas	180 University Ave	Newark	NJ	07012-
Middlesex County Co	Carl	Viesewetter	30 Hillside Ave	Monmouth Juncti	NJ	08852-
Nacote Creek Resear	Peter	Justus	PO Box 418	Port Republic	NJ	08241-
NCSUWater Quality G	Jean	Spooner	Campus Box 7637	Raleigh	NC	27695-7637
NJ Marine Sciences	Claire	Antonucci	Building 22	Fort Hancock	NJ	07732-
NJ Marine Sciences	Joan	Sheridan	Building 22	Fort Hancock	NJ	07732-
Ocean Nature & Cons	Don	Sutherland	21 Winding River Dr	Toms River	NJ	08755-

ORGANIZATION	FIRST NAME	LAST NAME	ADDRESS	CITY	STATE	ZIP CODE
Res.Center, Morris	Sherman	Masten	Route 10 & Center Gr	Dover	NJ	07801-
Rutgers Coop Ext Be	Joel	Flagler	327 Ridgewood Avenue	Paramus	NJ	07652-4896
Rutgers Coop Ext Ca	James	Wilmott	152 Ohio Avenue	Clementon	NJ	08021-4184
Rutgers Coop Ext Ca	Larry	Newbold	4 Moore Road	Cape May Court	NJ	08210-1601
Rutgers Coop Ext Cu	James	Johnson	291 Morton Avenue	Millville	NJ	08332-9776
Rutgers Coop Ext Me	Daniel	Kluchinski	930 Spruce Street	Trenton	NJ	08648-4584
Rutgers Coop Ext Oc	Art	Brown	1623 Whitesville Roa	Toms River	NJ	08755-1199
Rutgers Coop Ext Pa	Stan	Kamara	1310 Rt 23 North	Wayne	NJ	07470-
Rutgers Coop Ext Sa	Peter B	Probasco	51 Cheney Rd Suite #	Woodstown	NJ	08908-9982
Rutgers Coop Ext So	Clare	Liptak	310 Milltown Road	Bridgewater	NJ	08807-3587
Rutgers Coop Ext. O	Peter	Nitzche	PO BOX 900	Morristown	NJ	07963-0900
Rutgers Univ Haskin	Eleanor	Bochenek	1636 Delaware Ave	Cape May	NJ	08204-
Rutgers University	Kelly	Nitzsche	Center for Urban Res	Piscataway	NJ	08855-
Rutgers Univ-Marine	Tina	Bologna	132 Great Bay Blvd	Tuckerton	NJ	08087-2004
Stockton College Na	Jamie	Cromartie	PO Box 195	Pomona	NJ	08249-0195
Alliance For A Livi	Carol	Elliot	2007 Long Beach Blvd	North Beach Hav	NJ	08008-
Alliance For Enviro	Nancy	Sadlou	P.O. Box 4292	Warren	NJ	07059-4292
American Littoral S	Derry	Bennett	Sandy Hook Marine La	Highlands	NJ	07732
Anjec	Alix C	Bacon	15 Reading Rd	Stockton	NJ	08559-
Barnegat Bay Waters	Angela	Anderson	623 Whitesville Rd	Toms River	NJ	08755-
Barnegat Bay Waters	Bonney	Parker	19 Grant Ave	Toms River	NJ	08753-
Baykeeper NY/NJ Har	Greg	Remaud	Building 18 Sandy Ho	Highlands	NJ	07732-
Brookdale Community			PO Box 53	Fort Hancock	NJ	07732-
Citizens United To	Fred	Akers	PO Box 474	Millville	NJ	08332-
Clean Ocean Action	Cindy	Zipf	PO BOX 505	Sandy Hook	NJ	07732-
Delaware & Raritan	Linda	Mead	1327 Canal Road	Princeton	NJ	08540-
Delaware River Basi	Christopher	Roberts	PO Box 7360	West Trenton	NJ	08628-7360
Delaware Riverkeepe	Fred	Stine	PO Box 326	Washington Cros	PA	18977
Delaware Riverkeepe	John	Brunner	PO Box 326	Washington Cros	PA	18977-0326
Environ.Defense Fun	Louisa	Willner	257 Park Ave. South	New York	NY	10010
Environmental Prote	Sharon	Gill	225 Lafayette Avenue	Chatham	NJ	07928
Fed Of Gloucester W	Suzanne	Mc Carthy	PO Box 233	Glassboro	NJ	08028-0233
Great Egg Harbor Wa	Julie	Akers	PO Box 900	Hammonton	NJ	08037-
Great Swamp Nationa			RD 1	Basking Ridge	NJ	07920

ORGANIZATION	FIRST NAME	LAST NAME	ADDRESS	CITY	STATE	ZIP CODE
Great Swamp Watersh	Kelley	Curren	PO Box 300	New Vernon	NJ	07976-
Great Swamp Watersh	Julia	Somers	PO Box 300	New Vernon	NJ	07976-
Hackensack Riverkee	Captain Bill	Sheehan	231 Main Street	Hackensack	NJ	07601-
Help Save The Earth	Jeremy	Lees	19 Saint James Place	Clifton	NJ	07013-3426
Holmdel Envtl Cmsn	Larry	Fink	PO BOX 410	Holmdel	NJ	07733-
Hudson River Founda			17 Battery Place Sui	New York	NY	10004
Lake Hopatcong Comm	Donna	Macalle-Holly	117 Lakeside Bouleva	Landing	NJ	07850-1120
Lake Topanemus Cmsn	Pat	Preston	339 Broad Way	Freehold	NJ	07728-
Lower Raritan Wtr R	John N.	Korzun	P.O. BOX 191	New Brunswick	NJ	08903-
Manasquan River Pre	Harriet	Stanley	240 Casino Drive	Farmingdale	NJ	07727
Manasquan River Wat	Steve	Taylor	17 Bay Hill Road	Leonardo	NJ	07737-
Mantua Creek Water	Noel	Guerds	230 Center Avenue	Sewell	NJ	08080
Mantua Creek Waters	Domenic	Lanciano	4 Latour Ct	Woodbury	NJ	08096-
Marine Biology Expl	Brian	Pellin	67 Massey Drive	Sewell, NJ	NJ	08080
Meadowlands Environ	Gabrielle	Bennett	2 DeKorte Park Plaza	Lyndhurst	NJ	07071-
Miry Run Environmen	Terrence	Roberts	23 Valley Road	Hamilton Square	NJ	08690
Monmouth Co Friends	John	Granchi III	PO Box 303	Red Bank	NJ	07701
Mountain Lake Commu	Brian	Welsh	5 Center St	Belvidere	NJ	07823-
Musconetcong Waters	Gary	Porehly	PO Box 113	Asbury	NJ	08802-0113
Navesink River Envt	Joanne	Stolen	PO Box 6153	Fair Haven	NJ	07704-6153
New Jersey Audubon	Mike	Anderson	PO Box 126	Bernardsville	NJ	07924-
NJ Alliance For Act	Philip	Beachem	PO Box 6438	Edison	NJ	08818-6438
NJ Audubon Society	Brian	Vernachio	794 Rancocas Rd	Mt Holly	NJ	08060-
NJ Coalition Of Lak	Frances	Smith	21 The Boardwalk	Sparta	NJ	07871-
NJ Conservation Fou	Don	Kirchoffer	705 Lees Ln	Collingswood	NJ	08108-3132
NJ Environmental Lo	Mario	Curtis	204 West State St.	Trenton	NJ	08608-
NJ League Of Munici	John	Trafford	407 W State Street	Trenton	NJ	08618-
NJ Water Environmen	Jack	Lagrosa	PO Box 1212	Fair Lawn	NJ	07410-1212
NJWSA	Daniel	Endres	PO Box 287	South Bound Bro	NJ	08880-
NRCS	Tim	Dunn	54 Old Highway 22 Su	Clinton	NJ	08809-1389
NY/NJ Harbor Baykee	Andrew	Willner	52 W Front St	Keyport	NJ	07735-1241
Oceanport Water Wat	Ed	Miller	222 Monmouth Bouleva	Oceanport	NJ	07757
Oceanport Water Wat	Dr. William A	Kaloss	115 Smith Street	Oceanport	NJ	07757-
Pa Dep River Basin	Irene	Sheehan	PO Box 2063	Harrisburg	PA	17105-2063

ORGANIZATION	FIRST NAME	LAST NAME	ADDRESS	CITY	STATE	ZIP CODE
Palisades Interstat	Carol	Ash	Administration Build	Bear Mountain	NY	10911
Passaic River Coali	Ella	Fillapone	246 Madisonville Roa	Basking Ridge	NJ	07920-
Paulinskill Lake As	Ronald V	Volk	914 Deer Run	Newton	NJ	07860-
Pequannock River Co	Ross	Kushner	PO Box 392	Newfoundland	NJ	07435-
Pine Barrens Coalit	Nan	Walnut	PO BOX 2366	Vincentown	NJ	08088-
Pompeston Creek Wat	Debbie	Lord	551 New Albany Road	Moorestown	NJ	08057-
Rahway River Assoc	Frank S	Russo	190 Jensen Ave	Rahway	NJ	07065-
Save Our Shore	William	Pinkerton	404 Waverly Blvd.	Ocean City	NJ	08226-4748
Save The Delaware C	Hal	Lockwood	2126 Land Title Bldg	Philadelphia	PA	19110
Sierra Club	Bill	Wolfe	139 W Hanover St.	Trenton	NJ	08618-4823
Sierra Club - Shore	Martin	Jude	69 Hamilton Drive	Red Bank	NJ	07701-
Stony Brook Millsto	Judy	Gerardi	31 Titus Mill Road	Pennington	NJ	08534-
Stony Brook Regiona	John	Gaston	290 River Road	Princeton	NJ	08540-
The Nature Conserva	Liz	Johnson	200 Pottersville Rd	Chester	NJ	07930-2432
The Water Watcher	Anu	Verma	9 Chatham Ct	Robbinsville	NJ	08691-4005
Trout Unlimited	Walter	Scheurer	9 Cold Spring Road	Califon	NJ	08730-
United Water Resour	FRANK	Akers	9 Crestfield Rd	Boonton	NJ	07005-9007
Upper Raritan Water	David	Peifer	PO Box 273	Gladstone	NJ	07934-
Upper Raritan Water	Susan	Endres	PO Box 273	Gladstone	NJ	07934-0273
Upper Rockaway Rive	Constance	Stroh	PO BOX 555	Denville	NJ	07834-
Water Res. Assn Of	Bruce	Stewart	Davis Road	Valley Forge	PA	19481
Watershed Partnersh	Colleen	Gould	2528 Algonkin Trail	Manasquan	NJ	08736-
Wetlands Institute	Cindy	O'Conner	1075 Stone Harbor Dr	Stone Harbor	NJ	08247-1424
White Rock Communit	Les	Pappianne	42 Whitrock Blvd.	Oak Ridge	NJ	07438-
Woodbridge River Wa	Ernie	Oros	44 Fanning Street PO	Fords	NJ	08863
Delaware & Raritan	James	Amon	PO Box 539	Stockton	NJ	08539-0539
National Oceanic &	Peyton	Robertson	1305 East-West Highw	Silver Spring	MD	20910
Natl Marine Fisheri	Jeff	Lockwood	Sandy Hook Lab	Highlands	NJ	07732-
Nj Meadowlands Cmsn	Chris	Hobble	1 DeKorte Park Plaza	Lyndhurst	NJ	07071-
Noaa N/Sp Ssmc4, 95	Alison	Hammer	1305 East-West Highw	Silver Spring	MD	20910
Noaa Ssmc-4 N/Orm3	Marcella	jansen	1305 East West Hwy	Silver Spring	MD	20910
NOAA, Ssmc-4 N/Orm3	Helen	Farr	1305 East West Hwy	Silver Spring	MD	20910
Pinelands Commissio	JOHN	Stokes	P.O. Box 7	New Lisbon	NJ	08064-
Port Authority Of N	Daniel	Maynard	One World Trade Ctr	New York	NY	10048

ORGANIZATION	FIRST NAME	LAST NAME	ADDRESS	CITY	STATE	ZIP CODE
U.S. Fish, Game & W	Clifford	Day	927 North Main Stree	Pleasantville	NJ	08232-
Us Army Corp Of Eng	Charles	Ware	100 Penn Square East	Philadelphia	PA	19107
Us Fish And Wildlif			927 N Main Street	Pleasantville	NJ	08235-
Us Fish And Wildlif			1547 Route 565	Sussex	NJ	07461-
Atlantic County Dep	Tracey	Mc Ardle	201 South Shore Road	Northfield	NJ	08225
Bergen County Depar	Kathryn	Williams	327 Ridgewood Avenue	Paramus	NJ	07652-4895
Burlington Co. Heal	Charles	Schiers	Woodlane Rd	Mount Holly	NJ	08060-
Camden Co Health De	Robert	Pirrotta	PO BOX 9	Blackwood	NJ	08012-0009
Cape May Co. Health	Chris	Lawson	Crest Haven Complex	Cape May CH	NJ	08210-
Cumberland Co. Heal	Manuel	Ostroff	790 E. Commerce Stre	Bridgeton	NJ	08302-
Monmouth Co. Health	Karen	Brown	3435 Highway 9	Freehold	NJ	07728-
Ocean Co Health Dep	Joe	Przywara	175 Sunset Ave	Toms River	NJ	08755-
Passaic Co Dept Hea	Paula M	Hanley	311-317 Pennsylvania	Paterson	NJ	07503-
Passaic County Heal	John	Ferraioli	317 Pennsylvania Ave	Paterson	NJ	07503
Warren County Healt	Paul	Wegmann	319 W. Washington Av	Washington	NJ	07882-
Consumer NJ Water C	Ed	Rapciewicz	10 Black Forest Road	Hamilton	NJ	08691-
Elizabethtown Water	Anthony	Matarazzo	PO Box 102	Bound Brook	NJ	08805-
Hackensack Water Co	Pen	Tao	200 Old Hook Rd.	Harrington Park	NJ	07640-
Middlesex Water Com	Richard	Russo	1500 Ronson Rd.	Iselin	NJ	08830-
NJ American Water C	Michael	Robert	167 John F Kennedy P	Short Hills	NJ	07078-2708
NJ Water Supply Aut	Richard	Famularo	PO Box 5196	Clinton	NJ	08809-
NJ Water Supply Aut	Michael	Mcree	PO Box 5196	Clinton	NJ	08809-
Passaic Valley Wate	Philip	Roosa	PO Box 198	Little Falls	NJ	07424-
Assoc. of Environme	Helen	Gulbinsky				
TRC Omni Env'l Corp			321Wall Street	Princeton	NJ	08540-1515
HydroQual, Inc. and			1200 Mac Aurthur	Mahwah	NJ	7430
Princeton Hydro,LLC	Fred	Lubnow	1108 Old York Road	Ringoes	NJ	8551
Brick Utilities	Robert	Karl	1551 Highway 88	Brick	NJ	08724-2366
MCHD	Elizabeth B.	Cosg				
HydroQual, Inc	Patricia M.	Kehrb	1200 Mac Aurtur	Mahwah	NJ	7430
Najarian Associates	Howard	Litwack	One Industrial W	Eatontown	NJ	7724
Hatch Mott McDonald	Jurek	Patoczka	27 Bleeker Street	MillBurn	NJ	07041-1008
Hatch Mott McDonald	Micheal S.	Bennet	27 Bleeker Street	MillBurn	NJ	07041-1008
Hagedorn Center for	Amy S.	Greene	18 Commerce Stre	Flemington	NJ	08822-1743

ORGANIZATION	FIRST NAME	LAST NAME	ADDRESS	CITY	STATE	ZIP CODE
TRC Omni Env'l Corp	Micheal	Wright	321 Wal Street	Princeton	NJ	08540-1515
Omni Env'l Corp.			211 College Road	Princeton	NJ	08540-6623
Princeton Hydro	Erik L.Silldorff,		1108 Old York Road	Ringoes	NJ	8551
Allied Biological	Christopher G. Uc		580 Rockport Road	Hackettstown	NJ	7840
Sussex Cty MUA	Nathaniel Sajdak,		34 S. Rt.94	Lafayette	NJ	7848
Sussex Cty MUA	Nathaniel Sajdak,		34 S. Rt.94	Lafayette	NJ	7848
Sussex Cty MUA2	Nathaniel Sajdak,		34 S. Rt.94	Lafayette	NJ	7848
Warren Cty MUA			1200 MacArthur B	Mahwah	NJ	7430
TRC Omni Env'l Corp	Tom Amidon					
Franklin Twp. Commi	Princeton Hydro,		1108 Old York Rd	Ringoes	NJ	8551
HydroQual, Inc.	Patricia M. Kehrb		1200 MacArthur B	Mahwah	NJ	7430
Omni Env'l Corp	L. GallowayEvrard		3 Princeton Way	Princeton	NJ	08540-1515
Evesham MUA-Elmwood	Louis D. Russo		PO Box 467	Evesham	NJ	08053-
Western Monmouth UA	Allied Biological		580 Rockport Rd.	Hackettstown	NJ	07435-
Pequannock River Co	Ross Kushner, Exe		PO Box 392	Newfoundland	NJ	07435-
Interstate Env'l Co	Peter L. Sattler,		311 West 43rd St	NYC	NY	10036
Merrill Cr Reservoi	Merill Creek Owne			Boston	MA	
Pequannock River Co	Ross Kushner, Exe		PO Box 392	Newfoundland	NJ	07435-

Chapter 9: Next Steps-Preparing for 2008 and Beyond

Although significant improvements have been made to the 2006 Integrated Report, the Department realizes that there is room for further refinement in the integrated monitoring, assessment, listing, and reporting processes. This section summarizes the information gaps and steps the Department is taking to bridge the data gaps and improve assessment methods. The Department may not be able to complete all the required tasks necessary to make these refinements for the 2008 Integrated Report; however, the Department will continue to identify progress made in each subsequent reporting cycle.

Closing the Data Gaps:

Data gaps include the need for additional monitoring to provide raw data as well as refinement and development of assessment tools, such as indices, to aid in the assessment of data.

<u>Prioritize Monitoring Efforts To Complete The Assessment Of All Designated Uses</u>
The Integrated List identifies the status of individual designated uses. Specific types of data are needed to assess each use. The Department has assessed all uses (except fish consumption) in 241 subwatersheds. A total of 24 of these fully assessed subwatersheds attain all designated uses (except fish consumption). Additional monitoring is needed in 729 subwatersheds to assess all uses in all 970 HUC-14 subwatersheds statewide. Consistent with the recommendations in the Department's Long Term Monitoring Strategy, the Department will use the Integrated Report to focus additional monitoring in subwatersheds where the additional data will result in the assessment of all designated uses in those subwatersheds. By targeting monitoring efforts to support the full assessment of all uses in partially assessed subwatersheds, the Department hopes to increase the number of subwatersheds listed on Sublist 1 (i.e., in full attainment of all designated uses).

<u>Lake Sanitary Data</u>
Unlike rivers and streams, lake primary contact assessments are limited to lakes with designated bathing areas. The Department intends to work with the Department of Health and Senior Services to identify all licensed bathing beaches and ensure that the Department receives all appropriate data for these beaches.

<u>Continuous Monitoring</u>
The Department has initiated a program to collect baseline temperature data statewide. Over the next two years, temperature data from an additional 20 stations a year will be collected in the southern part of the state. In addition, the Pequannock River Coalition has volunteered to collect data at additional sites in the northern sections of the state. The Department's Bureau of Marine Monitoring intends to place additional telemetry buoys in the estuarine waters, which provide pH, dissolved oxygen, salinity, temperature, turbidity, and Chlorophyll α data.

Analytical Methods

The Department is conducting research to evaluate analytical methods that can achieve lower detection limits for arsenic and mercury.

Monitoring For Metals

There are still a significant number of subwatersheds for which there is no data to assess the presence of metals. This is partially the consequence of the high analytical cost of these constituents. Monitoring for toxic parameters was added to the supplemental monitoring stations in FY2005. The Department will explore methods for prioritizing monitoring in subwatersheds with a high likelihood of metal contamination to better assess metals in subsequent reports.

Conduct Monitoring To Reassess Old Listings

The Department has been conducting toxics monitoring to verify whether water quality impairment exists where listings were carried over from previous lists rather than based on current data. The Department will continue to identify additional historic listings where additional monitoring is needed to verify impairment.

Evaluate Assessing Upstream Subwatersheds Using GIS-Based Assessment Methods

The Department will evaluate whether a GIS-based assessment tool can be developed for the assessment of small headwater subwatersheds for which there is little or no data, in lieu of, or supplemental to, the assignment of valuable and scarce monitoring resources to those waters of the State.

Develop A Benthic Indicator For Estuarine and Ocean Waters To Improve The Assessment Of Aquatic Life Use

USEPA's National Coastal Assessment (NCA) program is providing states with the first complete and consistent dataset on the condition of benthic communities in the nation's estuarine waters. Prior to the NCA, New Jersey based its measure of the ecological health of its coastal waters solely on dissolved oxygen measurements. As a result of the availability of NCA and REMAP data, New Jersey included an ecological assessment of its benthic community in the 2006 Integrated Assessment for the Raritan Bay Estuary. The Department plans to expand this type of ecological assessment to the rest of its estuarine and ocean waters. The Department is working with USEPA and Rutgers University to develop a metric for the benthic community that accurately measures impairment of the aquatic life use for these waterbodies.

Enhance Biological Assessments In Freshwater

- **South Jersey Fish IBI:** The Department is in the process of developing a Fish Index of Biotic Indicators (IBI) metric for use in the inner coastal plain of southern New Jersey.

- **Develop Pinelands Index:** The Department is finalizing a benthic protocol for Pineland waters that will soon be applied and will result in most, if not all, of the PL waters being moved from Sublist 3 of the Integrated List to another, more appropriate sublist.

- **Headwaters:** The Department has contracted with USEPA to develop a protocol for assessing waterbodies with a drainage area of less than five square miles. The Department anticipates having an indicator by 2008.

- **Recalibration Of Existing Biological Indicator:** The Department currently uses a benthic macroinvertebrate biological index based upon family level identifications, which divides assessments into three categories. A USEPA contractor has recalibrated New Jersey's biological data to a generic level index that provides greater resolution to the State's biological assessment (four categories). The Department will use this new index to develop new biological criteria that will be used to assess attainment of the Aquatic Life Use.

Enhancements To The Assessment Methodology:

The Methods Document is a "living" document that undergoes a complete review and update as part of each reporting cycle. A draft of the Methods Document is provided to the public and USEPA for comment prior to developing the Integrated List. Below are some assessment methods/issues the Department plans to revisit for the next iteration of the Methods Document (for the 2008 Integrated Report).

<u>Lake Use Assessment: General Considerations</u>
The Department will be examining a series of lake assessment issues to develop a comprehensive lake assessment methodology.

- **Integration Of Lakes Into HUC-14 Assessment Units:** Lakes considered for the 2006 Integrated Report included impoundments greater than two acres or that had designated bathing beaches, including small ponds on the run-of–the-river, stormwater detention basins, isolated small ponds, and wider portions of rivers with dams, large lakes, and reservoirs. The Department intends to re-evaluate its assessment of lakes for the 2008 Integrated Report and incorporate many of the smaller, run-of-river lakes into their corresponding HUC-14 subwatershed assessment unit, which will eliminate much of the "double counting" of these waterbodies. The Department can then focus future lake assessments on larger, more significant lakes that should be assessed separately from the rest of the subwatershed.

- **Identification Of Lakes To Be Assessed As Lakes:** The Department will create GIS polygons for each lake to be individually assessed, as they will be treated as discrete assessment units.

- **Lake Recreation:** Many of the current impaired lakes were listed based on public perception and aesthetics rather than water quality data. As indicated above, efforts will be made to identify those lakes that should be assessed as lakes. Other currently listed impoundments will be delisted and evaluated as part of the subwatershed (HUC-14). The Department will focus its efforts on obtaining water quality data to assess water quality and attainment of the lake recreational use.

Other initiatives:

Stressor Identification

Many subwatersheds are listed as impaired based only on biological data. The Department needs to identify the pollutant that is causing the impairment or generate sufficient data to show that the impaired biological conditions are not due to a pollutant Identifying the pollutant will enable the Department to develop a TMDL (or implement another appropriate control measure) to address the impairment. Demonstrating that the impairment is not due to a pollutant will allow the Department to delist impaired waters.

The Department has initiated a program known as the Stressor Identification process (SI) to identify the full suite of stressors, on a site-specific basis, that have led to biological impairment. This effort is an outgrowth of a USEPA initiative that was subsequently modified by this Department to better reflect the Department's own assessment experience. An initial group of 138 impaired biological sites was evaluated. The Department selected five locations in the South Branch Raritan River for a pilot study. The Departments anticipates completing the pilot study by mid-2007, after which a full-scale effort will begin in coordination with the Department's Section 319(h) Nonpoint Source Pollution Control Grant Program.

Revise Surface Water Quality Standards (SWQS)

The SWQS (N.J.A.C. 7:9B) are used to evaluate use attainment for all waters of the State. However, the integrated assessment process raises some issues regarding specific use designations and the criteria established to protect and maintain the uses. The Department anticipates that some revisions to the SWQS will be necessary to resolve these issues for future Integrated Reports.

- **Classification Issues:** Many waters are classified as FW2-NT/SE1 (i.e., freshwater non-trout/saline estuary). To determine the appropriate uses of such waters, and the criteria needed to protect those uses, the level of salinity is considered. The Department needs to remove the SE1 classification from waters that are located above the head-of-tide, as these would not be considered saline waters; and remove the FW classification from waters with elevated salinity.

  Exceedances of pH observed in locations within the inner coastal plane immediately adjacent to the Pinelands are believed to result from inappropriate criteria applied in these transitional waters and may simply reflect natural conditions. Only those waters included in the Pinelands Regional Master Plan are designated as PL and are assigned a pH criterion range of 3.5 to 5.5. However, waters immediately adjacent to the Pinelands political boundary are classified as FW2, which has a pH criterion range of 6.5 to 8.5. Therefore, many of these waters are assessed as impaired for pH and placed on the 303(d) List. It would be more appropriate to develop site-specific criteria for these waters, to better reflect their transitional status and naturally-occurring acidity.

- **Modernizing Standards To Reflect New Monitoring Techniques:** Dissolved oxygen (DO) and temperature are critical parameters in the assessment of aquatic life use attainment, especially in assessing waters classified for Trout Production and Trout Maintenance. Many SWQS were developed for use in setting NJPDES permit limits, for which a single exceedance may be appropriate for assessing compliance based on quarterly sampling. However, now that continuous monitoring can be implemented on a routine basis using in-place recording devises, a different threshold seems more appropriate for assessment purposes. Similarly, extensive use of in-place recording devises for temperature provides the Department with more extensive datasets, and a better picture of overall stream conditions, than one sample taken on a given day, usually at peak temperatures in the afternoon. Revisions to the SWQS and assessment methods are being considered by the Department to address these concerns.

Data Exchange and Management

The Department recognizes the challenges associated with collecting and managing water quality data. It is especially difficult for volunteer monitoring groups, who coordinate data collection from a host of individuals with varied technical expertise. Currently, the New Jersey Watershed Watch Network is completing development of a user-friendly data management system that will serve as an online electronic submission tool for local volunteer water monitors. This online data management system will help alleviate the burden of data management and allow for volunteer-collected data to be submitted directly to the Department. This new system will allow the data to be effectively managed, analyzed, and reported for use by the Department, other interested organizations, the general public, and the monitors themselves. The Department is also developing a data exchange tool to integrate all available, high quality data (both Department and non-Department data) into the Department's assessment database through development of a common data exchange element. Both these projects will make it easier for the Department to analyze all the "readily available data" generated throughout the State.

Use Of New Hydrography

The Department has been developing a new hydrography GIS data layer based on 1:12K resolution, which will be used in future Integrated Reports. This new hydrography will provide a finer resolution that will result in the identification of much smaller streams, as well as more accurate locations of all streams. The accuracy of stream locations is critical to identifying potential sources of impairment. The Department has been moving to finer resolutions over time (from 1:100K to 1:24K to 1:12K). Each increase in resolution results in the identification of more stream miles to be assessed. The change in assessment unit boundaries for the 2006 Integrated Report, from stream segments to HUC-14 subwatersheds, allows the Department to track trends on an assessment unit basis even though the number of stream miles within the subwatershed may change based on the new hydrography.

Appendix A-1

Integrated List (without lakes)

(See Appendix A-2 for Lakes)

The assessment units were placed on one of five sublists according to the following: (See Section 7 of the Integrated List Methods Document for more detail on the Sublists). N/A (not applicable) is used when the designated use does not apply to a particular assessment unit.

Sublist 1: There is sufficient data to assess all applicable designated uses for the waterbody and the assessment indicates full attainment for all designated uses.

Sublist 2: Waterbodies are placed on this sublist when an assessment for an individual designated use is complete and results for that assessment indicates full attainment but other designated uses are unassessed, assessed as non attain or have an approved TMDL. When all designated uses are assessed as full attain, these waterbodies will be moved to Sublist 1.

Sublist 3: Waterbodies are placed on this sublist when the designated use assessment indicated insufficient or no data to assess the designated use.

Sublist 4: The waterbody is impaired or threatened for one or more designated uses. There are three subcategories:

Sublist 4A. Waterbodies are placed on this sublist when the designated use is non attain due to pollutants and a TMDL has been adopted in New Jersey Register and approved by the USEPA

Sublist 4B. Waterbodies are placed on this sublist when the designated use is non attain due to pollutants and other enforceable pollution control requirements are reasonably expected to result in the conformance with the applicable water quality standard(s) in the near future.

Sublist 4C. Waterbodies are placed on this sublist when the designated use is non attain and the impairment is not caused by a pollutant.

Sublist 5: Designated use assessment is complete and results for the assessment indicate non-attain.

(The individual pollutants causing the non attainment of the designated uses will be identified on the "303(d) List of Impaired Waterbodies by Parameter with Ranking". The Pollutant will be listed if known or "pollutant unknown" or "toxic unknown" will be used when the pollutant is not known.)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
02	02020007000010-01	Rutgers Creek tribs	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
02	02020007010010-01	Wallkill R/Lake Mohawk(above Sparta Sta)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007010020-01	Wallkill R (Ogdensburg to SpartaStation)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007010030-01	Franklin Pond Creek	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
02	02020007010040-01	Wallkill R(Hamburg SW Bdy to Ogdensburg)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 4A	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007010050-01	Hardistonville tribs	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
02	02020007010060-01	Beaver Run	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
02	02020007010070-01	Wallkill R(Martins Rd to Hamburg SW Bdy)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 5	Sublist 2	N/A	Sublist 3
02	02020007020010-01	Papakating Ck (above Frankford Plains)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007020020-01	Wykertown tribs (Papakating Creek)	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
02	02020007020030-01	Papakating Ck(Pellettown-Frankford Plns)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007020040-01	Papakating Ck WB(abv 74d39m30s side rd)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007020050-01	Papakating Ck WB(blw 74d39m30s side rd)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007020060-01	Clove Brook (Papakating Ck)	Sublist 5	Sublist 5	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007020070-01	Papakating Creek (below Pellettown)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007030010-01	Wallkill R(41d13m30s to Martins Road)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	Sublist 3

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
02	02020007030020-01	Quarryville Brook	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
02	02020007030030-01	Wallkill River(Owens gage to 41d13m30s)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 4A	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007030040-01	Wallkill River(stateline to Owens gage)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 4A	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007040010-01	Black Ck(above/incl G.Gorge Resort trib)	Sublist 4A	Sublist 5	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007040020-01	Black Creek (below G. Gorge Resort trib)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007040030-01	Pochuck Ck/Glenwood Lk & northern trib	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
02	02020007040040-01	Highland Lake/Wawayanda Lake	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
02	02020007040050-01	Wawayanda Creek & tribs	Sublist 4A	Sublist 5	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
02	02020007040060-01	Long House Creek/Upper Greenwood Lake	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
05	02030101170010-01	Hudson River	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	N/A	Sublist 3
05	02030101170020-01	Sparkill Brook	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103010010-01	Passaic R Upr (above Osborn Mills)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103010020-01	Primrose Brook	Sublist 1	Sublist 1	Sublist 1	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	Sublist 3
06	02030103010030-01	Great Brook (above Green Village Rd)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103010040-01	Loantaka Brook	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103010050-01	Great Brook (below Green Village Rd)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103010060-01	Black Brook (Great Swamp NWR)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103010070-01	Passaic R Upr (Dead R to Osborn Mills)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103010080-01	Dead River (above Harrisons Brook)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103010090-01	Harrisons Brook	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103010100-01	Dead River (below Harrisons Brook)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103010110-01	Passaic R Upr (Plainfield Rd to Dead R)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3
06	02030103010120-01	Passaic R Upr (Snyder to Plainfield Rd)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3
06	02030103010130-01	Passaic R Upr (40d 45m to Snyder Ave)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3
06	02030103010140-01	Canoe Brook	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103010150-01	Passaic R Upr (Columbia Rd to 40d 45m)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3
06	02030103010160-01	Passaic R Upr (HanoverRR to ColumbiaRd)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 5	Sublist 5	N/A	Sublist 3
06	02030103010170-01	Passaic R Upr (Rockaway to Hanover RR)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 5	Sublist 5	N/A	Sublist 5
06	02030103010180-01	Passaic R Upr (Pine Bk br to Rockaway)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
06	02030103020010-01	Whippany R (above road at 74d 33m)	Sublist 2	Sublist 5	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103020020-01	Whippany R (Wash. Valley Rd to 74d 33m)	Sublist 2	Sublist 5	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103020030-01	Greystone / Watnong Mtn tribs	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103020040-01	Whippany R(Lk Pocahontas to Wash Val Rd)	Sublist 5	Sublist 5	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103020050-01	Whippany R (Malapardis to Lk Pocahontas)	Sublist 5	Sublist 5	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103020060-01	Malapardis Brook	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103020070-01	Black Brook (Hanover)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103020080-01	Troy Brook (above Reynolds Ave)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103020090-01	Troy Brook (below Reynolds Ave)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
06	02030103020100-01	Whippany R (Rockaway R to Malapardis Bk)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103030010-01	Russia Brook (above Milton)	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103030020-01	Russia Brook (below Milton)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103030030-01	Rockaway R (above Longwood Lake outlet)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
06	02030103030040-01	Rockaway R (Stephens Bk to Longwood Lk)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
06	02030103030050-01	Green Pond Brook (above Burnt Meadow Bk)	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103030060-01	Green Pond Brook (below Burnt Meadow Bk)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103030070-01	Rockaway R (74d 33m 30s to Stephens Bk)	Sublist 2	Sublist 3	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
06	02030103030080-01	Mill Brook (Morris Co)	Sublist 2	Sublist 2	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103030090-01	Rockaway R (BM 534 brdg to 74d 33m 30s)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
06	02030103030100-01	Hibernia Brook	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103030110-01	Beaver Brook (Morris County)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
06	02030103030120-01	Den Brook	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
06	02030103030130-01	Stony Brook (Boonton)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103030140-01	Rockaway R (Stony Brook to BM 534 brdg)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
06	02030103030150-01	Rockaway R (Boonton dam to Stony Brook)	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
06	02030103030160-01	Montville tribs.	Sublist 2	Sublist 3	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
06	02030103030170-01	Rockaway R (Passaic R to Boonton dam)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
06	02030103040010-01	Passaic R Upr (Pompton R to Pine Bk)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
03	02030103050010-01	Pequannock R (above Stockholm/Vernon Rd)	Sublist 4A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103050020-01	Pacock Brook	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103050030-01	Pequannock R (above OakRidge Res outlet)	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
03	02030103050040-01	Clinton Reservior/Mossmans Brook	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103050050-01	Pequannock R (Charlotteburg to OakRidge)	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103050060-01	Pequannock R(Macopin gage to Charl'brg)	Sublist 2	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
03	02030103050070-01	Stone House Brook	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103050080-01	Pequannock R (below Macopin gage)	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
03	02030103070010-01	Belcher Creek (above Pinecliff Lake)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103070020-01	Belcher Creek (Pinecliff Lake & below)	Sublist 5	Sublist 5	Sublist 3	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
03	02030103070030-01	Wanaque R/Greenwood Lk(aboveMonks gage)	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
03	02030103070040-01	West Brook/Burnt Meadow Brook	Sublist 3	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103070050-01	Wanaque Reservior (below Monks gage)	Sublist 5	Sublist 5	Sublist 5	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
03	02030103070060-01	Meadow Brook/High Mountain Brook	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103070070-01	Wanaque R/Posts Bk (below reservior)	Sublist 5	Sublist 5	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
03	02030103100010-01	Ramapo R (above 74d 11m 00s)	Sublist 4A	Sublist 4A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
03	02030103100020-01	Masonicus Brook	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103100030-01	Ramapo R (above Fyke Bk to 74d 11m 00s)	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103100040-01	Ramapo R (Bear Swamp Bk thru Fyke Bk)	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
03	02030103100050-01	Ramapo R (Crystal Lk br to BearSwamp Bk)	Sublist 4A	Sublist 4A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103100060-01	Crystal Lake/Pond Brook	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
03	02030103100070-01	Ramapo R (below Crystal Lake bridge)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
03	02030103110010-01	Lincoln Park tribs (Pompton River)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
03	02030103110020-01	Pompton River	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
04	02030103120010-01	Peckman River (above CG Res trib)	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
04	02030103120020-01	Peckman River (below CG Res trib)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
04	02030103120030-01	Preakness Brook / Naachtpunkt Brook	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
04	02030103120040-01	Molly Ann Brook	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
04	02030103120050-01	Goffle Brook	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 5	Sublist 2	N/A	Sublist 3
04	02030103120060-01	Deepavaal Brook	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
04	02030103120070-01	Passaic R Lwr (Fair Lawn Ave to Goffle)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
04	02030103140010-01	Hohokus Bk (above Godwin Ave)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 5	Sublist 2	N/A	Sublist 3
04	02030103140020-01	Hohokus Bk(Pennington Ave to Godwin Ave)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
04	02030103140030-01	Hohokus Bk(below Pennington Ave)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 2	N/A	Sublist 3
04	02030103140040-01	Saddle River (above Rt 17)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
04	02030103140050-01	Saddle River (Rt 4 to Rt 17)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 5	Sublist 5	N/A	Sublist 3
04	02030103140060-01	Saddle River (Lodi gage to Rt 4)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 5	Sublist 5	N/A	Sublist 3
04	02030103140070-01	Saddle River (below Lodi gage)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 5	Sublist 5	N/A	Sublist 5
04	02030103150010-01	Third River	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
04	02030103150020-01	Second River	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 2	Sublist 3	Sublist 2	N/A	Sublist 3
04	02030103150030-01	Passaic R Lwr (Second R to Saddle R)	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 3	Sublist 2	N/A	Sublist 5
04	02030103150040-01	Passaic R Lwr (4th St br to Second R)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 3	Sublist 2	N/A	Sublist 5
04	02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	Sublist 5	N/A	N/A	Sublist 5	Sublist 5	Sublist 3	Sublist 2	N/A	Sublist 5
05	02030103170010-01	Pascack Brook (above Westwood gage)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 5	Sublist 2	N/A	Sublist 3
05	02030103170020-01	Pascack Brook (below Westwood gage)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 5	Sublist 2	N/A	Sublist 3
05	02030103170030-01	Hackensack River (above Old Tappan gage)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
05	02030103170040-01	Tenakill Brook	Sublist 5	Sublist 5	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
05	02030103170050-01	Dwars Kill	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
05	02030103170060-01	Hackensack R (Oradell to OldTappan gage)	Sublist 5	N/A	Sublist 5	Sublist 5	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
05	02030103180010-01	Coles Brook / Van Saun Mill Brook	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
05	02030103180020-01	Hirshfeld Brook	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
05	02030103180030-01	Hackensack R (Ft Lee Rd to Oradell gage)	Sublist 5	N/A	Sublist 5	Sublist 5	N/A	N/A	N/A	N/A	Sublist 5
05	02030103180040-01	Overpeck Creek	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 5	Sublist 2	N/A	Sublist 5
05	02030103180050-01	Hackensack R (Bellmans Ck to Ft Lee Rd)	Sublist 5	N/A	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
05	02030103180060-01	Berrys Creek (above Paterson Ave)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
05	02030103180070-01	Berrys Creek (below Paterson Ave)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
05	02030103180080-01	Hackensack R (Rt 3 to Bellmans Ck)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 2	N/A	Sublist 5
05	02030103180090-01	Hackensack R (Amtrak bridge to Rt 3)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
05	02030103180100-01	Hackensack R (below Amtrak bridge)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 2	N/A	Sublist 5
07	02030104010010-01	Newark Airport Peripheral Ditch	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
07	02030104010020-01	Kill Van Kull West	Sublist 5	N/A	N/A	Sublist 3	N/A	N/A	N/A	N/A	Sublist 5
07	02030104010020-02	Newark Bay / Kill Van Kull (74d 07m 30s)	Sublist 5	N/A	N/A	Sublist 3	N/A	N/A	N/A	N/A	Sublist 5
07	02030104010030-01	Kill Van Kull East	Sublist 5	N/A	N/A	Sublist 3	N/A	N/A	N/A	N/A	Sublist 5
07	02030104010030-02	Upper NY Bay / Kill Van Kull (74d07m30s)	Sublist 5	N/A	N/A	Sublist 3	N/A	N/A	N/A	N/A	Sublist 5
07	02030104020010-01	Elizabeth River (above I-78)	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
07	02030104020020-01	Elizabeth R (Elizabeth CORP BDY to I-78)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 5	Sublist 2	N/A	Sublist 3
07	02030104020030-01	Arthur Kill North	Sublist 5	N/A	N/A	Sublist 3	N/A	N/A	N/A	N/A	Sublist 5
07	02030104020030-02	Elizabeth R (below Elizabeth CORP BDY)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 5	Sublist 5	Sublist 2	N/A	Sublist 5
07	02030104030010-01	Arthur Kill South	Sublist 5	N/A	N/A	Sublist 3	N/A	N/A	N/A	N/A	Sublist 5
07	02030104030010-02	Morses Creek / Piles Creek	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
07	02030104050010-01	Rahway River WB	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 5	Sublist 2	N/A	Sublist 3
07	02030104050020-01	Rahway River EB	Sublist 2	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
07	02030104050030-01	Baltusrol trib (above Springfield Sta)	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
07	02030104050040-01	Rahway R (Kenilworth Blvd to EB / WB)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
07	02030104050050-01	Nomahegan Brook	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
07	02030104050060-01	Rahway R(Robinsons Br to KenilworthBlvd)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3
07	02030104050070-01	Robinsons Br Rahway R (above Lake Ave)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
07	02030104050080-01	Robinsons Br Rahway R (below Lake Ave)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
07	02030104050090-01	Rahway River SB	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 5	Sublist 2	N/A	Sublist 5
07	02030104050100-01	Rahway River (below Robinsons Branch)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
07	02030104050110-01	Woodbridge Creek	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	N/A	Sublist 5
07	02030104050120-01	Arthur Kill waterfront (below Grasselli)	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	N/A	Sublist 5
12	02030104060010-01	Cheesequake Creek / Whale Creek	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 2	Sublist 5
12	02030104060020-01	Matawan Creek (above Ravine Drive)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 3	Sublist 2	N/A	Sublist 3
12	02030104060030-01	Matawan Creek (below Ravine Drive)	Sublist 5	N/A	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 5	Sublist 2	Sublist 5
12	02030104060040-01	Chingarora Creek to Thorns Creek	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 2	Sublist 5
12	02030104060050-01	Waackaack Creek	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 4A	Sublist 5
12	02030104060060-01	Pews Creek to Shrewsbury River	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 5
12	02030104070010-01	Hop Brook	Sublist 5	Sublist 5	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 5	N/A	Sublist 3
12	02030104070020-01	Willow Brook	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104070030-01	Big Brook	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104070040-01	Yellow Brook (above Bucks Mill)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
12	02030104070050-01	Mine Brook (Monmouth Co)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104070060-01	Yellow Brook (below Bucks Mill)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
12	02030104070070-01	Swimming River Reservior / Slope Bk	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104070080-01	Pine Brook / Hockhockson Brook	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104070090-01	Nut Swamp Brook	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
12	02030104070100-01	Poricy Bk/Swimming R(below SwimmingR Rd)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 4A	Sublist 5
12	02030104070110-01	Navesink R (below Rt 35)/LowerShrewsbury	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 4A	Sublist 5
12	02030104080010-01	Little Silver Creek / Town Neck Creek	Sublist 2	N/A	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 4A	Sublist 5
12	02030104080020-01	Parkers Creek / Oceanport Creek	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 4A	Sublist 5
12	02030104080030-01	Branchport Creek	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 4A	Sublist 5
12	02030104080040-01	Shrewsbury River (above Navesink River)	Sublist 5	N/A	Sublist 4A	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 5
12	02030104090010-01	Whale Pond Brook	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104090020-01	Poplar Brook	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104090030-01	Deal Lake	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 5	N/A	Sublist 3
12	02030104090040-01	Shark River (above Remsen Mill gage)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
12	02030104090050-01	Jumping Brook (Ocean Co)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104090060-01	Shark River (below Remsen Mill gage)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 4A	Sublist 5
12	02030104090070-01	Wreck Pond Brook (above Rt 35)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104090080-01	Wreck Pond Brook (below Rt 35)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104100010-01	Manasquan R (above 74d17m50s road)	Sublist 4A	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
12	02030104100020-01	Manasquan R (Rt 9 to 74d17m50s road)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104100030-01	Manasquan R (West Farms Rd to Rt 9)	Sublist 5	Sublist 5	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104100040-01	Marsh Bog Brook	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104100050-01	Manasquan R (gage to West Farms Rd)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104100060-01	Mingamahone Brook (above Asbury Rd)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104100070-01	Mingamahone Brook (below Asbury Rd)	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
12	02030104100080-01	Manasquan R (74d07m30s to Squankum gage)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
12	02030104100090-01	Manasquan R (Rt 70 br to 74d07m30s)	Sublist 5	Sublist 5	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 3
12	02030104100100-01	Manasquan River (below Rt 70 bridge)	Sublist 5	N/A	Sublist 4A	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 3
12	02030104910010-01	Raritan Bay (west of Thorns Ck)	Sublist 5	N/A	Sublist 5	Sublist 2	N/A	N/A	N/A	Sublist 5	Sublist 5
12	02030104910020-01	Sandy Hook Bay (east of Thorns Ck)	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 5	Sublist 5
12	02030104920010-01	Atl Coast(Sandy H to Navesink R)Inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 3	Sublist 5
12	02030104920010-02	Atl Coast(Sandy H to Navesink R)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 3	Sublist 5
12	02030104920020-01	AtlCoast(Navesink R to WhalePond)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
21	02030104920020-02	AtlCoast(Navesink R to WhalePond)offshor	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
12	02030104930010-01	Atl Coast(Whale Pond to Shark R)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
12	02030104930010-02	Atl Coast(Whale Pond to Shark R)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
12	02030104930020-01	Atl Coast (Shark R to Manasquan)inshore	Sublist 5	N/A	Sublist 4B	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
21	02030104930020-02	Atl Coast (Shark R to Manasquan)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
08	02030105010010-01	Drakes Brook (above Eyland Ave)	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105010020-01	Drakes Brook (below Eyland Ave)	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105010030-01	Raritan River SB(above Rt 46)	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105010040-01	Raritan River SB(74d 44m 15s to Rt 46)	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105010050-01	Raritan R SB(LongValley br to 74d44m15s)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105010060-01	Raritan R SB(Califon br to Long Valley)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105010070-01	Raritan R SB(StoneMill gage to Califon)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105010080-01	Raritan R SB(Spruce Run-StoneMill gage)	Sublist 2	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105020010-01	Spruce Run (above Glen Gardner)	Sublist 2	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105020020-01	Spruce Run (Reservior to Glen Gardner)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105020030-01	Mulhockaway Creek	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105020040-01	Spruce Run Reservior / Willoughby Brook	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105020050-01	Beaver Brook (Clinton)	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105020060-01	Cakepoulin Creek	Sublist 5	Sublist 5	Sublist 3	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105020070-01	Raritan R SB(River Rd to Spruce Run)	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105020080-01	Raritan R SB(Prescott Bk to River Rd)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105020090-01	Prescott Brook / Round Valley Reservior	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105020100-01	Raritan R SB(Three Bridges-Prescott Bk)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105030010-01	First Neshanic River	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105030020-01	Second Neshanic River	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105030030-01	Headquarters trib (Third Neshanic River)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105030040-01	Third Neshanic River	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105030050-01	Back Brook	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105030060-01	Neshanic River (below FNR / SNR confl)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105040010-01	Raritan R SB(Pleasant Run-Three Bridges)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105040020-01	Pleasant Run	Sublist 5	N/A	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105040030-01	Holland Brook	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105040040-01	Raritan R SB(NB to Pleasant Run)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105050010-01	Lamington R (above Rt 10)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105050020-01	Lamington R (Hillside Rd to Rt 10)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105050030-01	Lamington R (Furnace Rd to Hillside Rd)	Sublist 2	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105050040-01	Lamington R(Pottersville gage-FurnaceRd)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105050050-01	Pottersville trib (Lamington River)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105050060-01	Cold Brook	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105050070-01	Lamington R(HallsBrRd-Pottersville gage)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105050080-01	Rockaway Ck (above McCrea Mills)	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
08	02030105050090-01	Rockaway Ck (RockawaySB to McCrea Mills)	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3

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WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
08	02030105050100-01	Rockaway Ck SB	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105050110-01	Lamington R (below Halls Bridge Rd)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105060010-01	Raritan R NB (above/incl India Bk)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105060020-01	Burnett Brook (above Old Mill Rd)	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105060030-01	Raritan R NB(incl McVickers to India Bk)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105060040-01	Raritan R NB(Peapack Bk to McVickers Bk)	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105060050-01	Peapack Brook (above/incl Gladstone Bk)	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105060060-01	Peapack Brook (below Gladstone Brook)	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105060070-01	Raritan R NB(incl Mine Bk to Peapack Bk)	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105060080-01	Middle Brook (NB Raritan River)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105060090-01	Raritan R NB (Lamington R to Mine Bk)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105070010-01	Raritan R NB (Rt 28 to Lamington R)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105070020-01	Chambers Brook	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
08	02030105070030-01	Raritan R NB (below Rt 28)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105080010-01	Peters Brook	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105080020-01	Raritan R Lwr (Rt 206 to NB / SB)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105080030-01	Raritan R Lwr (Millstone to Rt 206)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105090010-01	Stony Bk (above 74d 49m 15s)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105090020-01	Stony Bk (74d 48m 10s to 74d 49m 15s)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105090030-01	Stony Bk (Baldwins Ck to 74d 48m 10s)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105090040-01	Stony Bk(74d46m dam to/incl Baldwins Ck)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105090050-01	Stony Bk(Province Line Rd to 74d46m dam)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3
10	02030105090060-01	Stony Bk (Rt 206 to Province Line Rd)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3
10	02030105090070-01	Stony Bk (Harrison St to Rt 206)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3
10	02030105090080-01	Duck Pond Run	Sublist 2	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105100010-01	Millstone River (above Rt 33)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3
10	02030105100020-01	Millstone R (Applegarth road to Rt 33)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3
10	02030105100030-01	Millstone R (RockyBk to Applegarth road)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105100040-01	Rocky Brook (above Monmouth Co line)	Sublist 2	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105100050-01	Rocky Brook (below Monmouth Co line)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105100060-01	Millstone R (Cranbury Bk to Rocky Bk)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105100070-01	Cranbury Brook (above NJ Turnpike)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105100080-01	Cedar Brook (Cranbury Brook)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105100090-01	Cranbury Brook (below NJ Turnpike)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105100100-01	Shallow Brook (Devils Brook)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105100110-01	Devils Brook	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105100120-01	Bear Brook (above Trenton Road)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 3	Sublist 2	N/A	Sublist 3
10	02030105100130-01	Bear Brook (below Trenton Road)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 3	Sublist 2	N/A	Sublist 3

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
10	02030105100140-01	Millstone R (Rt 1 to Cranbury Bk)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105110010-01	Heathcote Brook	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105110020-01	Millstone R (HeathcoteBk to Harrison St)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105110030-01	Millstone R (Beden Bk to Heathcote Bk)	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105110040-01	Beden Brook (above Province Line Rd)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105110050-01	Beden Brook (below Province Line Rd)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105110060-01	Rock Brook (above Camp Meeting Ave)	Sublist 2	N/A	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105110070-01	Rock Brook (below Camp Meeting Ave)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105110080-01	Pike Run (above Cruser Brook)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105110090-01	Cruser Brook / Roaring Brook	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105110100-01	Pike Run (below Cruser Brook)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105110110-01	Millstone R (BlackwellsMills to BedenBk)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105110120-01	Sixmile Run (above Middlebush Rd)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105110130-01	Sixmile Run (below Middlebush Rd)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105110140-01	Millstone R(AmwellRd to BlackwellsMills)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
10	02030105110150-01	Royce Brook (above Branch Royce Brook)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105110160-01	Royce Brook (below/incl Branch Royce Bk)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
10	02030105110170-01	Millstone River (below Amwell Rd)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105120010-01	Green Bk (above/incl Blue Brook)	Sublist 2	Sublist 3	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105120020-01	Green Bk (N Plainfield gage to Blue Bk)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105120030-01	Stony Brook (North Plainfield)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105120040-01	Green Bk (Bound Bk to N Plainfield gage)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105120050-01	Middle Brook EB	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105120060-01	Middle Brook WB	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105120070-01	Cuckels Brook	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105120080-01	South Fork of Bound Brook	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
09	02030105120090-01	Spring Lake Fork of Bound Brook	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
09	02030105120100-01	Bound Brook (below fork at 74d 25m 15s)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
09	02030105120110-01	Ambrose Brook (above/incl Lake Nelson)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105120120-01	Ambrose Brook (below Lake Nelson)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105120130-01	Green Brook (below Bound Brook)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
09	02030105120140-01	Raritan R Lwr(I-287 Piscatway-Millstone)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 5
09	02030105120150-01	Mile Run	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105120160-01	Raritan R Lwr (MileRun to I-287 Pisctwy)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 5
09	02030105120170-01	Raritan R Lwr (Lawrence Bk to Mile Run)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105130010-01	Great Ditch / Pigeon Swamp	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105130020-01	Lawrence Brook (above Deans Pond dam)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105130030-01	Oakeys Brook	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
09	02030105130040-01	Ireland Brook	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105130050-01	Lawrence Bk (Church Lane to Deans Pond)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105130060-01	Lawrence Bk (Milltown to Church Lane)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105130070-01	Lawrence Bk (below Milltown/Herberts br)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
09	02030105140010-01	Manalapan Brook (above 40d 16m 15s)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105140020-01	Manalapan Bk(incl LkManlpn to 40d16m15s)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105140030-01	Manalapan Brook (below Lake Manalapan)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105150010-01	Weamaconk Creek	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105150020-01	McGellairds Brook (above Taylors Mills)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105150030-01	McGellairds Brook (below Taylors Mills)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105150040-01	Matchaponix Brook (above/incl Pine Bk)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105150050-01	Barclay Brook	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105150060-01	Matchaponix Brook (below Pine Brook)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105160010-01	Deep Run (above Monmouth Co line)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105160020-01	Deep Run (Rt 9 to Monmouth Co line)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105160030-01	Duhernal Lake / Iresick Brook	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105160040-01	Deep Run (below Rt 9)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
09	02030105160050-01	Tennent Brook (above 74d 19m 05s)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105160060-01	Tennent Brook (below 74d 19m 05s)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105160070-01	South River (below Duhernal Lake)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
09	02030105160080-01	Mill Brook / Martins Creek	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
09	02030105160090-01	Red Root Creek / Crows Mill Creek	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 3	Sublist 3	Sublist 2	Sublist 5
09	02030105160100-01	Raritan R Lwr (below Lawrence Bk)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02030902940020-01	At Coast(Corson to Townsends In)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02030902940020-02	At Coast(Corson to Townsends In)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02030902940030-01	Atl Cst(Townsends to Hereford In)inshor	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02030902940030-02	Atl Cst(Townsends to Hereford In)offshor	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
01	02040104090010-01	Mashipacong Island UDRV tribs	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040104090020-01	Clove Brook (Delaware R)	Sublist 2	Sublist 5	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040104090030-01	Shimers Brook	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040104110010-01	UDRV tribs (Dingmans Ferry to 206 bridg)	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040104110020-01	UDRV tribs (Flat Bk to Dingmans Ferry)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Sublist 3
01	02040104130010-01	Little Flat Brook (Beerskill and above)	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040104130020-01	Little Flat Brook (Layton to Beerskill)	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040104130030-01	Little Flat Brook (Confluence to Layton)	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040104140010-01	Big Flat Brook (above Forked Brook)	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	Sublist 3
01	02040104140020-01	Forked Brook/Parker Brook	Sublist 2	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040104140030-01	Big Flat Brook (Kittle Rd to Forked Bk)	Sublist 2	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
01	02040104140040-01	Big Flat Brook (Confluence to Kittle Rd)	Sublist 2	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040104150010-01	Flat Brook (Tillman Brook to Confluence)	Sublist 2	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040104150020-01	Flat Brook (below Tillman Brook)	Sublist 2	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040104240010-01	Van Campens Brook	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 2	N/A	Sublist 3
01	02040104240020-01	Dunnfield Creek (incl UDRV)	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105030010-01	Swartswood trib(41-06-06 thru Lk Owassa)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105030020-01	Swartswood Lake and tribs	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105030030-01	Trout Brook	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105040010-01	Culvers Creek	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105040020-01	Dry Brook	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105040030-01	Lake Kemah tribs	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105040040-01	Lafayette Swamp tribs	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105040050-01	Sparta Junction tribs	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105040060-01	Paulins Kill (above Rt 15)	Sublist 5	Sublist 5	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105040070-01	Paulins Kill (Dry Brook to Rt 15)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105040080-01	Paulins Kill (PK Lk outlet to Dry Brook)	Sublist 2	Sublist 3	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105040090-01	Paulins Kill (Stillwater Vil to PK Lake)	Sublist 2	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105050010-01	Paulins Kill (Blairstown to Stillwater)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105050020-01	Blair Creek	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105050030-01	Jacksonburg Creek	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105050040-01	Yards Creek	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105050050-01	Paulins Kill (below Blairstown gage)	Sublist 5	Sublist 5	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105060010-01	Stony Brook (incl UDRV)	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105060020-01	Delawanna Creek (incl UDRV)	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105070010-01	Lake Lenape trib	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105070020-01	New Wawayanda Lake/Andover Pond trib	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105070030-01	Pequest River (above Brighton)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105070040-01	Pequest River (Trout Brook to Brighton)	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105070050-01	Trout Brook/Lake Tranquility	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105070060-01	Pequest R (below Bear Swamp to Trout Bk)	Sublist 2	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105080010-01	Bear Brook (Sussex/Warren Co)	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105080020-01	Bear Creek	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105090010-01	Pequest R (Drag Strip--below Bear Swamp)	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105090020-01	Pequest R (Cemetary Road to Drag Strip)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105090030-01	Pequest R (Furnace Bk to Cemetary Road)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105090040-01	Mountain Lake Brook	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105090050-01	Furnace Brook	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105090060-01	Pequest R (below Furnace Brook)	Sublist 5	Sublist 5	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
01	02040105100010-01	Union Church trib	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105100020-01	Honey Run	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105100030-01	Beaver Brook (above Hope Village)	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105100040-01	Beaver Brook (below Hope Village)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105110010-01	Pophandusing Brook	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105110020-01	Buckhorn Creek (incl UDRV)	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105110030-01	UDRV tribs (Rt 22 to Buckhorn Ck)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105120010-01	Lopatcong Creek (above Rt 57)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105120020-01	Lopatcong Creek (below Rt 57) incl UDRV	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105140010-01	Pohatcong Creek (above Rt 31)	Sublist 2	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105140020-01	Pohatcong Ck (Brass Castle Ck to Rt 31)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105140030-01	Pohatcong Ck (Edison Rd-Brass Castle Ck)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105140040-01	Merrill Creek	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105140050-01	Pohatcong Ck (Merrill Ck to Edison Rd)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105140060-01	Pohatcong Ck (Springtown to Merrill Ck)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105140070-01	Pohatcong Ck(below Springtown) incl UDRV	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105150010-01	Weldon Brook/Beaver Brook	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105150020-01	Lake Hopatcong	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105150030-01	Musconetcong R (Wills Bk to LkHopatcong)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105150040-01	Lubbers Run (above/incl Dallis Pond)	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105150050-01	Lubbers Run (below Dallis Pond)	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105150060-01	Cranberry Lake / Jefferson Lake & tribs	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105150070-01	Musconetcong R(Waterloo to/incl WillsBk)	Sublist 2	Sublist 5	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105150080-01	Musconetcong R (SaxtonFalls to Waterloo)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105150090-01	Mine Brook (Morris Co)	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105150100-01	Musconetcong R (Trout Bk to SaxtonFalls)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 3
01	02040105160010-01	Musconetcong R (Hances Bk thru Trout Bk)	Sublist 2	Sublist 5	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105160020-01	Musconetcong R (Changewater to HancesBk)	Sublist 2	Sublist 5	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105160030-01	Musconetcong R (Rt 31 to Changewater)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105160040-01	Musconetcong R (75d 00m to Rt 31)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105160050-01	Musconetcong R (I-78 to 75d 00m)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105160060-01	Musconetcong R (Warren Glen to I-78)	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
01	02040105160070-01	Musconetcong R (below Warren Glen)	Sublist 2	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105170010-01	Holland Twp (Hakihokake to Musconetcong)	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
11	02040105170020-01	Hakihokake Creek	Sublist 2	Sublist 2	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105170030-01	Harihokake Creek (and to Hakihokake Ck)	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105170040-01	Nishisakawick Creek (above 40d 33m)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105170050-01	Nishisakawick Creek (below 40d 33m)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3

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WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
11	02040105170060-01	Kingwood Twp(Warford-Little Nishisakawk)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105170070-01	Kingwood Twp (Rt 519 to Warford Ck)	Sublist 2	Sublist 2	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
11	02040105200010-01	Lockatong Ck (above Rt 12)	Sublist 4A	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105200020-01	Lockatong Ck (Milltown to Rt 12)	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105200030-01	Lockatong Ck (below Milltown) incl UDRV	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105200040-01	Wickecheoke Creek (above Locktown)	Sublist 4A	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105200050-01	Plum Creek	Sublist 4A	Sublist 4A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105200060-01	Wickecheoke Creek (below Locktown)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105210010-01	Alexauken Ck (above 74d 55m)	Sublist 2	Sublist 5	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105210020-01	Alexauken Ck (below 74d 55m to 11BA06)	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105210030-01	Swan Creek (Moore Ck to Alexauken Ck)	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
11	02040105210040-01	Moore Creek	Sublist 5	Sublist 5	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
11	02040105210050-01	Fiddlers Creek (Jacobs Ck to Moore Ck)	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
11	02040105210060-01	Jacobs Creek (above Woolsey Brook)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105210070-01	Jacobs Creek (below/incl Woolsey Brook)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105210080-01	Mercer (Calhoun St to Jacobs Creek)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
11	02040105230010-01	Assunpink Ck (above Assunpink Lake)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
11	02040105230020-01	Assunpink Ck (NewSharonBr to/incl Lake)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
11	02040105230030-01	New Sharon Branch (Assunpink Creek)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
11	02040105230040-01	Assunpink Ck (TrentonRd to NewSharonBr)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
11	02040105230050-01	Assunpink Ck (Shipetaukin to Trenton Rd)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
11	02040105230060-01	Shipetaukin Creek	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
11	02040105240010-01	Shabakunk Creek	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
11	02040105240020-01	Shabakunk Creek WB	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
11	02040105240030-01	Miry Run (Assunpink Cr)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105240040-01	Pond Run	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
11	02040105240050-01	Assunpink Creek (below Shipetaukin Ck)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
20	02040201030010-01	Duck Creek and UDRV to Assunpink Ck	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
20	02040201040010-01	Brindle Lake and above (Jumping Brook)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
20	02040201040020-01	South Run (above 74d35m) (Ft Dix)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
20	02040201040030-01	South Run (Jumping Brook to 74d35m)	Sublist 5	N/A	Sublist 5	Sublist 5	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
20	02040201040040-01	Jumping Brook (Monmouth Co)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 5
20	02040201040050-01	South Run (North Run to Jumping Brook)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
20	02040201040060-01	North Run (above Wrightstown bypass)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201040070-01	Crosswicks Ck(NewEgypt to/incl NorthRun)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
20	02040201050010-01	Lahaway Creek (above Prospertown)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201050020-01	Lahaway Ck(Allentwn/NE Road-Prospertown)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201050030-01	Crosswicks Ck(Lahaway Ck to New Egypt)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5

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WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
20	02040201050040-01	Crosswicks Ck(Walnford to Lahaway Ck)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 5
20	02040201050050-01	Crosswicks Ck(Ellisdale trib - Walnford)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
20	02040201050060-01	Ellisdale trib (Crosswicks Creek)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
20	02040201050070-01	Crosswicks Ck(Doctors Ck-Ellisdale trib)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 5
20	02040201060010-01	Doctors Creek (above 74d28m40s)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201060020-01	Doctors Creek (Allentown to 74d28m40s)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201060030-01	Doctors Creek (below Allentown)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201070010-01	Back Creek (above Yardville-H Sq Road)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201070020-01	Crosswicks Ck(below Doctors Creek)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
20	02040201070030-01	Shady Brook/Spring Lake/Rowan Lake	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
20	02040201080010-01	Blacks Creek (above 40d06m10s)	Sublist 4A	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201080020-01	Blacks Creek (Bacons Run to 40d06m10s)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201080030-01	Blacks Creek (below Bacons Run)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 5	N/A	Sublist 5
20	02040201090010-01	Crafts Creek (above Rt 206)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201090020-01	Crafts Creek (below Rt 206)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
20	02040201090030-01	LDRV tribs (Assiscunk Ck to Blacks Ck)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
20	02040201100010-01	Assiscunk Creek (above Rt 206)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201100020-01	Barkers Brook (above 40d02m30s)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201100030-01	Jacksonville trib (above Barkers Brook)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
20	02040201100040-01	Assiscunk Ck (Jacksonville rd to Rt 206)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
20	02040201100050-01	Assiscunk Ck(Neck Rd to Jacksonville rd)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
20	02040201100060-01	Assiscunk Creek (below Neck Rd)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
20	02040201110010-01	LDRV tribs (Beverly to Assiscunk Ck)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
19	02040202020010-01	Gaunts Brook / Hartshorne Mill Stream	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 3	N/A	N/A	Sublist 3
19	02040202020020-01	Ong Run / Jacks Run	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
19	02040202020030-01	Rancocas Ck NB (incl Mirror Lk-GauntsBk)	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 3	N/A	N/A	Sublist 3
19	02040202020040-01	Rancocas Ck NB (NL dam to Mirror Lk)	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
19	02040202030010-01	Pole Bridge Branch (above County line)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
19	02040202030020-01	Mount Misery Bk NB (above 74d27m30s dam)	Sublist 2	N/A	Sublist 5	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
19	02040202030030-01	Mount Misery Bk MB/NB (below 74d27m30s)	Sublist 2	N/A	Sublist 5	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
19	02040202030040-01	Mount Misery Brook SB	Sublist 2	N/A	Sublist 5	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
19	02040202030050-01	Bucks Cove Run / Cranberry Branch	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
19	02040202030060-01	Pole Bridge Br (CountryLk dam - Co line)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
19	02040202030070-01	McDonalds Branch	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	N/A	Sublist 3
19	02040202030080-01	Bisphams Mill Creek (below McDonalds Br)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
19	02040202030090-01	Greenwood Br(below CountryLk & MM confl)	Sublist 2	N/A	Sublist 5	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
19	02040202040010-01	Rancocas Ck NB (Pemberton br to NL dam)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 2	N/A	N/A	Sublist 3
19	02040202040020-01	Pemberton / Ft Dix trib (NB Rancocas Ck)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
19	02040202040030-01	Rancocas Ck NB (Rt 206 to Pemberton br)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
19	02040202040040-01	Rancocas Creek NB (Smithville to Rt 206)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
19	02040202040050-01	Rancocas Creek NB (below Smithville)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
19	02040202050010-01	Burrs Mill Bk (above 39d51m30s road)	Sublist 5	N/A	Sublist 3	Sublist 2	Sublist 2	Sublist 3	N/A	N/A	Sublist 3
19	02040202050020-01	Burrs Mill Bk (Burnt Br Br- 39-51-30 rd)	Sublist 5	N/A	Sublist 3	Sublist 2	Sublist 2	Sublist 3	N/A	N/A	Sublist 3
19	02040202050030-01	Burrs Mill Bk (BurrsMill to Burnt Br Br)	Sublist 5	N/A	Sublist 3	Sublist 2	Sublist 2	Sublist 3	N/A	N/A	Sublist 3
19	02040202050040-01	Friendship Creek (above Burrs Mill Bk)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
19	02040202050050-01	Friendship Ck (below/incl Burrs Mill Bk)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
19	02040202050060-01	Rancocas Creek SB(above Friendship Ck)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 5
19	02040202050070-01	Jade Run	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
19	02040202050080-01	Rancocas Ck SB (Vincentown-FriendshipCk)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 5
19	02040202050090-01	Rancocas Ck SB (BobbysRun to Vincentown)	Sublist 5	N/A	Sublist 5	Sublist 2	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
19	02040202060010-01	Kettle Run (above Centennial Lake)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
19	02040202060020-01	Lake Pine / Centennial Lake & tribs	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
19	02040202060030-01	Haynes Creek (below Lake Pine)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
19	02040202060040-01	Barton Run (above Kettle Run Road)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 3	N/A	Sublist 3
19	02040202060050-01	Barton Run (below Kettle Run Road)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
19	02040202060060-01	Bear Swamp River	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
19	02040202060070-01	Little Creek (above Bear Swamp River)	Sublist 5	N/A	Sublist 5	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
19	02040202060080-01	Rancocas Ck SW Branch (above Medford br)	Sublist 5	N/A	Sublist 5	Sublist 5	Sublist 2	Sublist 3	Sublist 2	N/A	Sublist 3
19	02040202060090-01	Little Creek (below Bear Swamp River)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
19	02040202060100-01	Rancocas Ck SW Branch (below Medford br)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
19	02040202070010-01	Bobbys Run	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
19	02040202070020-01	Rancocas Creek SB (Rt 38 to Bobbys Run)	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
19	02040202070030-01	Rancocas Creek SB (below Rt 38)	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
19	02040202080010-01	Parkers Creek (above Marne Highway)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
19	02040202080020-01	Rancocas Creek (Martins Beach to NB/SB)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
19	02040202080030-01	Mill Creek (Willingboro)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
19	02040202080040-01	Rancocas Creek (Rt 130 to Martins Beach)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
19	02040202080050-01	Rancocas Creek (below Rt 130)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
18	02040202090010-01	Swede Run	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202090020-01	Pompeston Creek (above Rt 130)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
18	02040202090030-01	Pompeston Ck (below Rt130/Swede to 40d)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
18	02040202100010-01	Pennsauken Ck NB (above NJTPK)	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
18	02040202100020-01	Pennsauken Ck NB (incl StrwbrdgLk-NJTPK)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
18	02040202100030-01	Pennsauken Ck NB (below Strawbridge Lk)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
18	02040202100040-01	Pennsauken Ck SB (above Rt 41)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3
18	02040202100050-01	Pennsauken Ck SB (below Rt 41)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 5	N/A	Sublist 3

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WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
18	02040202100060-01	Pennsauken Ck (below NB / SB)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202110010-01	Cooper River NB(above Springdale Road)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202110020-01	Cooper River NB(below Springdale Road)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202110030-01	Cooper River (above Evesham Road)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202110040-01	Cooper R (Wallworth gage to Evesham Rd)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202110050-01	Cooper River (Rt 130 to Wallworth gage)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202110060-01	Cooper River (below Rt 130)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202110070-01	LDRV tribs (Pennsauken Ck to 28th St)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
18	02040202120010-01	Big Timber Creek NB (above Laurel Rd)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202120020-01	Big Timber Creek NB (below Laurel Rd)	Sublist 5	Sublist 5	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202120030-01	Big Timber Creek SB (above Lakeland Rd)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202120040-01	Big T Ck SB(incl Bull Run to LakelandRd)	Sublist 4A	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202120050-01	Big Timber Creek SB (below Bull Run)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202120060-01	Almonesson Creek	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
18	02040202120070-01	Little Timber Creek (Gloucester City)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
18	02040202120080-01	Big Timber Creek (below NB/SB confl)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
18	02040202120090-01	Newton Creek (LDRV-Kaighn Ave to LT Ck)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202120100-01	Woodbury Creek (above Rt 45)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
18	02040202120110-01	Woodbury Ck (below Rt 45)/LDRV to B T Ck	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202120120-01	Main Ditch / Little Mantua Creek	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
18	02040202130010-01	Mantua Creek (above Rt 47)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
18	02040202130020-01	Mantua Creek (road to Sewell to Rt 47)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
18	02040202130030-01	Chestnut Branch (above Sewell)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
18	02040202130040-01	Mantua Ck (Edwards Run to rd to Sewell)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202130050-01	Edwards Run	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202130060-01	Mantua Creek (below Edwards Run)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
18	02040202140010-01	NehonseyBk/Clonmell Ck(LDRV to MantuaCk)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
18	02040202140020-01	Still Run/London Br(above Tomlin Sta Rd)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
18	02040202140030-01	Pargay Creek	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
18	02040202140040-01	Moss Branch / Little Timber Ck (Repaupo)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
18	02040202140050-01	RepaupoCk(belowTomlin Sta Rd)/CedarSwamp	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
18	02040202150010-01	Raccoon Ck (above Clems Run)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
18	02040202150020-01	Raccoon Ck (Rt 45 to/incl Clems Run)	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
18	02040202150030-01	Raccoon Ck SB	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
18	02040202150040-01	Raccoon Ck (Russell Mill Rd to Rt 45)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202150050-01	Raccoon Ck (Swedesboro rd-RussellMillRd)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
18	02040202150060-01	Raccoon Ck (below Swedesboro rd)/BirchCk	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
18	02040202160010-01	Oldmans Creek (above Commissioners Rd)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3

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18	02040202160020-01	Oldmans Creek (Rt45 to Commissioners Rd)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
18	02040202160030-01	Oldmans Creek (Kings Hwy to Rt 45)	Sublist 4A	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
18	02040202160040-01	Beaver Creek (Oldmans Creek)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
18	02040202160050-01	Oldmans Creek (Center Sq Rd to KingsHwy)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
18	02040202160060-01	Oldmans Creek (below Center Sq Rd)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
17	02040204910010-01	Dl Bay(CapeMay Pt to Dennis Ck)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040204910010-02	Dl Bay(CapeMay Pt to Dennis Ck)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040204910020-01	Dl Bay(DennisCk to Egg Islnd Pt)inshore	Sublist 5	N/A	Sublist 4A	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 5
17	02040204910020-02	Dl Bay(DennisCk to Egg Islnd Pt)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040204910030-01	Dl Bay(Egg Is Pt to Cohansey R)Inshore	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040204910030-02	Dl Bay(Egg Is Pt to Cohansey R)Offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040204910040-01	Delaware Bay (Cohansey R to FishingCk)	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 1	Sublist 5
17	02040206020010-01	LDRV tribs (Lakeview Ave to Oldmans Ck)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
17	02040206020020-01	LDRV tribs (Marsh Pt-Main St Pennsville)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
17	02040206030010-01	Salem River (above Woodstown gage)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206030020-01	Nichomus Run	Sublist 3	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206030030-01	Salem R (CountyHomeRd to Woodstown gage)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206030040-01	Salem R (CoursesLanding to CountyHomeRd)	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206030050-01	Game Creek (above Rt 48)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206030060-01	Salem R (39-40-14 dam-CoursesLndg)/Canal	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206030070-01	Game Creek (below Rt 48)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206040010-01	Mannington Creek	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206040020-01	Fenwick Creek / Keasbeys Creek	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
17	02040206040030-01	Salem R (Fenwick Ck to 39d40m14s dam)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
17	02040206040040-01	Salem R (below Fenwick Creek)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
17	02040206060010-01	Cool Run	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206060020-01	Alloway Ck (above Alloway-Woodstown Rd)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206060030-01	Cedar Brook / Carlisle Run	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206060040-01	Deep Run (Alloway)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206060050-01	Alloway Ck (Quinton to Alloway-WdstwnRd)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
17	02040206060060-01	Alloway Creek (New Bridge to Quinton)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206060070-01	Harmony trib (Alloway Creek)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 2	Sublist 5
17	02040206060080-01	Alloway Ck (HancocksBridge to NewBridge)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206060090-01	Alloway Ck (below HancocksBr) to Salem R	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206060100-01	Hope Creek / Artificial Island	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206070010-01	Fishing Creek / Bucks Ditch/Pattys Fork	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206070020-01	Mad Horse Ck / Little Ck / Turners Fork	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206070030-01	Canton Drain (above Maskell Mill)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3

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17	02040206070040-01	Canton Drain (below Maskell Mill)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206070050-01	Stow Creek (above Jericho Road)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206070060-01	Stow Creek (Canton Road to Jericho Road)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206070070-01	Raccoon Ditch (Stow Creek)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 5
17	02040206070080-01	Stow Creek (below Canton Rd)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206070090-01	Phillips Creek / Jacobs Creek	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206080010-01	Cohansey River (above Beals Mill)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206080020-01	Cohansey R (incl HandsPond - Beals Mill)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206080030-01	Parsonage Run / Foster Run	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206080040-01	Cohansey R (incl Beebe Run to HandsPond)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206080050-01	Cohansey R (incl CornwellRun - BeebeRun)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206090010-01	Barrett Run (above West Ave)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206090020-01	Indian Fields Branch / Jackson Run	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206090030-01	Cohansey R (Rocaps Run to Cornwell Run)	Sublist 4A	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 5
17	02040206090040-01	Mill Creek (above/incl Maple House Bk)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206090050-01	Mill Creek (below Maple House Bk)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206090060-01	Cohansey R (75d15m to/incl Rocaps Run)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206090070-01	Cohansey R (75d17m50s to 75d15m)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206090080-01	Cohansey R (Greenwich to 75d17m50s)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206090090-01	Pine Mount Creek	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
17	02040206090100-01	Cohansey R (below Greenwich)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 5
17	02040206100010-01	Middle Marsh Ck (DrumboCk to Sea Breeze)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 5
17	02040206100020-01	Bridges Sticks Creek / Ogden Creek	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206100030-01	Back Creek (Sea Breeze Rd to Cedar Ck)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206100040-01	Cedar Creek (above Rt 553)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206100050-01	Cedar Creek (below Rt 553)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 5
17	02040206100060-01	Nantuxent Creek (above Newport Landing)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 4A	Sublist 5
17	02040206100070-01	Nantuxent Creek (below Newport Landing)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 5
17	02040206110010-01	Newport Neck (Nantuxent to Beadons Ck)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206110020-01	Fortesque Ck / Fishing Ck / Straight Ck	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206110030-01	Oranoaken Creek	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206110040-01	Mill Creek (Dividing Creek)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	N/A	Sublist 5
17	02040206110050-01	Dividing Creek (above Mill Creek)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206110060-01	Dividing Creek (below Mill Creek)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206110070-01	New England Creek (Kenny Pt to Elder Pt)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	N/A	Sublist 5
17	02040206120010-01	Little Ease Run (above Academy Rd)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206120020-01	Little Ease Run (below Academy Rd)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206120030-01	Still Run (above Silver Lake Road)	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	Sublist 3

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17	02040206120040-01	Reed Branch (Still Run)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206120050-01	Still Run (WillowGroveLk - SilverLakeRd)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206130010-01	Scotland Run (above Fries Mill)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206130020-01	Scotland Run (Delsea Drive to FriesMill)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206130030-01	Indian Branch (Scotland Run)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206130040-01	Scotland Run (below Delsea Drive)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206140010-01	MauriceR(BlkwtrBr to/incl WillowGroveLk)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206140020-01	Burnt Mill Branch / Hudson Branch	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206140030-01	Green Branch / Endless Branch	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206140040-01	Blackwater Branch (above/incl Pine Br)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206140050-01	Blackwater Branch (below Pine Branch)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206140060-01	Maurice R (Sherman Ave to Blackwater Br)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206140070-01	Parvin Branch / Tarkiln Branch	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206150010-01	Muddy Run (above/incl Elmer Lake)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206150020-01	Muddy Run (incl Palatine Lk to Elmer Lk)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206150030-01	Palatine Branch (Muddy Run)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206150040-01	Indian Run (Muddy Run)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206150050-01	Muddy Run (incl ParvinLk to Palatine Lk)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206150060-01	Muddy Run (Landis Ave to Parvin Lake)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206150070-01	Muddy Run (below Landis Ave)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206160010-01	Lebanon Branch (Mill Creek)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206160020-01	Chatfield Branch (Mill Creek)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206160030-01	Maurice River(Union Lake to Sherman Ave)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206170010-01	Hankins Pond trib (Millville)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 5
17	02040206170020-01	White Marsh Run (Millville)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206170030-01	Maurice River(Menantico Ck to UnionLake)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206170040-01	Buckshutem Creek (above Rt 555)	Sublist 2	N/A	Sublist 5	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
17	02040206170050-01	Buckshutem Creek (below Rt 555)	Sublist 2	N/A	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
17	02040206180010-01	Panther Branch (Menantico Creek)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206180020-01	Cedar Branch (Menantico Creek)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206180030-01	Menantico Creek (above Rt 552)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206180040-01	Berryman Branch (Menantico Creek)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206180050-01	Menantico Creek (below Rt 552)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
17	02040206190010-01	Manumuskin River (above/incl BigNealBr)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206190020-01	Manumuskin River (Rt 49 to Big Neal Br)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
17	02040206190030-01	Manumuskin River (below Rt 49)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
17	02040206200010-01	Middle Branch / Slab Branch	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
17	02040206200020-01	Muskee Creek	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 2	Sublist 5

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
17	02040206200030-01	Maurice River (Rt 548 to Menantico Ck)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
17	02040206200040-01	Maurice River (Leesburg to Rt 548)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 5
17	02040206200050-01	Maurice River (below Leesburg) to EastPt	Sublist 5	N/A	Sublist 4A	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 5
16	02040206210010-01	Riggins Ditch (Moores Beach to East Pt)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 5
16	02040206210020-01	West Ck (above Rt 550)	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	N/A	Sublist 3
16	02040206210030-01	West Ck (Paper Mill Rd to Rt 550)	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	N/A	Sublist 3
16	02040206210040-01	West Ck (below PaperMillRd) to MooresBch	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040206210050-01	Savages Run (above East Creek Pond)	Sublist 2	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
16	02040206210060-01	East Creek	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040206220010-01	Dennis Ck / Cedar Swamp(Rt 47 to Rt 550)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040206220020-01	Sluice Creek	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040206220030-01	Dennis Creek (Jakes Landing Rd to Rt 47)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 5
16	02040206220040-01	Dennis Creek (below Jakes Landing Rd)	Sublist 5	N/A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 5
16	02040206230010-01	Bidwell Creek (above Rt 47)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 5
16	02040206230020-01	Bidwell Ck(below Rt 47)-Dias to GoshenCk	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 5
16	02040206230030-01	Dias Creek	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040206230040-01	Green Ck (Norburys Landng to Pierces Pt)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040206230050-01	Fishing Creek / Fishing Mill Stream	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040206230060-01	Cox Hall Creek / Mickels Run (to Villas)	Sublist 5	N/A	Sublist 5	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040206230070-01	Pond Creek / Cape May Canal West	Sublist 3	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301020010-01	Metedeconk R NB(above I-195)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
13	02040301020020-01	Metedeconk R NB(Rt 9 to I-195)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
13	02040301020030-01	Haystack Brook	Sublist 5	N/A	Sublist 4A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
13	02040301020040-01	Muddy Ford Brook	Sublist 5	Sublist 5	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
13	02040301020050-01	Metedeconk R NB (confluence to Rt 9)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
13	02040301030010-01	Metedeconk R SB (above I-195 exit 21 rd)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
13	02040301030020-01	Metedeconk R SB (74d19m15s to I-195 X21)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
13	02040301030030-01	Metedeconk R SB(BennettsPd to 74d19m15s)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
13	02040301030040-01	Metedeconk R SB (Rt 9 to Bennetts Pond)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
13	02040301030050-01	Metedeconk R SB (confluence to Rt 9)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
13	02040301040010-01	Beaverdam Creek	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 4A	Sublist 3
13	02040301040020-01	Metedeconk R (Beaverdam Ck to confl)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 4A	Sublist 3
13	02040301040030-01	Metedeconk R (below Beaverdam Creek)	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 3
13	02040301050010-01	Kettle Creek (above Lake Riviera outlet)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
13	02040301050020-01	Kettle Creek (below Lake Riviera outlet)	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 3
13	02040301050030-01	Metedekunk Neck tribs (below Heron Is)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	N/A	Sublist 3
13	02040301050040-01	Barnegat North tribs (Tide Ck to Rt 37)	Sublist 1	N/A	Sublist 1	Sublist 1	N/A	N/A	N/A	N/A	Sublist 3
13	02040301050050-01	Barnegat Bay North (above Rt 37 bridge)	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 3

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13	02040301060010-01	Toms River (above Francis Mills)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
13	02040301060020-01	Toms River (74-22-30 rd to FrancisMills)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 3	N/A	Sublist 3
13	02040301060030-01	Toms River (Bowman Rd to 74-22-30 road)	Sublist 5	Sublist 5	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	Sublist 3	N/A	Sublist 3
13	02040301060040-01	Maple Root Branch (Toms River)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
13	02040301060050-01	Dove Mill Branch (Toms River)	Sublist 3	Sublist 3	Sublist 4A	Sublist 3	N/A	N/A	N/A	N/A	Sublist 3
13	02040301060060-01	Toms River (Hope Chapel Rd to Bowman Rd)	Sublist 5	Sublist 5	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 5
13	02040301060070-01	Toms River (Rt 70 to Hope Chapel Road)	Sublist 5	Sublist 5	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
13	02040301060080-01	Toms River (Oak Ridge Parkway to Rt 70)	Sublist 5	Sublist 5	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
13	02040301070010-01	Shannae Brook	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
13	02040301070020-01	Harris Branch / Bordens Mill Branch	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
13	02040301070030-01	Ridgeway Br (Hope Chapel Rd to HarrisBr)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 5
13	02040301070040-01	Ridgeway Br (below Hope Chapel Rd)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
13	02040301070050-01	Blacks Branch (above 74d22m05s)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
13	02040301070060-01	Old Hurricane Brook (above 74d22m30s)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
13	02040301070070-01	Old Hurricane Brook (below 74d22m30s)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
13	02040301070080-01	Manapaqua Brook	Sublist 3	N/A	Sublist 3	Sublist 2	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
13	02040301070090-01	Union Branch (below Blacks Br 74d22m05s)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 5
13	02040301080010-01	Wrangel Brook (above Michaels Branch)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
13	02040301080020-01	Michaels Branch (Wrangel Brook)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
13	02040301080030-01	Davenport Branch (above Pinewald Road)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
13	02040301080040-01	Davenport Branch (below Pinewald Road)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
13	02040301080050-01	Wrangel Brook (below Michaels Branch)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 5	Sublist 2	Sublist 2	N/A	Sublist 5
13	02040301080070-01	Jakes Branch (Lower Toms River)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
13	02040301080080-01	Long Swamp Creek	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
13	02040301080090-01	Toms R Lwr (below Rt 166)	Sublist 5	N/A	Sublist 4A	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 3
13	02040301090010-01	Webbs Mill Branch	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	N/A	Sublist 3
13	02040301090020-01	Chamberlain Branch	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	N/A	Sublist 3
13	02040301090030-01	Cedar Creek (74-16-38 to Chamberlain Br)	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	N/A	Sublist 3
13	02040301090040-01	Factory Br / Newbolds Br / Daniels Br	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
13	02040301090050-01	Cedar Creek (GS Parkway to 74d16m38s)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
13	02040301090060-01	Cedar Creek (below GS Parkway)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	Sublist 4A	Sublist 3
13	02040301100010-01	Barnegat Cntrl tribs (Rt 37 to Cedar Ck)	Sublist 3	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	N/A	Sublist 3
13	02040301100020-01	Barnegat Cntrl tribs(CedarCk - Forked R)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	N/A	Sublist 3
13	02040301100030-01	Barnegat Bay Cntrl (Rt 37- Brngt Inlet)	Sublist 1	N/A	Sublist 1	Sublist 1	N/A	N/A	N/A	Sublist 1	Sublist 3
13	02040301110010-01	Forked River NB(above old RR grade)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
13	02040301110020-01	Forked River NB(below old RR grade)	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	Sublist 3
13	02040301110030-01	Forked River(below NB incl Mid/South Br)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 3

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
13	02040301110040-01	Oyster Creek (above Rt 532)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	N/A	Sublist 3
13	02040301110050-01	Oyster Creek (below Rt 532)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	N/A	Sublist 3
13	02040301120010-01	Waretown Creek / Lochiel Creek	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	Sublist 2	Sublist 2	Sublist 3
13	02040301120020-01	Barnegat South tribs (below Lochiel Ck)	Sublist 1	N/A	Sublist 1	Sublist 1	N/A	N/A	N/A	Sublist 1	Sublist 3
13	02040301120030-01	Barnegat Bay So (Brngt Inlet-Surf City)	Sublist 1	N/A	Sublist 1	Sublist 1	N/A	N/A	N/A	Sublist 1	Sublist 3
13	02040301130010-01	Four Mile Branch (Mill Creek)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 3
13	02040301130020-01	Mill Ck (above GS Parkway)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
13	02040301130030-01	Mill Ck (below GS Parkway)/Manahawkin Ck	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 3	Sublist 2	Sublist 3
13	02040301130040-01	Cedar Run	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 3	Sublist 2	Sublist 4A	Sublist 3
13	02040301130050-01	Westecunk Creek (above GS Parkway)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	N/A	Sublist 3
13	02040301130060-01	Westecunk Creek (below GS Parkway)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
13	02040301130070-01	Dinner Point Creek & tribs	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
13	02040301130080-01	Manahawkin Bay/LEH Bay (to Westecunk Cr)	Sublist 1	N/A	Sublist 1	Sublist 1	N/A	N/A	N/A	Sublist 1	Sublist 3
13	02040301140010-01	Mill Branch (above GS Parkway)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	N/A	Sublist 3
13	02040301140020-01	Mill Branch (below GS Parkway)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
13	02040301140030-01	Tuckerton Creek (below Mill Branch)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 4A	Sublist 3
13	02040301140040-01	LEH Bay tribs(Westecunk Ck-Tuckerton Ck)	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 3
13	02040301140050-01	LEH Bay tribs (Willis Creek to LE Inlet)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
13	02040301140060-01	Little Egg HarborBay(Westecunk to Inlet)	Sublist 1	N/A	Sublist 1	Sublist 1	N/A	N/A	N/A	Sublist 1	Sublist 3
14	02040301150010-01	Batsto River (above Hampton Gate)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301150020-01	Skit Branch (Batsto River)	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	N/A	Sublist 3
14	02040301150030-01	Indian Mills Brook / Muskingum Brook	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301150040-01	Springers Brook / Deep Run	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301150050-01	Batsto River (CNJRR to Hampton Gate)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301150060-01	Batsto River (Quaker Bridge to CNJRR)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301150070-01	Penn Swamp Branch	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301150080-01	Batsto R (Batsto gage to Quaker Bridge)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301160010-01	Alquatka Branch	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301160020-01	Mullica River (above Jackson Road)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 5
14	02040301160030-01	Mullica River (Rt 206 to Jackson Road)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 5
14	02040301160040-01	Wisickaman Creek	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301160050-01	Hays Mill Creek (above Tremont Ave)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301160060-01	Sleeper Branch (Rt 206 to Tremont Ave)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301160070-01	Pump Branch (above 74d53m road)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301160080-01	Pump Branch (below 74d53m road)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301160090-01	Clark Branch (above/incl Price Branch)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301160100-01	Blue Anchor Brook	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301160110-01	Albertson Brook / Gun Branch	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
14	02040301160120-01	Great Swamp Branch (above Rt 206)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 2	N/A	N/A	Sublist 3
14	02040301160130-01	Great Swamp Branch (below Rt 206)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 2	N/A	N/A	Sublist 3
14	02040301160140-01	Mullica River (39d40m30s to Rt 206)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 5
14	02040301160150-01	Mullica R (Pleasant Mills to 39d40m30s)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 5
14	02040301170010-01	Hammonton Creek (above 74d43m)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	N/A	N/A	Sublist 3
14	02040301170020-01	Hammonton Creek (Columbia Rd to 74d43m)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 5	Sublist 2	N/A	N/A	Sublist 3
14	02040301170030-01	Hammonton Creek (below Columbia Rd)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301170040-01	Mullica River (BatstoR to PleasantMills)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 5
14	02040301170050-01	Bull Creek / Little Bull Creek	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301170060-01	Mullica River (Rt 563 to Batsto River)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 3	Sublist 3	N/A	Sublist 4A	Sublist 5
14	02040301170070-01	Nergo Creek	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301170080-01	Mullica River (Lower Bank Rd to Rt 563)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 3	Sublist 3	N/A	Sublist 4A	Sublist 5
14	02040301170090-01	Indian Cabin Creek	Sublist 5	N/A	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301170100-01	Landing Creek (above Rt 563)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301170110-01	Landing Creek (Indian Cabin Ck to Rt563)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301170120-01	Landing Creek (below Indian Cabin Ck)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	Sublist 2	Sublist 3
14	02040301170130-01	Mullica River(Turtle Ck to Lower BankRd)	Sublist 2	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 5
14	02040301180010-01	Yellow Dam Branch	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301180020-01	Oswego River (above Rt 539)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301180030-01	Plains Branch (Oswego River)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301180040-01	Oswego River (Sim Place Resv to Rt 539)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301180050-01	Papoose Branch (Oswego River)	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	N/A	N/A	Sublist 3
14	02040301180060-01	Oswego R (Andrews Rd to Sim Place Resv)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301180070-01	Oswego River (below Andrews Road)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301190010-01	Shoal Branch (above/incl Pope Branch)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301190020-01	Wading River WB (above Rt 532)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301190030-01	Wading River WB (Rt 563 to Rt 532)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301190040-01	Shoal Branch (below Pope Branch)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301190050-01	Wading River WB (Jenkins Rd to Rt 563)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 5
14	02040301190060-01	Tulpehocken Creek	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301190070-01	Wading River WB (Oswego R to Jenkins Rd)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 5
14	02040301200010-01	Beaver Branch (Wading River)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 5
14	02040301200020-01	Wading River (Rt 542 to Oswego River)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 5
14	02040301200030-02	Wading River (below Rt 542)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 3	Sublist 3	N/A	N/A	Sublist 5
14	02040301200040-02	Bass River WB	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301200050-02	Bass River EB	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
14	02040301200060-02	Bass River (below WB / EB)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 4A	Sublist 3
14	02040301200070-02	Ballanger Creek	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3

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14	02040301200080-02	Mullica River (GSP bridge to Turtle Ck)	Sublist 2	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 5
14	02040301200090-02	Clarks Mill Stream	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
14	02040301200100-02	Morses Mill Stream	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	Sublist 3
14	02040301200110-02	Mattix Run (Nacote Creek)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 3
14	02040301200120-02	Nacote Creek (below/incl Mill Pond)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 3
14	02040301210010-02	Mullica River (below GSP bridge)	Sublist 2	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 5
14	02040301210020-02	Mott Creek (Oysterbed Pt to Oyster Ck)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
14	02040301210030-02	Little Bay & tribs	Sublist 1	N/A	Sublist 1	Sublist 1	N/A	N/A	N/A	Sublist 1	Sublist 3
14	02040301210040-02	Great Bay & tribs	Sublist 1	N/A	Sublist 1	Sublist 1	N/A	N/A	N/A	Sublist 1	Sublist 3
13	02040301910010-01	Atl Coast(Manasquan/Herring Is)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301910010-02	Atl Coast(Manasquan/Herring Is)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301910020-01	Atl Coast (Herring Is to Rt 37)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301910020-02	Atl Coast (Herring Is to Rt 37)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301910030-01	Atl Cst(Rt 37 to Barnegat Inlet)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301910030-02	Atl Cst(Rt 37 to Barnegat Inlet)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301920010-01	Atl Coast(Barnegat to Surf City)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301920010-02	Atl Coast(Barnegat to Surf City)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301920020-01	Atl Coast(Surf City to Haven Be)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301920020-02	Atl Coast(Surf City to Haven Be)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301920030-01	Atl Coast(Haven Bch to Lit Egg)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
13	02040301920030-02	Atl Coast(Haven Bch to Lit Egg)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
15	02040302010010-01	Reeds Bay / Absecon Bay & tribs	Sublist 1	N/A	Sublist 1	Sublist 1	N/A	N/A	N/A	Sublist 1	Sublist 3
15	02040302020010-01	Absecon Creek NB	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
15	02040302020020-01	Absecon Creek SB	Sublist 2	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 3	N/A	N/A	Sublist 3
15	02040302020030-01	Absecon Ck (AC Reserviors) (gage to SB)	Sublist 2	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 3
15	02040302020040-01	Absecon Creek (below gage)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
15	02040302030010-01	Great Egg Harbor R(above New Freedom Rd)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302030020-01	GEHR (AC Expressway to New Freedom Rd)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302030030-01	Four Mile Branch (GEHR)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 2	N/A	Sublist 3
15	02040302030040-01	GEHR (Broad Lane road to AC Expressway)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302030050-01	Squankum Branch (GEHR)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 3	N/A	N/A	Sublist 3
15	02040302030060-01	GEHR (Piney Hollow Rd to Broad Lane rd)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302030070-01	Penny Pot Stream (GEHR)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
15	02040302030080-01	GEHR (Hospitality Br to Piney Hollow Rd)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302040010-01	Hospitality Branch (above Whitehouse Rd)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302040020-01	Hospitality Br (Rt 538 to Whitehouse Rd)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302040030-01	Hospitality Br (Piney HollowRd to Rt538)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302040040-01	White Oak Branch (Hospitality Branch)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
15	02040302040050-01	Collings Lakes trib (Hospitality Branch)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
15	02040302040060-01	Three Pond Branch (Hospitality Branch)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
15	02040302040070-01	Hospitality Br (below Piney Hollow Rd)	Sublist 5	N/A	Sublist 4A	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302040080-01	GEHR (39d32m50s to Hospitality Branch)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302040090-01	GEHR (Rt 322 to 39d32m50s)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302040100-01	Makepeace Stream (above Makepeace Lake)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
15	02040302040110-01	GEHR (Mare Run to Rt 322)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302040120-01	Deep Run (GEHR)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302040130-01	GEHR (Lake Lenape to Mare Run)	Sublist 5	N/A	Sublist 4A	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302050010-01	Watering Race Branch (Babcock Creek)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
15	02040302050020-01	Babcock Creek (GEHR)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302050030-01	South River (above 39d26m15s)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302050040-01	South River (below 39d26m15s)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	Sublist 3	N/A	Sublist 3
15	02040302050050-01	Gravelly Run (above Gravelly Run road)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
15	02040302050060-01	GEHR (Miry Run to Lake Lenape)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 3
15	02040302050070-01	Miry Run (GEHR)	Sublist 3	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
15	02040302050080-01	Stephen Creek (GEHR)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 3	Sublist 4A	Sublist 3
15	02040302050090-01	English Creek / Flat Ck / Cranberry Ck	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 3
15	02040302050100-01	Gibson Creek / Jackson Creek	Sublist 1	N/A	Sublist 1	Sublist 1	Sublist 1	Sublist 1	Sublist 1	Sublist 1	Sublist 3
15	02040302050110-01	Lakes Creek (GEHR)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 4A	Sublist 3
15	02040302050120-01	Middle River / Peters Creek	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
15	02040302050130-01	Great Egg Harbor R (GEH Bay to Miry Run)	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 3
15	02040302060010-01	Mill Br (above Cardiff-Bargaintown rd)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302060020-01	Maple Run/Mill Br(Zion Rd to Cardiff rd)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	Sublist 2	N/A	Sublist 3
15	02040302060030-01	Patcong Creek (Somers Ave to Zion Rd)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
15	02040302060040-01	GEH Bay/Lakes Bay/Skull Bay/Peck Bay	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 3
15	02040302070010-01	Tuckahoe R (above Cumberland Ave)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302070020-01	Tuckahoe R (39d19m52s to Cumberland Ave)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302070030-01	McNeals Branch (Tuckahoe River)	Sublist 2	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
15	02040302070040-01	Tuckahoe River (Rt 49 to 39d19m52s)	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 2	Sublist 2	N/A	N/A	Sublist 3
15	02040302070050-01	Tarkiln Brook (Tuckahoe River)	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 3	Sublist 3	N/A	N/A	Sublist 3
15	02040302070060-01	Mill Creek / Back Run (Tuckahoe River)	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
15	02040302070070-01	Halfway Creek	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
15	02040302070080-01	Cedar Swamp Ck/Cedar Swamp (above Rt 50)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
15	02040302070090-01	Cedar Swamp Ck (below Rt 50)	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
15	02040302070100-01	Willis Thorofare / Hughes Creek	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
15	02040302070110-01	Tuckahoe River (below Rt 49)	Sublist 5	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
16	02040302080010-01	Crook Horn Creek (above Devils Island)	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 3

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
16	02040302080020-01	Corson Inlet & Sound / Ludlam Bay	Sublist 1	N/A	Sublist 1	Sublist 1	N/A	N/A	N/A	Sublist 1	Sublist 3
16	02040302080030-01	Mill Creek / Sunks Ck / Big Elder Creek	Sublist 3	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	Sublist 2	Sublist 3
16	02040302080040-01	Cape May Bays (Reubens Wharf-BigElderCk)	Sublist 1	N/A	Sublist 1	Sublist 1	N/A	N/A	N/A	Sublist 1	Sublist 3
16	02040302080050-01	Cape May Courthouse tribs	Sublist 2	N/A	Sublist 3	Sublist 3	N/A	N/A	N/A	N/A	Sublist 3
16	02040302080060-01	Mommy Teal Ck / Cresse Ck / Gravelly Run	Sublist 3	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 3
16	02040302080070-01	Cape May Bays (Rt 47 to Reubens Wharf)	Sublist 2	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 3
16	02040302080080-01	Mill Creek / Jones Creek / Taylor Creek	Sublist 3	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 3
16	02040302080090-01	Cape May Harbor & Bays (below Rt 47)	Sublist 2	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 4A	Sublist 3
14	02040302910010-01	Atl Coast(Ltl Egg to Absecon In)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
14	02040302910010-02	Atl Coast(Ltl Egg to Absecon In)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
15	02040302920010-01	Atl Coast(Absecon In to Ventnor)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
15	02040302920010-02	Atl Coast(Absecon In to Ventnor)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
15	02040302920020-01	Atl Coast(Ventnor to Great Egg)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
15	02040302920020-02	Atl Coast(Ventnor to Great Egg)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
15	02040302930010-01	Atl Coast(Great Egg to 34th St)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
21	02040302930010-02	Atl Coast(Great Egg to 34th St)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040302940010-01	Atl Coast(34th St to Corson Inl)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040302940010-02	Atl Coast(34th St to Corson Inl)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040302940040-01	Atl Cst(Hereford to Cape May In)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040302940040-02	Atl Cst(Hereford to Cape May In)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040302940050-01	Atl Cst(CM Inlet to Cape May Pt)inshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
16	02040302940050-02	Atl Cst(CM Inlet to Cape May Pt)offshore	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	N/A	N/A	Sublist 2	Sublist 5
Zone 1	Delaware River 1	Delaware River 1C2	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
Zone 1	Delaware River 10	Delaware River 1E1	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
Zone 1	Delaware River 11	Delaware River 1E2	Sublist 5	N/A	Sublist 5	Sublist 5	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
Zone 1	Delaware River 12	Delaware River 1E3	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
Zone 1	Delaware River 13	Delaware River 1E4	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
Zone 1	Delaware River 14	Delaware River 1E5	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
Zone 2	Delaware River 15	Delaware River 2	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
Zone 3	Delaware River 16	Delaware River 3	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
Zone 4	Delaware River 17	Delaware River 4	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	Sublist 3	N/A	N/A	Sublist 5
Zone 5	Delaware River 18	Delaware River 5A	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	Sublist 3	N/A	N/A	Sublist 5
Zone 5	Delaware River 19	Delaware River 5B	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	Sublist 3	N/A	N/A	Sublist 5
Zone 1	Delaware River 2	Delaware River 1C3	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
Zone 5	Delaware River 20	Delaware River 5C	Sublist 5	N/A	Sublist 2	Sublist 2	N/A	Sublist 3	N/A	N/A	Sublist 5
Zone 1	Delaware River 3	Delaware River 1C4	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
Zone 1	Delaware River 4	Delaware River 1D1	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5
Zone 1	Delaware River 5	Delaware River 1D2	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	Sublist 3	Sublist 3	N/A	Sublist 5

(See Appendix A-2 for Lakes)

WMA	Assessment Unit ID	Assessment Unit Name	Aquatic Life (general)	Aquatic Life (trout)	Primary Contact Recreation	Secondary Contact Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Shellfish Harvest	Fish Consumption
Zone 1	Delaware River 6	Delaware River 1D3	Sublist 5	N/A	Sublist 5	Sublist 3	Sublist 5	N/A	Sublist 3	N/A	Sublist 5
Zone 1	Delaware River 7	Delaware River 1D4	Sublist 5	N/A	Sublist 2	Sublist 2	Sublist 5	N/A	Sublist 3	N/A	Sublist 5
Zone 1	Delaware River 8	Delaware River 1D5	Sublist 5	N/A	Sublist 3	Sublist 3	Sublist 5	N/A	Sublist 3	N/A	Sublist 5
Zone 1	Delaware River 9	Delaware River 1D6	Sublist 5	N/A	Sublist 5	Sublist 5	Sublist 5	N/A	Sublist 3	N/A	Sublist 5

Appendix A-2

Integrated List -Lakes

Lakes

The assessment units were placed on one of five sublists according to the following: (See Section 7 of the Integrated List Methods Document for more detail on the Sublists)

Sublist 1: There is sufficient data to assess all applicable designated uses for the waterbody and the assessment indicates full attainment for all designated uses.

Sublist 2: Waterbodies are placed on this sublist when an assessment for an individual designated use is complete and results for that assessment indicates full attainment but other designated uses are unassessed, assessed as non attain or have an approved TMDL. When all designated uses are assessed as full attain, these waterbodies will be moved to Sublist 1.

Sublist 3: Waterbodies are placed on this sublist when the designated use assessment indicated insufficient or no data to assess the designated use.

Sublist 4: The waterbody is impaired or threatened for one or more designated uses. There are three subcategories:

Sublist 4A. Waterbodies are placed on this sublist when the designated use is non attain due to pollutants and a TMDL has been adopted in New Jersey Register and approved by the USEPA

Sublist 4B. Waterbodies are placed on this sublist when the designated use is non attain due to pollutants and other enforceable pollution control requirements are reasonably expected to result in the conformance with the applicable SWQSs in the near future.

Sublist 4C. Waterbodies are placed on this sublist when the designated use is non attain and the impairment is not caused by a pollutant.

Sublist 5: Designated use assessment is complete and results for the assessment indicate non-attain.

(The individual pollutants causing the non attainment of the designated uses will be identified on the "303(d) List of Impaired Waterbodies by Parameter with Ranking". The Pollutant will be listed if known or “pollutant unknown” or “toxic unknown” will be used when the pollutant is not known.)

WMA	Lake Acres	Assessment Unit	Recreation (Primary Contact)	Recreation (Aesthetics)	Aquatic Life	Fish Consumption
17	2	4 Seasons Campground Pond-17	Sublist 5	Sublist 3	Sublist 3	Sublist 3
14	53	Absegami Lake-14	Sublist 2	Sublist 4A	Sublist 3	Sublist 3
17	14	Albert Giampietro-17	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
18	20	Alcyon Lake-18	Sublist 3	Sublist 2	Sublist 4B	Sublist 5
20	23	Allentown Lake-20	Sublist 3	Sublist 4B	Sublist 3	Sublist 3
06	16	Ames Lake-06	Sublist 3	Sublist 3	Sublist 3	Sublist 3
10	10	Amwell Lake-10	Sublist 3	Sublist 3	Sublist 3	Sublist 3
14	16	Anchor Lake One-14	Sublist 3	Sublist 3	Sublist 5	Sublist 3
02	5	Arapaho Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	19	Arrowhead Lake-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
11	249	Assunpink Lake-11	Sublist 3	Sublist 3	Sublist 3	Sublist 5
14	21	Atco Lake-14	Sublist 3	Sublist 3	Sublist 5	Sublist 3
15	162	Atlantic City Reservoir 1-15	Sublist 3	Sublist 3	Sublist 3	Sublist 5
15	2	Atlantic City Reservoir 2-15	Sublist 3	Sublist 3	Sublist 3	Sublist 5
14	101	Atsion Lake-14	Sublist 2	Sublist 2	Sublist 3	Sublist 5
13	60	Bamber Lake-13	Sublist 5	Sublist 3	Sublist 3	Sublist 3
04		Barbours Pond-04	Sublist 3	Sublist 3	Sublist 3	Sublist 3
02	59	Barry Lakes-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3

WMA	Lake Acres	Assessment Unit	Recreation (Primary Contact)	Recreation (Aesthetics)	Aquatic Life	Fish Consumption
01	14	Bass Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
14	2	Batsto Lake-14	Sublist 3	Sublist 3	Sublist 3	Sublist 5
16	6	Bayberry Cove-16	Sublist 2	Sublist 3	Sublist 3	Sublist 3
16	6	Beachcomer Lake-16	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	50	Bear Swamp Lake 2-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	139	Beaver Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
14	21	Beaverdam Lake-14	Sublist 3	Sublist 3	Sublist 5	Sublist 3
		Beiser's Pond	Sublist 5	Sublist 3	Sublist 3	Sublist 3
14	18	Belhaven Lake-14	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	2	Bell Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	33	Bell Lake-18	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
18		Bellmawr Lake-18	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18		Bells Lake-18	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	10	Bethel Lake-18	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
19	15	Big Pine Lake-19	Sublist 3	Sublist 3	Sublist 3	Sublist 3
16		Big Timber Lake-16	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	13	Birchwood Lake-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19		Black Run Bogs-19	Sublist 3	Sublist 3	Sublist 2	Sublist 3
18	6	Blackwood Lake-18	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
06	790	Boonton Reservoir-06	Sublist 3	Sublist 3	Sublist 3	Sublist 5
17	29	Bostwick Lake-17	Sublist 3	Sublist 3	Sublist 3	Sublist 3
15	16	Braddock Lake-15	Sublist 5	Sublist 3	Sublist 3	Sublist 3
19	24	Braddocks Millpond-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
10	22	Brainard Lake-10	Sublist 3	Sublist 3	Sublist 2	Sublist 3
04	23	Branchbrook Park Lake-04	Sublist 3	Sublist 3	Sublist 3	Sublist 5
03	2	Bubbling Springs-03	Sublist 5	Sublist 3	Sublist 3	Sublist 3
08	389	Budd Lake-08	Sublist 5	Sublist 3	Sublist 2	Sublist 5
15	3	Buena Vista CG-15	Sublist 5	Sublist 3	Sublist 3	Sublist 3
17	22	Burnt Mill Pond-17	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
13	21	Butterfly Pond-13	Sublist 3	Sublist 3	Sublist 3	Sublist 5
03		Camp Gigal Pond-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06		Camp Lewis-06	Sublist 5	Sublist 3	Sublist 3	Sublist 3
17	3	Camp Merrywood-17	Sublist 2	Sublist 3	Sublist 3	Sublist 3
17	17	Camp Roosevelt Lake-17	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01		Camp Taylor Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	318	Canistear Reservoir-03	Sublist 3	Sublist 3	Sublist 2	Sublist 5
13	74	Carasaljo Lake-13	Sublist 5	Sublist 3	Sublist 3	Sublist 5
19	5	Cardinal Ridge-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
10	238	Carnegie Lake-10	Sublist 3	Sublist 3	Sublist 3	Sublist 5
15	94	Cedar Lake 1-15	Sublist 3	Sublist 3	Sublist 3	Sublist 5
06	25	Cedar Lake-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
17	24	Cedar Lake-17	Sublist 5	Sublist 3	Sublist 3	Sublist 3
19	20	Cedar Run Lake-19	Sublist 3	Sublist 3	Sublist 2	Sublist 3
19	63	Centennial Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
14		Chips Folly-14	Sublist 2	Sublist 3	Sublist 3	Sublist 3
17	90	Clarks Pond-17	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	17	Clementon Lake-18	Sublist 3	Sublist 3	Sublist 3	Sublist 5
03	24	Cliffwood Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	478	Clinton Reservoir-03	Sublist 3	Sublist 3	Sublist 2	Sublist 5
03	10	Clove Acres Lake-02	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
01	17	Clove Lake-01	Sublist 3	Sublist 5	Sublist 3	Sublist 3
01	51	Columbia Lake-01	Sublist 3	Sublist 3	Sublist 3	Sublist 3

WMA	Lake Acres	Assessment Unit	Recreation (Primary Contact)	Recreation (Aesthetics)	Aquatic Life	Fish Consumption
12	36	Como Lake-12	Sublist 3	Sublist 3	Sublist 3	Sublist 3
06	18	Cooks Pond-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	165	Cooper River Lake-18	Sublist 3	Sublist 4A	Sublist 2	Sublist 5
19	145	Country Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	32	Cozy Lake-06	Sublist 5	Sublist 3	Sublist 3	Sublist 3
01	190	Cranberry Lake-01	Sublist 2	Sublist 4A	Sublist 3	Sublist 5
01	77	Crandon Lakes-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	20	Crater Lake-01	Sublist 3	Sublist 3	Sublist 3	Sublist 5
03	24	Crystal Lake-03	Sublist 5	Sublist 3	Sublist 3	Sublist 3
20	21	Crystal Lake-20	Sublist 3	Sublist 3	Sublist 3	Sublist 5
02		Crystal Springs-02	Sublist 5	Sublist 3	Sublist 3	Sublist 3
01	562	Culvers Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	60	Cupsaw Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
15	66	Cushman Lake-15	Sublist 5	Sublist 3	Sublist 3	Sublist 3
09	37	Davidsons Mill Pond-09	Sublist 3	Sublist 4A	Sublist 5	Sublist 3
17	31	Davis Mill pond-17	Sublist 3	Sublist 3	Sublist 2	Sublist 3
12	158	Deal Lake-12	Sublist 5	Sublist 4A	Sublist 3	Sublist 3
13	42	Deer Head Lake-13	Sublist 5	Sublist 2	Sublist 3	Sublist 3
01	7	Deer Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	37	Deer Pond-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	9	Deer Trail Lake-02	Sublist 5	Sublist 3	Sublist 3	Sublist 3
19	2	Delanco Camp Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
09	37	Delaware & Raritan Canal-09	Sublist 3	Sublist 3	Sublist 3	Sublist 5
01	48	Delaware Lake-01	Sublist 3	Sublist 3	Sublist 2	Sublist 3
		Demott Pond	Sublist 3	Sublist 3	Sublist 2	Sublist 3
16	130	Dennisville Lake-16	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
09		Devoe Lake-09	Sublist 3	Sublist 4A	Sublist 3	Sublist 5
17	27	DOD Lake-17	Sublist 3	Sublist 3	Sublist 2	Sublist 3
13	63	Double Trouble State Park-13	Sublist 3	Sublist 3	Sublist 3	Sublist 5
16		Driftwood Camping Resorts Lake-16	Sublist 2	Sublist 3	Sublist 3	Sublist 3
04	63	Dundee Lake-04	Sublist 3	Sublist 3	Sublist 3	Sublist 5
06	47	Durham Pond-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
09	22	East Brunswick Community Lake-09	Sublist 3	Sublist 3	Sublist 2	Sublist 3
16		East Creek Lake-16	Sublist 3	Sublist 3	Sublist 3	Sublist 5
02	21	East Highland Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
17	10	Eastern Gate Lake-17	Sublist 5	Sublist 3	Sublist 3	Sublist 3
03	35	Echo Lake-03	Sublist 2	Sublist 3	Sublist 2	Sublist 5
07	265	Echo Lake-07	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
14	7	Egg Harbor City Lake-14	Sublist 2	Sublist 3	Sublist 3	Sublist 3
14	20	Elm (James) Lake-14	Sublist 3	Sublist 3	Sublist 5	Sublist 3
17	54	Elmer Lake-17	Sublist 3	Sublist 3	Sublist 2	Sublist 3
03	77	Erskine Lake-03	Sublist 5	Sublist 3	Sublist 3	Sublist 3
06	75	Estling Lake-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
10	20	Etra Lake-10	Sublist 3	Sublist 4B	Sublist 3	Sublist 3
18	15	Evans Pond-18	Sublist 3	Sublist 4A	Sublist 3	Sublist 5
01	103	Fairview Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	3	Farm Crest Acres-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
09	217	Farrington Lake-09	Sublist 3	Sublist 3	Sublist 2	Sublist 3
02	5	Fawn Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	36	Flamingo Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	9	Forest Hill Lake-03	Sublist 5	Sublist 3	Sublist 3	Sublist 3
01	46	Forest Lake-01	Sublist 5	Sublist 3	Sublist 3	Sublist 3
01	73	Fox Hollow Lake-01	Sublist 5	Sublist 3	Sublist 3	Sublist 3

WMA	Lake Acres	Assessment Unit	Recreation (Primary Contact)	Recreation (Aesthetics)	Aquatic Life	Fish Consumption
17	24	Foxmill Lake-17	Sublist 3	Sublist 3	Sublist 3	Sublist 3
06	11	Foxs Pond-06	Sublist 5	Sublist 3	Sublist 3	Sublist 3
03	95	Franklin Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
12	15	Franklin Lake-12	Sublist 3	Sublist 4A	Sublist 3	Sublist 4A
17	33	Franklinville Lake-17	Sublist 5	Sublist 3	Sublist 3	Sublist 3
01	31	Frenches Pond-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	56	Furnace Lake-01	Sublist 5	Sublist 3	Sublist 3	Sublist 3
17		Gandy's Beach	Sublist 5	Sublist 3	Sublist 3	Sublist 3
16	8	Garden Park Lake-16	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	7	Garden State Academy Pond-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
17	33	Garrison Lake-17	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	94	Gerard Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	18	Ghost Lake-01	Sublist 3	Sublist 4A	Sublist 3	Sublist 4A
18	13	Gilman Lake-18	Sublist 2	Sublist 3	Sublist 3	Sublist 3
		Glen Lake	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	108	Glen Wild Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	28	Glenwood Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	13	Gordon Lakes-03	Sublist 3	Sublist 3	Sublist 3	Sublist 3
14	15	Goshen Pond-14	Sublist 3	Sublist 3	Sublist 3	Sublist 3
02	20	Great Gorge-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	505	Green Pond-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	45	Green Turtle Lake-03	Sublist 3	Sublist 3	Sublist 3	Sublist 5
01		Green Valley Beach Campground	Sublist 5	Sublist 3	Sublist 3	Sublist 3
03		Greenbrook Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	24	Greenwich Lake-18	Sublist 3	Sublist 3	Sublist 3	Sublist 3
03	826	Greenwood Lake-03	Sublist 2	Sublist 4A	Sublist 5	Sublist 5
18	18	Grenlock Lake-18	Sublist 3	Sublist 5	Sublist 3	Sublist 3
10	29	Grove Mill Pond-10	Sublist 3	Sublist 3	Sublist 3	Sublist 5
18	10	Haddon Lake-18	Sublist 3	Sublist 3	Sublist 3	Sublist 3
		Hainesville Pond	Sublist 3	Sublist 3	Sublist 3	Sublist 5
14	61	Hammonton Lake-14	Sublist 5	Sublist 4A	Sublist 5	Sublist 3
16	34	Hands Millpond-16	Sublist 2	Sublist 2	Sublist 3	Sublist 3
19	88	Hanover Lake-19	Sublist 3	Sublist 3	Sublist 3	Sublist 3
19	5	Harmony Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	4	Harmony Ridge Large Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	2	Harmony Ridge Small Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	11	Harrison Mountain Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	18	Harrisonville Lake-18	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
14	55	Harrisville Lake-14	Sublist 3	Sublist 4A	Sublist 3	Sublist 5
13	14	Harry Wrights Lake-13	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	20	Heaters Pond-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	40	Henion Pond-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
		Hercules Pond	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	7	Heritage Lakes-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
16	9	Hidden Acres Lake-16	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	4	Hidden Valley Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03		Hidden Valley Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	39	High Crest Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	324	Highland Lake 1-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	19	Highland Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
14	38	Hobb Lake-14	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	111	Holiday Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
13	45	Holiday Lake-13	Sublist 5	Sublist 3	Sublist 3	Sublist 3

WMA	Lake Acres	Assessment Unit	Recreation (Primary Contact)	Recreation (Aesthetics)	Aquatic Life	Fish Consumption
17		Holly Green Campground Pond-17	Sublist 5	Sublist 3	Sublist 3	Sublist 3
19	3	Holly Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
12	11	Hooks Creek Lake-12	Sublist 5	Sublist 4A	Sublist 3	Sublist 3
13	59	Horicon Lake-13	Sublist 2	Sublist 3	Sublist 3	Sublist 3
08	59	Horseshoe Lake-08	Sublist 2	Sublist 3	Sublist 3	Sublist 3
17	18	Hudson Lake-17	Sublist 2	Sublist 3	Sublist 3	Sublist 3
	14	Hurff Lake	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	37	Iliff Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
20	16	Imlaystown Lake-20	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
06	33	Indian Lake-06	Sublist 5	Sublist 3	Sublist 3	Sublist 3
15	88	Indian Lake-15	Sublist 2	Sublist 3	Sublist 3	Sublist 3
14	7	Indian Mills Lake-14	Sublist 3	Sublist 3	Sublist 5	Sublist 3
06	11	Intervale Lake-06	Sublist 5	Sublist 3	Sublist 3	Sublist 3
17	32	Iona Lake-17	Sublist 5	Sublist 3	Sublist 3	Sublist 3
19	5	JCC Camp Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	46	Jefferson Lake-01	Sublist 2	Sublist 3	Sublist 2	Sublist 3
19	3	Jennings Lake-19	Sublist 3	Sublist 3	Sublist 5	Sublist 3
03	31	Kampfe Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	8	Kandle Lake-18	Sublist 2	Sublist 3	Sublist 3	Sublist 3
13	18	Kennedy Lake-13	Sublist 3	Sublist 3	Sublist 2	Sublist 3
19	11	Kettle Run-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03		Kilroy Park Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	25	Kirkwood Lake-18	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
03	23	Kitchell Lake-03	Sublist 5	Sublist 3	Sublist 3	Sublist 3
01	90	Kittatinny Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01		Lackawanna Lake-01	Sublist 5	Sublist 3	Sublist 3	Sublist 3
14	11	Ladys Lake-14	Sublist 3	Sublist 3	Sublist 3	Sublist 3
19		Lake 1417-19	Sublist 3	Sublist 3	Sublist 2	Sublist 3
01	113	Lake Aeroflex-01	Sublist 3	Sublist 3	Sublist 2	Sublist 3
01	48	Lake Ashroe-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
13	66	Lake Barnegat-13	Sublist 5	Sublist 3	Sublist 3	Sublist 3
02	7	Lake Conway-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03		Lake Edenwold-03	Sublist 5	Sublist 3	Sublist 3	Sublist 3
01	2461	Lake Hopatcong-01	Sublist 5	Sublist 4A	Sublist 5	Sublist 5
03	67	Lake Ioscoe-03	Sublist 5	Sublist 3	Sublist 3	Sublist 3
19	29	Lake James-19	Sublist 5	Sublist 3	Sublist 3	Sublist 3
01	102	Lake Kemah-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
16	5	Lake Laurie-16	Sublist 5	Sublist 3	Sublist 3	Sublist 3
01	54	Lake Lenape-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
12		Lake Matawan-12	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	30	Lake Mishe-Mokwa-19	Sublist 2	Sublist 2	Sublist 3	Sublist 3
02	755	Lake Mohawk-02	Sublist 5	Sublist 3	Sublist 3	Sublist 3
14	16	Lake Mo-Li-Th-Ma-14	Sublist 2	Sublist 3	Sublist 5	Sublist 3
01	314	Lake Musconetcong-01	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
16	25	Lake Nummy-16	Sublist 2	Sublist 3	Sublist 3	Sublist 5
06	8	Lake Reality-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	13	Lake Robert Rooke-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	8	Lake Shawanni-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
13	52	Lake Shennadoah-13	Sublist 3	Sublist 3	Sublist 3	Sublist 3
		Lake Silvestro	Sublist 5	Sublist 3	Sublist 3	Sublist 3
03	31	Lake Stockholm-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	54	Lake Swannanoa-06	Sublist 5	Sublist 3	Sublist 3	Sublist 3
12	16	Lake Takanassee-12	Sublist 5	Sublist 5	Sublist 3	Sublist 3

WMA	Lake Acres	Assessment Unit	Recreation (Primary Contact)	Recreation (Aesthetics)	Aquatic Life	Fish Consumption
05	656	Lake Tappan-05	Sublist 3	Sublist 3	Sublist 3	Sublist 5
01	62	Lake Tranquility-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	9	Lake Winona-01	Sublist 5	Sublist 3	Sublist 3	Sublist 3
19	58	Lake1417-19	Sublist 3	Sublist 3	Sublist 2	Sublist 3
19	7	Lake1523-19	Sublist 3	Sublist 3	Sublist 5	Sublist 3
19	39	Lake1552-19	Sublist 3	Sublist 3	Sublist 2	Sublist 3
14	9	Lake1606-14	Sublist 3	Sublist 3	Sublist 2	Sublist 3
14	9	Lake1609-14	Sublist 3	Sublist 3	Sublist 2	Sublist 3
14	4	Lake1616-14	Sublist 3	Sublist 3	Sublist 3	Sublist 3
14	14	Lake1634-14	Sublist 3	Sublist 3	Sublist 2	Sublist 3
14	3	Lake1670-14	Sublist 3	Sublist 3	Sublist 3	Sublist 3
14	2	Lake1685-14	Sublist 3	Sublist 3	Sublist 3	Sublist 3
14	3	Lake1717-14	Sublist 3	Sublist 3	Sublist 2	Sublist 3
14	5	Lake1729-14	Sublist 3	Sublist 3	Sublist 2	Sublist 3
14	51	Lake1741-14	Sublist 3	Sublist 3	Sublist 3	Sublist 3
14	41	Lake1757-14	Sublist 3	Sublist 3	Sublist 5	Sublist 3
14		Lake1768-14	Sublist 3	Sublist 3	Sublist 2	Sublist 3
14	12	Lake1770-14	Sublist 3	Sublist 3	Sublist 2	Sublist 3
14	21	Lake1930-14	Sublist 3	Sublist 3	Sublist 3	Sublist 3
14	6	Lake1950-14	Sublist 3	Sublist 3	Sublist 5	Sublist 3
14	38	Lake1970-14	Sublist 3	Sublist 3	Sublist 5	Sublist 3
17	22	Laurel Lake 1-17	Sublist 3	Sublist 3	Sublist 3	Sublist 3
17	173	Laurel Lake 2-17	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01		Lawrenceville School Camp Pond-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01		Layfayette Municipal Pond-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
15	7	Lazy River Lake-15	Sublist 2	Sublist 3	Sublist 3	Sublist 3
12	77	Lefferts Lake-12	Sublist 2	Sublist 3	Sublist 3	Sublist 3
15	318	Lenape Lake-15	Sublist 2	Sublist 3	Sublist 2	Sublist 5
20	5	Liberty Lake-20	Sublist 2	Sublist 3	Sublist 3	Sublist 3
15	24	Lily Lake-15	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
05	8	Lincoln Park Lake-05	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
18	6	Linden Lake-18	Sublist 3	Sublist 3	Sublist 3	Sublist 5
03	20	Lindy Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
08	3	Lingerts Pond-08	Sublist 3	Sublist 3	Sublist 2	Sublist 3
03	6	Lionhead Lake-03	Sublist 5	Sublist 3	Sublist 3	Sublist 3
01	32	Long Pine Pond-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	15	Lookover Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
20	16	Lower Sylvan Lake-20	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
16	57	Ludlams Pond-16	Sublist 5	Sublist 3	Sublist 3	Sublist 3
17		Mac's Pond-17	Sublist 3	Sublist 3	Sublist 3	Sublist 3
17	103	Malaga Lake-17	Sublist 5	Sublist 3	Sublist 3	Sublist 5
13	61	Manahawkin Lake-13	Sublist 5	Sublist 2	Sublist 3	Sublist 3
09		Manalapan Lake-09	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
12	752	Manasquan Reservoir-12	Sublist 3	Sublist 3	Sublist 2	Sublist 5
15	31	Maple Lake-15	Sublist 3	Sublist 3	Sublist 2	Sublist 3
01		Marcia Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
08	16	Marine Lake-08	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	5	Marlton Lake-18	Sublist 3	Sublist 3	Sublist 3	Sublist 5
17	22	Mary Elmer Lake-17	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
01	48	Mashipacong Pond-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
17		Maskells Mill Pond-17	Sublist 3	Sublist 3	Sublist 2	Sublist 5
03	61	McDonalds Ponds-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
17	22	Memorial Lake-17	Sublist 3	Sublist 4A	Sublist 3	Sublist 5

WMA	Lake Acres	Assessment Unit	Recreation (Primary Contact)	Recreation (Aesthetics)	Aquatic Life	Fish Consumption
17	34	Menantico Lake-17	Sublist 3	Sublist 3	Sublist 2	Sublist 3
06		Mendham Twp Pond-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
11	285	Mercer Co. Park Lake-11	Sublist 3	Sublist 3	Sublist 2	Sublist 3
01	649	Merrill Creek Reservoir-01	Sublist 3	Sublist 3	Sublist 2	Sublist 5
14	47	Mill Pond-14	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	24	Mimosa Lakes-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
08	56	Mine Hill Lake-08	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	132	Mirror Lake-19	Sublist 5	Sublist 3	Sublist 3	Sublist 5
19	3	Mohegan Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	522	Monksville Reservoir-03	Sublist 3	Sublist 3	Sublist 2	Sublist 5
03	14	Morse Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
14	23	Moss Mill Lake-14	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	18	Mount Hope Pond-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	20	Mount Laurel Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	117	Mountain Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 5
06	78	Mountain Lake-06	Sublist 5	Sublist 3	Sublist 3	Sublist 5
03	4	Mountain Springs Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	14	Mt. Glen Lakes-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	8	Mt. Misery Lake-19	Sublist 2	Sublist 3	Sublist 2	Sublist 3
18	27	Narraticon Lake-18	Sublist 3	Sublist 3	Sublist 3	Sublist 3
02	25	Neepaulin Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
15	11	New Brooklyn Lake-15	Sublist 3	Sublist 4A	Sublist 3	Sublist 5
09	17	New Market Pond-09	Sublist 3	Sublist 3	Sublist 5	Sublist 5
18	83	Newton Lake-18	Sublist 3	Sublist 3	Sublist 3	Sublist 5
		North Community	Sublist 3	Sublist 3	Sublist 3	Sublist 3
05	17	North Hudson Park Lake-05	Sublist 3	Sublist 2	Sublist 3	Sublist 3
06	4	NYODA Camp-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	465	Oak Ridge Reservoir-03	Sublist 3	Sublist 3	Sublist 3	Sublist 5
20	38	Oakford Lake-20	Sublist 3	Sublist 3	Sublist 3	Sublist 3
19	29	Oakwood Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
13	8	Ocean County Park Lake-13	Sublist 5	Sublist 3	Sublist 3	Sublist 3
13	9	Ocean Twp Bathing Beach-13	Sublist 5	Sublist 3	Sublist 3	Sublist 3
17		Old Cedar Lake-17	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	23	Old Forge Lake-19	Sublist 3	Sublist 3	Sublist 3	Sublist 3
04	13	Oldham Pond-04	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18		Oldmans Creek Lake-18	Sublist 2	Sublist 3	Sublist 3	Sublist 3
05	733	Oradell Reservoir-05	Sublist 3	Sublist 3	Sublist 3	Sublist 5
14	109	Oswego Lake-14	Sublist 3	Sublist 3	Sublist 3	Sublist 3
14	5	Otter Pond-14	Sublist 3	Sublist 3	Sublist 2	Sublist 3
16	13	Outdoor World Lake-16	Sublist 2	Sublist 3	Sublist 3	Sublist 3
16		Outdoor World Sea Pines Lake-16	Sublist 2	Sublist 3	Sublist 3	Sublist 3
05	229	Overpeck Creek-05	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
03	83	Packanack Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	4	Pakim Pond-19	Sublist 3	Sublist 3	Sublist 2	Sublist 3
02	10	Panorama Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	42	Panther Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
14	22	Paradise Lake-14	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	155	Parsippany Lake-06	Sublist 5	Sublist 3	Sublist 3	Sublist 3
17	91	Parvin Lake-17	Sublist 5	Sublist 3	Sublist 2	Sublist 3
01	184	Paulins Kill Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
10	16	Peddie Lake-10	Sublist 3	Sublist 3	Sublist 2	Sublist 3
19	46	Pemberton Lake-19	Sublist 3	Sublist 3	Sublist 2	Sublist 3
		Penbryn Lake	Sublist 3	Sublist 3	Sublist 2	Sublist 3

Lakes

WMA	Lake Acres	Assessment Unit	Recreation (Primary Contact)	Recreation (Aesthetics)	Aquatic Life	Fish Consumption
03	180	Pia Costa Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
14	21	Pilgrim Lake-14	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	21	Pine Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
16		Pine Haven Lake-16	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	13	Pine Hill Scout Camp Lake-18	Sublist 2	Sublist 3	Sublist 3	Sublist 3
13	60	Pine Lake-13	Sublist 5	Sublist 3	Sublist 3	Sublist 3
19	60	Pine Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	142	Pinecliff Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	140	Pines Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	16	Pleasant Valley Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	39	Plymouth Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
13	35	Pohatcong Lake-13	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
03	184	Pompton Lake-03	Sublist 3	Sublist 4A	Sublist 3	Sublist 5
06		Pond at Conference Center (Left & Rt.)	Sublist 5	Sublist 3	Sublist 3	Sublist 3
03	8	Post Brook Farms Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	8	Powder Mill Pond-06	Sublist 5	Sublist 3	Sublist 3	Sublist 3
19	130	Presidential Lakes-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
20	157	Prospertown Lake-20	Sublist 3	Sublist 3	Sublist 2	Sublist 3
17	73	Rainbow Lake-17	Sublist 3	Sublist 3	Sublist 3	Sublist 3
06	36	Rainbow Lakes-06	Sublist 5	Sublist 3	Sublist 2	Sublist 3
03	95	Ramapo Lake-03	Sublist 3	Sublist 3	Sublist 2	Sublist 5
08	15	Randolph Park Lake-08	Sublist 5	Sublist 3	Sublist 3	Sublist 3
08	41	Ravine Lake-08	Sublist 5	Sublist 3	Sublist 3	Sublist 3
14	12	Red Wing Lakes-14	Sublist 2	Sublist 3	Sublist 3	Sublist 3
15	2	Resort Campground Lake-15	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	23	Ricabear Lake-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	7	Rickonda Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
11	41	Rising Sun-11	Sublist 3	Sublist 3	Sublist 3	Sublist 3
03	4	Rock Lodge Pond-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	18	Rock Ridge Lake-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
08	9	Rogerene Lake-08	Sublist 2	Sublist 3	Sublist 3	Sublist 3
10	29	Rosedale Lake-10	Sublist 3	Sublist 3	Sublist 3	Sublist 3
08	2266	Round Valley Reservoir Recreation Area-08	Sublist 2	Sublist 4A	Sublist 2	Sublist 5
08	31	Round Valley Reservoir-08	Sublist 2	Sublist 3	Sublist 2	Sublist 5
06	32	Ryker Lake-06	Sublist 3	Sublist 3	Sublist 2	Sublist 3
01	13	Saffin Pond-01	Sublist 3	Sublist 3	Sublist 2	Sublist 3
02	16	Saginaw Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	9	Saipe Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	16	Sand Pond-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	20	Sawmill Pond-01	Sublist 3	Sublist 3	Sublist 3	Sublist 5
01	46	Saxton Lake-01	Sublist 3	Sublist 3	Sublist 3	Sublist 3
03	2	Scarlet Oak Pond-03	Sublist 3	Sublist 3	Sublist 2	Sublist 3
02		Scenic Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
16		Seashore Campsites Lake-16	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01		Seneca Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
12	9	Shadow Lake-12	Sublist 3	Sublist 3	Sublist 2	Sublist 5
14	91	Shadow Lake-14	Sublist 3	Sublist 3	Sublist 3	Sublist 3
13	4	Shanock Lake-13	Sublist 3	Sublist 3	Sublist 2	Sublist 3
19	4	Shawnee Country Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	80	Shawnee Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
17	28	Shaws Mill Pond-17	Sublist 3	Sublist 3	Sublist 2	Sublist 3
03		Shepherds Lake-03	Sublist 3	Sublist 3	Sublist 2	Sublist 5
03	73	Sheppard Pond-03	Sublist 2	Sublist 3	Sublist 2	Sublist 3

WMA	Lake Acres	Assessment Unit	Recreation (Primary Contact)	Recreation (Aesthetics)	Aquatic Life	Fish Consumption
17	54	Sheppards Mill Pond-17	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19		Sherwood Forest Pond-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
08	7	Shongum Lake-08	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	61	Silver Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	23	Silver Lake-02	Sublist 3	Sublist 3	Sublist 2	Sublist 3
12	13	Silver Lake-12	Sublist 3	Sublist 3	Sublist 3	Sublist 3
03	37	Skyline Lakes-03	Sublist 5	Sublist 3	Sublist 3	Sublist 3
02		Sleep Valley Lake	Sublist 5	Sublist 3	Sublist 3	Sublist 3
15		Sleepy Hollow CG Lake-15	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	23	Smithville Lake-19	Sublist 3	Sublist 3	Sublist 3	Sublist 3
06	16	Sparta Lake-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	19	Speedwell Lake-06	Sublist 3	Sublist 3	Sublist 3	Sublist 5
12	22	Spring Lake-12	Sublist 3	Sublist 5	Sublist 5	Sublist 5
20	14	Spring Lake-20	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
08	13	Spruce Run Reservoir-08	Sublist 2	Sublist 3	Sublist 2	Sublist 5
13	193	Stafford Forge Lake-13	Sublist 3	Sublist 3	Sublist 3	Sublist 5
03	21	Star Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	36	Steeny Kill Lake-01	Sublist 3	Sublist 3	Sublist 3	Sublist 5
18		Stewart Lake-18	Sublist 3	Sublist 3	Sublist 3	Sublist 5
03	127	Stickle Pond-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
14	49	Stockton State-14	Sublist 3	Sublist 3	Sublist 3	Sublist 3
11	53	Stone Tavern-11	Sublist 3	Sublist 3	Sublist 3	Sublist 3
03		Stoneybrook Swim Club Lake-03	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	16	Stony Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	32	Strawbridge Lake-18	Sublist 5	Sublist 4A	Sublist 3	Sublist 5
19	28	Sturbridge Lake-19	Sublist 5	Sublist 3	Sublist 3	Sublist 3
13	58	Success Lake-13	Sublist 3	Sublist 3	Sublist 2	Sublist 5
02	12	Summit Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	5	Sun Air Campground-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
08	12	Sunset Lake-08	Sublist 5	Sublist 3	Sublist 3	Sublist 3
17	87	Sunset Lake-17	Sublist 5	Sublist 4A	Sublist 2	Sublist 5
03	11	Surprise Lake-03	Sublist 3	Sublist 3	Sublist 3	Sublist 3
19	10	Swan Lake-19	Sublist 3	Sublist 3	Sublist 3	Sublist 3
01	521	Swartswood Lake-01	Sublist 2	Sublist 4A	Sublist 3	Sublist 5
19	13	Tamarack Lake-19	Sublist 2	Sublist 3	Sublist 5	Sublist 3
02	34	Tamaracks Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	37	Taunton Lake-19	Sublist 2	Sublist 3	Sublist 5	Sublist 3
06	9	Telemark Lake-06	Sublist 5	Sublist 3	Sublist 3	Sublist 3
17	11	Thundergust Lake-17	Sublist 3	Sublist 3	Sublist 3	Sublist 3
19	15	Timber Lake-19	Sublist 5	Sublist 3	Sublist 5	Sublist 3
14	29	Timberline Lakes-14	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	9	Tomahawk Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
04	5	Toms Lake-04	Sublist 5	Sublist 3	Sublist 3	Sublist 3
09	22	Topanemus Lake-09	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
15	19	Tuckahoe Lake-15	Sublist 3	Sublist 2	Sublist 3	Sublist 3
12	25	Turkey Swamp-12	Sublist 3	Sublist 3	Sublist 3	Sublist 3
13	68	Turnmill Lake-13	Sublist 3	Sublist 2	Sublist 2	Sublist 3
17	827	Union Lake-17	Sublist 2	Sublist 3	Sublist 2	Sublist 5
19	4	Union Mill Lake-19	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	11	Upper East Highland Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	425	Upper Greenwood Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
01	22	Upper Mohawk Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
20	5	Upper Sylvan Lake-20	Sublist 5	Sublist 2	Sublist 3	Sublist 3

WMA	Lake Acres	Assessment Unit	Recreation (Primary Contact)	Recreation (Aesthetics)	Aquatic Life	Fish Consumption
06	90	Valhalla Lake-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	28	Vernon Valley Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
04	13	Verona Park Lake-04	Sublist 3	Sublist 4A	Sublist 3	Sublist 3
16	3	View Lake-16	Sublist 2	Sublist 3	Sublist 3	Sublist 3
02	28	Wallkill Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
03	2352	Wanaque Reservoir-03	Sublist 3	Sublist 3	Sublist 3	Sublist 5
01	13	Wapalanne Lake-01	Sublist 2	Sublist 3	Sublist 3	Sublist 3
18	3	Washington Lake-18	Sublist 2	Sublist 3	Sublist 3	Sublist 3
09	21	Washington Valley Reservoir-09	Sublist 3	Sublist 3	Sublist 2	Sublist 3
09	11	Watchung Lake-09	Sublist 3	Sublist 3	Sublist 3	Sublist 3
02	244	Wawayanda Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 5
09	4	Weamaconk Lake-09	Sublist 3	Sublist 5	Sublist 5	Sublist 3
07	69	Weequahic Lake-07	Sublist 3	Sublist 5	Sublist 5	Sublist 5
13	24	Wells Mills Reservoir-13	Sublist 3	Sublist 3	Sublist 3	Sublist 3
18	3	Wenonah Lake-18	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	33	West Lake-06	Sublist 5	Sublist 3	Sublist 3	Sublist 3
01	69	White Lake-01	Sublist 3	Sublist 3	Sublist 2	Sublist 3
02	30	White Lake-02	Sublist 2	Sublist 3	Sublist 3	Sublist 3
06	138	White Meadow Lake-06	Sublist 5	Sublist 3	Sublist 3	Sublist 3
06	5	White Rock Lake-06	Sublist 2	Sublist 3	Sublist 3	Sublist 3
19	124	Whitesbog Pond-19	Sublist 3	Sublist 3	Sublist 3	Sublist 5
17	124	Willow Grove Lake-17	Sublist 3	Sublist 3	Sublist 3	Sublist 5
17	61	Wilson Lake-17	Sublist 5	Sublist 3	Sublist 2	Sublist 5
		Wilson Park Lake	Sublist 3	Sublist 3	Sublist 2	Sublist 3
19	4	Wood Lake-19	Sublist 3	Sublist 3	Sublist 3	Sublist 3

Appendix B

303d List of Water Quality Limited Waters ("List of Impaired Waters")

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
02	02020007010020-01	Wallkill R (Ogdensburg to SpartaStation)	Temperature	L
02	02020007010040-01	Wallkill R(Hamburg SW Bdy to Ogdensburg)	Mercury	M
02	02020007010040-01	Wallkill R(Hamburg SW Bdy to Ogdensburg)	Phosphorus	M
02	02020007010040-01	Wallkill R(Hamburg SW Bdy to Ogdensburg)	Temperature	L
02	02020007010060-01	Beaver Run	Pollutant Unknown	L
02	02020007010070-01	Wallkill R(Martins Rd to Hamburg SW Bdy)	Mercury	M
02	02020007010070-01	Wallkill R(Martins Rd to Hamburg SW Bdy)	Phosphorus	M
02	02020007010070-01	Wallkill R(Martins Rd to Hamburg SW Bdy)	Total dissolved solids	L
02	02020007020030-01	Papakating Ck(Pellettown-Frankford Plns)	Unknown Toxic	L
02	02020007020060-01	Clove Brook (Papakating Ck)	Pathogens	H
02	02020007020060-01	Clove Brook (Papakating Ck)	Temperature	L
02	02020007020060-01	Clove Brook (Papakating Ck)	Unknown Toxic	L
02	02020007020070-01	Papakating Creek (below Pellettown)	Nitrate	M
02	02020007030010-01	Wallkill R(41d13m30s to Martins Road)	Pollutant Unknown	L
02	02020007030030-01	Wallkill River(Owens gage to 41d13m30s)	Phosphorus	M
02	02020007030040-01	Wallkill River(stateline to Owens gage)	Phosphorus	M
02	02020007040010-01	Black Ck(above/incl G.Gorge Resort trib)	Temperature	L
02	02020007040020-01	Black Creek (below G. Gorge Resort trib)	Dissolved Oxygen	M
02	02020007040050-01	Wawayanda Creek & tribs	Temperature	L
05	02030101170010-01	Hudson River	PCBs	M
05	02030101170010-01	Hudson River	Dioxin	M
05	02030101170010-01	Hudson River	Pollutant Unknown	L
06	02030103010050-01	Great Brook (below Green Village Rd)	Pollutant Unknown	L
06	02030103010060-01	Black Brook (Great Swamp NWR)	Arsenic	M
06	02030103010060-01	Black Brook (Great Swamp NWR)	Phosphorus	H
06	02030103010070-01	Passaic R Upr (Dead R to Osborn Mills)	Arsenic	M
06	02030103010070-01	Passaic R Upr (Dead R to Osborn Mills)	Cyanide	M
06	02030103010080-01	Dead River (above Harrisons Brook)	Phosphorus	H
06	02030103010080-01	Dead River (above Harrisons Brook)	Total suspended solids	L
06	02030103010100-01	Dead River (below Harrisons Brook)	Phosphorus	H
06	02030103010100-01	Dead River (below Harrisons Brook)	Total suspended solids	L
06	02030103010110-01	Passaic R Upr (Plainfield Rd to Dead R)	Arsenic	M
06	02030103010110-01	Passaic R Upr (Plainfield Rd to Dead R)	Copper	M
06	02030103010110-01	Passaic R Upr (Plainfield Rd to Dead R)	Cyanide	M
06	02030103010110-01	Passaic R Upr (Plainfield Rd to Dead R)	Lead	M
06	02030103010110-01	Passaic R Upr (Plainfield Rd to Dead R)	Mercury	M
06	02030103010110-01	Passaic R Upr (Plainfield Rd to Dead R)	Phosphorus	H
06	02030103010110-01	Passaic R Upr (Plainfield Rd to Dead R)	Total suspended solids	L
06	02030103010120-01	Passaic R Upr (Snyder to Plainfield Rd)	Arsenic	M
06	02030103010120-01	Passaic R Upr (Snyder to Plainfield Rd)	Copper	M
06	02030103010120-01	Passaic R Upr (Snyder to Plainfield Rd)	Cyanide	M
06	02030103010120-01	Passaic R Upr (Snyder to Plainfield Rd)	Lead	M
06	02030103010120-01	Passaic R Upr (Snyder to Plainfield Rd)	Mercury	M
06	02030103010120-01	Passaic R Upr (Snyder to Plainfield Rd)	Phosphorus	H
06	02030103010120-01	Passaic R Upr (Snyder to Plainfield Rd)	Total suspended solids	L
06	02030103010130-01	Passaic R Upr (40d 45m to Snyder Ave)	Arsenic	M
06	02030103010130-01	Passaic R Upr (40d 45m to Snyder Ave)	Copper	M
06	02030103010130-01	Passaic R Upr (40d 45m to Snyder Ave)	Cyanide	M
06	02030103010130-01	Passaic R Upr (40d 45m to Snyder Ave)	Lead	M
06	02030103010130-01	Passaic R Upr (40d 45m to Snyder Ave)	Mercury	M
06	02030103010130-01	Passaic R Upr (40d 45m to Snyder Ave)	Phosphorus	H
06	02030103010130-01	Passaic R Upr (40d 45m to Snyder Ave)	Total suspended solids	L

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
06	02030103010150-01	Passaic R Upr (Columbia Rd to 40d 45m)	Arsenic	M
06	02030103010150-01	Passaic R Upr (Columbia Rd to 40d 45m)	Copper	M
06	02030103010150-01	Passaic R Upr (Columbia Rd to 40d 45m)	Cyanide	M
06	02030103010150-01	Passaic R Upr (Columbia Rd to 40d 45m)	Lead	M
06	02030103010150-01	Passaic R Upr (Columbia Rd to 40d 45m)	Mercury	M
06	02030103010150-01	Passaic R Upr (Columbia Rd to 40d 45m)	Phosphorus	H
06	02030103010150-01	Passaic R Upr (Columbia Rd to 40d 45m)	Total dissolved solids	L
06	02030103010150-01	Passaic R Upr (Columbia Rd to 40d 45m)	Total suspended solids	L
06	02030103010160-01	Passaic R Upr (HanoverRR to ColumbiaRd)	Phosphorus	H
06	02030103010160-01	Passaic R Upr (HanoverRR to ColumbiaRd)	Total dissolved solids	L
06	02030103010160-01	Passaic R Upr (HanoverRR to ColumbiaRd)	Total suspended solids	L
06	02030103010170-01	Passaic R Upr (Rockaway to Hanover RR)	Chlordane	M
06	02030103010170-01	Passaic R Upr (Rockaway to Hanover RR)	DDX	M
06	02030103010170-01	Passaic R Upr (Rockaway to Hanover RR)	Mercury	M
06	02030103010170-01	Passaic R Upr (Rockaway to Hanover RR)	PCBs	M
06	02030103010170-01	Passaic R Upr (Rockaway to Hanover RR)	Phosphorus	H
06	02030103010170-01	Passaic R Upr (Rockaway to Hanover RR)	Total dissolved solids	L
06	02030103010170-01	Passaic R Upr (Rockaway to Hanover RR)	Total suspended solids	L
06	02030103010180-01	Passaic R Upr (Pine Bk br to Rockaway)	Arsenic	M
06	02030103010180-01	Passaic R Upr (Pine Bk br to Rockaway)	Chlordane	M
06	02030103010180-01	Passaic R Upr (Pine Bk br to Rockaway)	DDX	M
06	02030103010180-01	Passaic R Upr (Pine Bk br to Rockaway)	Mercury	M
06	02030103010180-01	Passaic R Upr (Pine Bk br to Rockaway)	PCBs	M
06	02030103010180-01	Passaic R Upr (Pine Bk br to Rockaway)	Phosphorus	H
06	02030103020010-01	Whippany R (above road at 74d 33m)	Temperature	L
06	02030103020020-01	Whippany R (Wash. Valley Rd to 74d 33m)	Temperature	L
06	02030103020040-01	Whippany R(Lk Pocahontas to Wash Val Rd)	Phosphorus	H
06	02030103020050-01	Whippany R (Malapardis to Lk Pocahontas)	Phosphorus	H
06	02030103020100-01	Whippany R (Rockaway R to Malapardis Bk)	Dissolved Oxygen	M
06	02030103020100-01	Whippany R (Rockaway R to Malapardis Bk)	Lead	M
06	02030103020100-01	Whippany R (Rockaway R to Malapardis Bk)	Phosphorus	H
06	02030103030030-01	Rockaway R (above Longwood Lake outlet)	Mercury	M
06	02030103030040-01	Rockaway R (Stephens Bk to Longwood Lk)	Mercury	M
06	02030103030040-01	Rockaway R (Stephens Bk to Longwood Lk)	Pollutant Unknown	L
06	02030103030060-01	Green Pond Brook (below Burnt Meadow Bk)	Pollutant Unknown	L
06	02030103030070-01	Rockaway R (74d 33m 30s to Stephens Bk)	Mercury	M
06	02030103030090-01	Rockaway R (BM 534 brdg to 74d 33m 30s)	Mercury	M
06	02030103030090-01	Rockaway R (BM 534 brdg to 74d 33m 30s)	Pollutant Unknown	L
06	02030103030110-01	Beaver Brook (Morris County)	Mercury	M
06	02030103030110-01	Beaver Brook (Morris County)	pH	M
06	02030103030130-01	Stony Brook (Boonton)	Pollutant Unknown	L
06	02030103030140-01	Rockaway R (Stony Brook to BM 534 brdg)	Arsenic	M
06	02030103030140-01	Rockaway R (Stony Brook to BM 534 brdg)	Mercury	M
06	02030103030140-01	Rockaway R (Stony Brook to BM 534 brdg)	PCE/TCE	M
06	02030103030140-01	Rockaway R (Stony Brook to BM 534 brdg)	Pollutant Unknown	L
06	02030103030150-01	Rockaway R (Boonton dam to Stony Brook)	Arsenic	M
06	02030103030150-01	Rockaway R (Boonton dam to Stony Brook)	Mercury	M
06	02030103030150-01	Rockaway R (Boonton dam to Stony Brook)	PCE/TCE	M
06	02030103030170-01	Rockaway R (Passaic R to Boonton dam)	Mercury	M
06	02030103030170-01	Rockaway R (Passaic R to Boonton dam)	PCE/TCE	M
06	02030103030170-01	Rockaway R (Passaic R to Boonton dam)	Phosphorus	H
06	02030103040010-01	Passaic R Upr (Pompton R to Pine Bk)	Arsenic	M
06	02030103040010-01	Passaic R Upr (Pompton R to Pine Bk)	Chlordane	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
06	02030103040010-01	Passaic R Upr (Pompton R to Pine Bk)	DDX	M
06	02030103040010-01	Passaic R Upr (Pompton R to Pine Bk)	Mercury	M
06	02030103040010-01	Passaic R Upr (Pompton R to Pine Bk)	PCBs	M
06	02030103040010-01	Passaic R Upr (Pompton R to Pine Bk)	Phosphorus	H
03	02030103050080-01	Pequannock R (below Macopin gage)	Chlordane	M
03	02030103050080-01	Pequannock R (below Macopin gage)	DDX	M
03	02030103050080-01	Pequannock R (below Macopin gage)	Mercury	M
03	02030103050060-01	Pequannock R(Macopin gage to Charl'brg)	Dissolved Oxygen	M
03	02030103050080-01	Pequannock R (below Macopin gage)	PCBs	M
03	02030103070020-01	Belcher Creek (Pinecliff Lake & below)	Temperature	L
03	02030103070030-01	Wanaque R/Greenwood Lk(aboveMonks gage)	Unknown Toxic	L
03	02030103070040-01	West Brook/Burnt Meadow Brook	Temperature	L
03	02030103070050-01	Wanaque Reservior (below Monks gage)	Dissolved Oxygen	M
03	02030103070050-01	Wanaque Reservior (below Monks gage)	Pathogens	H
03	02030103070050-01	Wanaque Reservior (below Monks gage)	Phosphorus	H
03	02030103070050-01	Wanaque Reservior (below Monks gage)	Temperature	L
03	02030103070060-01	Meadow Brook/High Mountain Brook	Pollutant Unknown	L
03	02030103070070-01	Wanaque R/Posts Bk (below reservior)	Phosphorus	H
03	02030103070070-01	Wanaque R/Posts Bk (below reservior)	Unknown Toxic	L
03	02030103100070-01	Ramapo R (below Crystal Lake bridge)	Dissolved Oxygen	M
03	02030103100070-01	Ramapo R (below Crystal Lake bridge)	pH	M
03	02030103110010-01	Lincoln Park tribs (Pompton River)	Phosphorus	H
03	02030103110020-01	Pompton River	Chlordane	M
03	02030103110020-01	Pompton River	DDX	M
03	02030103110020-01	Pompton River	Lead	M
03	02030103110020-01	Pompton River	Mercury	M
03	02030103110020-01	Pompton River	PCBs	M
03	02030103110020-01	Pompton River	Phosphorus	H
03	02030103110020-01	Pompton River	Unknown Toxic	L
04	02030103120020-01	Peckman River (below CG Res trib)	Dioxin	M
04	02030103120020-01	Peckman River (below CG Res trib)	PCBs	M
04	02030103120020-01	Peckman River (below CG Res trib)	Pollutant Unknown	L
04	02030103120030-01	Preakness Brook / Naachtpunkt Brook	Pollutant Unknown	L
04	02030103120040-01	Molly Ann Brook	Pollutant Unknown	L
04	02030103120050-01	Goffle Brook	Total dissolved solids	L
04	02030103120060-01	Deepavaal Brook	Pollutant Unknown	L
04	02030103120070-01	Passaic R Lwr (Fair Lawn Ave to Goffle)	Arsenic	M
04	02030103120070-01	Passaic R Lwr (Fair Lawn Ave to Goffle)	Chlordane	M
04	02030103120070-01	Passaic R Lwr (Fair Lawn Ave to Goffle)	Cyanide	M
04	02030103120070-01	Passaic R Lwr (Fair Lawn Ave to Goffle)	DDX	M
04	02030103120070-01	Passaic R Lwr (Fair Lawn Ave to Goffle)	Dioxin	M
04	02030103120070-01	Passaic R Lwr (Fair Lawn Ave to Goffle)	Mercury	M
04	02030103120070-01	Passaic R Lwr (Fair Lawn Ave to Goffle)	PCBs	M
04	02030103120070-01	Passaic R Lwr (Fair Lawn Ave to Goffle)	Phosphorus	H
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	Arsenic	M
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	Chlordane	M
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	Cyanide	M
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	DDX	M
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	Dioxin	M
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	Mercury	M
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	Pathogens	H
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	PCBs	M
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	Phosphorus	H

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	Arsenic	M
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	Chlordane	M
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	Cyanide	M
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	DDX	M
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	Dioxin	M
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	Mercury	M
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	Pathogens	H
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	PCBs	M
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	Phosphorus	H
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Arsenic	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Cadmium	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Chlordane	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Chromium	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Copper	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Cyanide	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	DDX	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Dioxin	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Lead	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Mercury	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Pathogens	H
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	PCBs	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Phosphorus	H
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Silver	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Thallium	M
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Zinc	M
04	02030103140010-01	Hohokus Bk (above Godwin Ave)	Total dissolved solids	L
04	02030103140010-01	Hohokus Bk (above Godwin Ave)	Unknown Toxic	L
04	02030103140020-01	Hohokus Bk(Pennington Ave to Godwin Ave)	Unknown Toxic	L
04	02030103140030-01	Hohokus Bk(below Pennington Ave)	Unknown Toxic	L
04	02030103140040-01	Saddle River (above Rt 17)	pH	M
04	02030103140040-01	Saddle River (above Rt 17)	Temperature	L
04	02030103140040-01	Saddle River (above Rt 17)	Unknown Toxic	L
04	02030103140050-01	Saddle River (Rt 4 to Rt 17)	Arsenic	M
04	02030103140050-01	Saddle River (Rt 4 to Rt 17)	Mercury	M
04	02030103140050-01	Saddle River (Rt 4 to Rt 17)	pH	M
04	02030103140050-01	Saddle River (Rt 4 to Rt 17)	Phosphorus	M
04	02030103140050-01	Saddle River (Rt 4 to Rt 17)	Total dissolved solids	L
04	02030103140050-01	Saddle River (Rt 4 to Rt 17)	Total suspended solids	L
04	02030103140050-01	Saddle River (Rt 4 to Rt 17)	Unknown Toxic	L
04	02030103140060-01	Saddle River (Lodi gage to Rt 4)	Arsenic	M
04	02030103140060-01	Saddle River (Lodi gage to Rt 4)	Mercury	M
04	02030103140060-01	Saddle River (Lodi gage to Rt 4)	Phosphorus	M
04	02030103140060-01	Saddle River (Lodi gage to Rt 4)	Total dissolved solids	L
04	02030103140060-01	Saddle River (Lodi gage to Rt 4)	Total suspended solids	L
04	02030103140060-01	Saddle River (Lodi gage to Rt 4)	Unknown Toxic	L
04	02030103140070-01	Saddle River (below Lodi gage)	Arsenic	M
04	02030103140070-01	Saddle River (below Lodi gage)	Dioxin	M
04	02030103140070-01	Saddle River (below Lodi gage)	Mercury	M
04	02030103140070-01	Saddle River (below Lodi gage)	PCBs	M
04	02030103140070-01	Saddle River (below Lodi gage)	Phosphorus	M
04	02030103140070-01	Saddle River (below Lodi gage)	Total dissolved solids	L
04	02030103140070-01	Saddle River (below Lodi gage)	Total suspended solids	L
04	02030103140070-01	Saddle River (below Lodi gage)	Unknown Toxic	L

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
04	02030103150010-01	Third River	Dioxin	M
04	02030103150010-01	Third River	PCBs	M
04	02030103150010-01	Third River	Pollutant Unknown	L
04	02030103150020-01	Second River	Pathogens	H
04	02030103150020-01	Second River	pH	M
04	02030103150020-01	Second River	Phosphorus	M
04	02030103150030-01	Passaic R Lwr (Second R to Saddle R)	Arsenic	M
04	02030103150030-01	Passaic R Lwr (Second R to Saddle R)	Chlordane	M
04	02030103150030-01	Passaic R Lwr (Second R to Saddle R)	DDX	M
04	02030103150030-01	Passaic R Lwr (Second R to Saddle R)	Dioxin	M
04	02030103150030-01	Passaic R Lwr (Second R to Saddle R)	Mercury	M
04	02030103150030-01	Passaic R Lwr (Second R to Saddle R)	Pathogens	H
04	02030103150030-01	Passaic R Lwr (Second R to Saddle R)	PCBs	M
04	02030103150030-01	Passaic R Lwr (Second R to Saddle R)	Phosphorus	M
04	02030103150040-01	Passaic R Lwr (4th St br to Second R)	Arsenic	M
04	02030103150040-01	Passaic R Lwr (4th St br to Second R)	Chlordane	M
04	02030103150040-01	Passaic R Lwr (4th St br to Second R)	DDX	M
04	02030103150040-01	Passaic R Lwr (4th St br to Second R)	Dioxin	M
04	02030103150040-01	Passaic R Lwr (4th St br to Second R)	Mercury	M
04	02030103150040-01	Passaic R Lwr (4th St br to Second R)	PCBs	M
04	02030103150040-01	Passaic R Lwr (4th St br to Second R)	Pollutant Unknown	L
04	02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	Arsenic	M
04	02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	Chlordane	M
04	02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	DDX	M
04	02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	Dioxin	M
04	02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	Dissolved Oxygen	M
04	02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	Mercury	M
04	02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	Pathogens	H
04	02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	PCBs	M
04	02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	pH	M
05	02030103170010-01	Pascack Brook (above Westwood gage)	Total dissolved solids	L
05	02030103170020-01	Pascack Brook (below Westwood gage)	Arsenic	M
05	02030103170020-01	Pascack Brook (below Westwood gage)	Mercury	M
05	02030103170020-01	Pascack Brook (below Westwood gage)	Total dissolved solids	L
05	02030103170030-01	Hackensack River (above Old Tappan gage)	Arsenic	M
05	02030103170030-01	Hackensack River (above Old Tappan gage)	Mercury	M
05	02030103170030-01	Hackensack River (above Old Tappan gage)	Phosphorus	M
05	02030103170040-01	Tenakill Brook	Arsenic	M
05	02030103170040-01	Tenakill Brook	Mercury	M
05	02030103170040-01	Tenakill Brook	Pollutant Unknown	L
05	02030103170050-01	Dwars Kill	Mercury	M
05	02030103170060-01	Hackensack R (Oradell to OldTappan gage)	Arsenic	M
05	02030103170060-01	Hackensack R (Oradell to OldTappan gage)	Mercury	M
05	02030103170060-01	Hackensack R (Oradell to OldTappan gage)	Pathogens	M
05	02030103170060-01	Hackensack R (Oradell to OldTappan gage)	Phosphorus	M
05	02030103180030-01	Hackensack R (Ft Lee Rd to Oradell gage)	Dioxin	M
05	02030103180030-01	Hackensack R (Ft Lee Rd to Oradell gage)	Mercury	M
05	02030103180030-01	Hackensack R (Ft Lee Rd to Oradell gage)	Pathogens	M
05	02030103180030-01	Hackensack R (Ft Lee Rd to Oradell gage)	PCBs	M
05	02030103180030-01	Hackensack R (Ft Lee Rd to Oradell gage)	Phosphorus	M
05	02030103180030-01	Hackensack R (Ft Lee Rd to Oradell gage)	Total suspended solids	L
05	02030103180040-01	Overpeck Creek	Chlordane	M
05	02030103180040-01	Overpeck Creek	DDX	M

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05	02030103180040-01	Overpeck Creek	Dioxin	M
05	02030103180040-01	Overpeck Creek	Mercury	M
05	02030103180040-01	Overpeck Creek	Pathogens	H
05	02030103180040-01	Overpeck Creek	PCBs	M
05	02030103180040-01	Overpeck Creek	pH	M
05	02030103180040-01	Overpeck Creek	Total dissolved solids	L
05	02030103180050-01	Hackensack R (Bellmans Ck to Ft Lee Rd)	Dioxin	M
05	02030103180050-01	Hackensack R (Bellmans Ck to Ft Lee Rd)	Dissolved Oxygen	M
05	02030103180050-01	Hackensack R (Bellmans Ck to Ft Lee Rd)	Pathogens	M
05	02030103180050-01	Hackensack R (Bellmans Ck to Ft Lee Rd)	PCBs	M
05	02030103180050-01	Hackensack R (Bellmans Ck to Ft Lee Rd)	Turbidity	L
05	02030103180060-01	Berrys Creek (above Paterson Ave)	Arsenic	M
05	02030103180060-01	Berrys Creek (above Paterson Ave)	Copper	M
05	02030103180060-01	Berrys Creek (above Paterson Ave)	Dioxin	M
05	02030103180060-01	Berrys Creek (above Paterson Ave)	Lead	M
05	02030103180060-01	Berrys Creek (above Paterson Ave)	Mercury	M
05	02030103180060-01	Berrys Creek (above Paterson Ave)	PCBs	M
05	02030103180060-01	Berrys Creek (above Paterson Ave)	Turbidity	L
05	02030103180070-01	Berrys Creek (below Paterson Ave)	Arsenic	M
05	02030103180070-01	Berrys Creek (below Paterson Ave)	Chlorinated benzene	M
05	02030103180070-01	Berrys Creek (below Paterson Ave)	Chromium	M
05	02030103180070-01	Berrys Creek (below Paterson Ave)	Copper	M
05	02030103180070-01	Berrys Creek (below Paterson Ave)	Dioxin	M
05	02030103180070-01	Berrys Creek (below Paterson Ave)	Lead	M
05	02030103180070-01	Berrys Creek (below Paterson Ave)	Mercury	M
05	02030103180070-01	Berrys Creek (below Paterson Ave)	PCBs	M
05	02030103180070-01	Berrys Creek (below Paterson Ave)	Turbidity	L
05	02030103180080-01	Hackensack R (Rt 3 to Bellmans Ck)	Dioxin	M
05	02030103180080-01	Hackensack R (Rt 3 to Bellmans Ck)	Dissolved Oxygen	M
05	02030103180080-01	Hackensack R (Rt 3 to Bellmans Ck)	Mercury	M
05	02030103180080-01	Hackensack R (Rt 3 to Bellmans Ck)	PCBs	M
05	02030103180080-01	Hackensack R (Rt 3 to Bellmans Ck)	pH	M
05	02030103180080-01	Hackensack R (Rt 3 to Bellmans Ck)	Turbidity	L
05	02030103180090-01	Hackensack R (Amtrak bridge to Rt 3)	Dioxin	M
05	02030103180090-01	Hackensack R (Amtrak bridge to Rt 3)	Dissolved Oxygen	M
05	02030103180090-01	Hackensack R (Amtrak bridge to Rt 3)	Mercury	M
05	02030103180090-01	Hackensack R (Amtrak bridge to Rt 3)	PCBs	M
05	02030103180100-01	Hackensack R (below Amtrak bridge)	Dioxin	M
05	02030103180100-01	Hackensack R (below Amtrak bridge)	Dissolved Oxygen	M
05	02030103180100-01	Hackensack R (below Amtrak bridge)	Mercury	M
05	02030103180100-01	Hackensack R (below Amtrak bridge)	PCBs	M
05	02030103180100-01	Hackensack R (below Amtrak bridge)	pH	M
05	02030103180100-01	Hackensack R (below Amtrak bridge)	Turbidity	L
07	02030104010010-01	Newark Airport Peripheral Ditch	Dioxin	M
07	02030104010010-01	Newark Airport Peripheral Ditch	PCBs	M
07	02030104010020-01	Kill Van Kull West	Dioxin	M
07	02030104010020-01	Kill Van Kull West	PAHs	M
07	02030104010020-01	Kill Van Kull West	PCBs	M
07	02030104010020-01	Kill Van Kull West	Pesticides	M
07	02030104010020-02	Newark Bay / Kill Van Kull (74d 07m 30s)	Dioxin	M
07	02030104010020-02	Newark Bay / Kill Van Kull (74d 07m 30s)	PAHs	M
07	02030104010020-02	Newark Bay / Kill Van Kull (74d 07m 30s)	PCBs	M
07	02030104010020-02	Newark Bay / Kill Van Kull (74d 07m 30s)	Pesticides	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
07	02030104010030-01	Kill Van Kull East	Dioxin	M
07	02030104010030-01	Kill Van Kull East	PAHs	M
07	02030104010030-01	Kill Van Kull East	PCBs	M
07	02030104010030-01	Kill Van Kull East	Pesticides	M
07	02030104010030-02	Upper NY Bay / Kill Van Kull (74d07m30s)	Dioxin	M
07	02030104010030-02	Upper NY Bay / Kill Van Kull (74d07m30s)	PAHs	M
07	02030104010030-02	Upper NY Bay / Kill Van Kull (74d07m30s)	PCBs	M
07	02030104010030-02	Upper NY Bay / Kill Van Kull (74d07m30s)	Pesticides	M
07	02030104020020-01	Elizabeth R (Elizabeth CORP BDY to I-78)	Mercury	M
07	02030104020020-01	Elizabeth R (Elizabeth CORP BDY to I-78)	Phosphorus	M
07	02030104020020-01	Elizabeth R (Elizabeth CORP BDY to I-78)	Total dissolved solids	L
07	02030104020030-01	Arthur Kill North	Dioxin	M
07	02030104020030-01	Arthur Kill North	PAHs	M
07	02030104020030-01	Arthur Kill North	PCBs	M
07	02030104020030-01	Arthur Kill North	Pesticides	M
07	02030104020030-02	Elizabeth R (below Elizabeth CORP BDY)	Dioxin	M
07	02030104020030-02	Elizabeth R (below Elizabeth CORP BDY)	PCBs	M
07	02030104020030-02	Elizabeth R (below Elizabeth CORP BDY)	Phosphorus	M
07	02030104020030-02	Elizabeth R (below Elizabeth CORP BDY)	Total dissolved solids	L
07	02030104030010-01	Arthur Kill South	Dioxin	M
07	02030104030010-01	Arthur Kill South	PAHs	M
07	02030104030010-01	Arthur Kill South	PCBs	M
07	02030104030010-01	Arthur Kill South	Pesticides	M
07	02030104030010-02	Morses Creek / Piles Creek	Dioxin	M
07	02030104030010-02	Morses Creek / Piles Creek	PAHs	M
07	02030104030010-02	Morses Creek / Piles Creek	PCBs	M
07	02030104030010-02	Morses Creek / Piles Creek	Pesticides	M
07	02030104030010-02	Morses Creek / Piles Creek	Phosphorus	M
07	02030104050010-01	Rahway River WB	Phosphorus	M
07	02030104050010-01	Rahway River WB	Sulfate	M
07	02030104050010-01	Rahway River WB	Total dissolved solids	L
07	02030104050040-01	Rahway R (Kenilworth Blvd to EB / WB)	Arsenic	M
07	02030104050040-01	Rahway R (Kenilworth Blvd to EB / WB)	Phosphorus	M
07	02030104050060-01	Rahway R(Robinsons Br to KenilworthBlvd)	Arsenic	M
07	02030104050060-01	Rahway R(Robinsons Br to KenilworthBlvd)	Mercury	M
07	02030104050060-01	Rahway R(Robinsons Br to KenilworthBlvd)	Phosphorus	M
07	02030104050060-01	Rahway R(Robinsons Br to KenilworthBlvd)	Total suspended solids	L
07	02030104050070-01	Robinsons Br Rahway R (above Lake Ave)	Pollutant Unknown	L
07	02030104050080-01	Robinsons Br Rahway R (below Lake Ave)	Arsenic	M
07	02030104050080-01	Robinsons Br Rahway R (below Lake Ave)	Mercury	M
07	02030104050080-01	Robinsons Br Rahway R (below Lake Ave)	Phosphorus	M
07	02030104050090-01	Rahway River SB	Dioxin	M
07	02030104050090-01	Rahway River SB	Mercury	M
07	02030104050090-01	Rahway River SB	PCBs	M
07	02030104050090-01	Rahway River SB	Phosphorus	M
07	02030104050090-01	Rahway River SB	Total dissolved solids	L
07	02030104050100-01	Rahway River (below Robinsons Branch)	Dioxin	M
07	02030104050100-01	Rahway River (below Robinsons Branch)	PCBs	M
07	02030104050110-01	Woodbridge Creek	Dioxin	M
07	02030104050110-01	Woodbridge Creek	PCBs	M
07	02030104050120-01	Arthur Kill waterfront (below Grasselli)	Dioxin	M
07	02030104050120-01	Arthur Kill waterfront (below Grasselli)	PAHs	M
07	02030104050120-01	Arthur Kill waterfront (below Grasselli)	PCBs	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
07	02030104050120-01	Arthur Kill waterfront (below Grasselli)	Pesticides	M
12	02030104060010-01	Cheesequake Creek / Whale Creek	Chlordane	M
12	02030104060010-01	Cheesequake Creek / Whale Creek	DDX	M
12	02030104060010-01	Cheesequake Creek / Whale Creek	Dissolved Oxygen	M
12	02030104060010-01	Cheesequake Creek / Whale Creek	Mercury	M
12	02030104060010-01	Cheesequake Creek / Whale Creek	PCBs	M
12	02030104060020-01	Matawan Creek (above Ravine Drive)	Arsenic	M
12	02030104060020-01	Matawan Creek (above Ravine Drive)	Copper	M
12	02030104060020-01	Matawan Creek (above Ravine Drive)	Lead	M
12	02030104060020-01	Matawan Creek (above Ravine Drive)	PCBs	M
12	02030104060020-01	Matawan Creek (above Ravine Drive)	pH	M
12	02030104060030-01	Matawan Creek (below Ravine Drive)	Chlordane	M
12	02030104060030-01	Matawan Creek (below Ravine Drive)	DDX	M
12	02030104060030-01	Matawan Creek (below Ravine Drive)	Dissolved Oxygen	M
12	02030104060030-01	Matawan Creek (below Ravine Drive)	Mercury	M
12	02030104060030-01	Matawan Creek (below Ravine Drive)	Pathogens	H
12	02030104060030-01	Matawan Creek (below Ravine Drive)	PCBs	M
12	02030104060030-01	Matawan Creek (below Ravine Drive)	pH	M
12	02030104060030-01	Matawan Creek (below Ravine Drive)	Phosphorus	M
12	02030104060040-01	Chingarora Creek to Thorns Creek	Chlordane	M
12	02030104060040-01	Chingarora Creek to Thorns Creek	DDX	M
12	02030104060040-01	Chingarora Creek to Thorns Creek	Dissolved Oxygen	M
12	02030104060040-01	Chingarora Creek to Thorns Creek	Mercury	M
12	02030104060040-01	Chingarora Creek to Thorns Creek	Pathogens	H
12	02030104060040-01	Chingarora Creek to Thorns Creek	PCBs	M
12	02030104060050-01	Waackaack Creek	Chlordane	M
12	02030104060050-01	Waackaack Creek	DDX	M
12	02030104060050-01	Waackaack Creek	Dissolved Oxygen	M
12	02030104060050-01	Waackaack Creek	Mercury	M
12	02030104060050-01	Waackaack Creek	PCBs	M
12	02030104060060-01	Pews Creek to Shrewsbury River	Chlordane	M
12	02030104060060-01	Pews Creek to Shrewsbury River	DDX	M
12	02030104060060-01	Pews Creek to Shrewsbury River	Dissolved Oxygen	M
12	02030104060060-01	Pews Creek to Shrewsbury River	Mercury	M
12	02030104060060-01	Pews Creek to Shrewsbury River	PCBs	M
12	02030104070010-01	Hop Brook	Phosphorus	M
12	02030104070010-01	Hop Brook	Temperature	L
12	02030104070010-01	Hop Brook	Total suspended solids	L
12	02030104070020-01	Willow Brook	Pathogens	H
12	02030104070020-01	Willow Brook	Phosphorus	M
12	02030104070020-01	Willow Brook	Total suspended solids	L
12	02030104070030-01	Big Brook	Phosphorus	M
12	02030104070050-01	Mine Brook (Monmouth Co)	pH	M
12	02030104070060-01	Yellow Brook (below Bucks Mill)	Pollutant Unknown	L
12	02030104070070-01	Swimming River Reservior / Slope Bk	Pathogens	H
12	02030104070070-01	Swimming River Reservior / Slope Bk	pH	M
12	02030104070070-01	Swimming River Reservior / Slope Bk	Phosphorus	M
12	02030104070070-01	Swimming River Reservior / Slope Bk	Total suspended solids	L
12	02030104070080-01	Pine Brook / Hockhockson Brook	pH	M
12	02030104070100-01	Poricy Bk/Swimming R(below SwimmingR Rd)	DDX	M
12	02030104070100-01	Poricy Bk/Swimming R(below SwimmingR Rd)	Dissolved Oxygen	M
12	02030104070100-01	Poricy Bk/Swimming R(below SwimmingR Rd)	PCBs	M
12	02030104070110-01	Navesink R (below Rt 35)/LowerShrewsbury	DDX	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
12	02030104070110-01	Navesink R (below Rt 35)/LowerShrewsbury	Dissolved Oxygen	M
12	02030104070110-01	Navesink R (below Rt 35)/LowerShrewsbury	Mercury	M
12	02030104070110-01	Navesink R (below Rt 35)/LowerShrewsbury	PCBs	M
12	02030104070110-01	Navesink R (below Rt 35)/LowerShrewsbury	pH	M
12	02030104070110-01	Navesink R (below Rt 35)/LowerShrewsbury	Turbidity	L
12	02030104080010-01	Little Silver Creek / Town Neck Creek	DDX	M
12	02030104080010-01	Little Silver Creek / Town Neck Creek	Mercury	M
12	02030104080010-01	Little Silver Creek / Town Neck Creek	PCBs	M
12	02030104080020-01	Parkers Creek / Oceanport Creek	DDX	M
12	02030104080020-01	Parkers Creek / Oceanport Creek	Dissolved Oxygen	M
12	02030104080020-01	Parkers Creek / Oceanport Creek	Mercury	M
12	02030104080020-01	Parkers Creek / Oceanport Creek	PCBs	M
12	02030104080020-01	Parkers Creek / Oceanport Creek	pH	M
12	02030104080020-01	Parkers Creek / Oceanport Creek	Phosphorus	M
12	02030104080030-01	Branchport Creek	DDX	M
12	02030104080030-01	Branchport Creek	Dissolved Oxygen	M
12	02030104080030-01	Branchport Creek	Mercury	M
12	02030104080030-01	Branchport Creek	PCBs	M
12	02030104080040-01	Shrewsbury River (above Navesink River)	DDX	M
12	02030104080040-01	Shrewsbury River (above Navesink River)	Dissolved Oxygen	M
12	02030104080040-01	Shrewsbury River (above Navesink River)	Mercury	M
12	02030104080040-01	Shrewsbury River (above Navesink River)	PCBs	M
12	02030104080040-01	Shrewsbury River (above Navesink River)	pH	M
12	02030104090010-01	Whale Pond Brook	pH	M
12	02030104090020-01	Poplar Brook	Phosphorus	M
12	02030104090030-01	Deal Lake	pH	M
12	02030104090040-01	Shark River (above Remsen Mill gage)	Chlordane	M
12	02030104090040-01	Shark River (above Remsen Mill gage)	DDX	M
12	02030104090040-01	Shark River (above Remsen Mill gage)	Mercury	M
12	02030104090040-01	Shark River (above Remsen Mill gage)	PCBs	M
12	02030104090040-01	Shark River (above Remsen Mill gage)	Pollutant Unknown	L
12	02030104090050-01	Jumping Brook (Ocean Co)	pH	M
12	02030104090060-01	Shark River (below Remsen Mill gage)	Chlordane	M
12	02030104090060-01	Shark River (below Remsen Mill gage)	DDX	M
12	02030104090060-01	Shark River (below Remsen Mill gage)	Dissolved Oxygen	M
12	02030104090060-01	Shark River (below Remsen Mill gage)	Mercury	M
12	02030104090060-01	Shark River (below Remsen Mill gage)	PCBs	M
12	02030104090060-01	Shark River (below Remsen Mill gage)	pH	M
12	02030104090070-01	Wreck Pond Brook (above Rt 35)	pH	M
12	02030104090080-01	Wreck Pond Brook (below Rt 35)	pH	M
12	02030104100020-01	Manasquan R (Rt 9 to 74d17m50s road)	Total suspended solids	H
12	02030104100030-01	Manasquan R (West Farms Rd to Rt 9)	pH	H
12	02030104100030-01	Manasquan R (West Farms Rd to Rt 9)	Temperature	L
12	02030104100030-01	Manasquan R (West Farms Rd to Rt 9)	Total suspended solids	H
12	02030104100040-01	Marsh Bog Brook	pH	M
12	02030104100050-01	Manasquan R (gage to West Farms Rd)	pH	H
12	02030104100050-01	Manasquan R (gage to West Farms Rd)	Total suspended solids	H
12	02030104100060-01	Mingamahone Brook (above Asbury Rd)	pH	M
12	02030104100060-01	Mingamahone Brook (above Asbury Rd)	Total suspended solids	L
12	02030104100060-01	Mingamahone Brook (above Asbury Rd)	Turbidity	L
12	02030104100070-01	Mingamahone Brook (below Asbury Rd)	Pollutant Unknown	L
12	02030104100080-01	Manasquan R (74d07m30s to Squankum gage)	pH	H
12	02030104100090-01	Manasquan R (Rt 70 br to 74d07m30s)	Dissolved Oxygen	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
12	02030104100100-01	Manasquan River (below Rt 70 bridge)	Dissolved Oxygen	M
12	02030104910010-01	Raritan Bay (west of Thorns Ck)	Chlordane	M
12	02030104910010-01	Raritan Bay (west of Thorns Ck)	DDX	M
12	02030104910010-01	Raritan Bay (west of Thorns Ck)	Dioxin	M
12	02030104910010-01	Raritan Bay (west of Thorns Ck)	Dissolved Oxygen	M
12	02030104910010-01	Raritan Bay (west of Thorns Ck)	Mercury	M
12	02030104910010-01	Raritan Bay (west of Thorns Ck)	Pathogens	M
12	02030104910010-01	Raritan Bay (west of Thorns Ck)	PCBs	M
12	02030104910020-01	Sandy Hook Bay (east of Thorns Ck)	Chlordane	M
12	02030104910020-01	Sandy Hook Bay (east of Thorns Ck)	DDX	M
12	02030104910020-01	Sandy Hook Bay (east of Thorns Ck)	Dioxin	M
12	02030104910020-01	Sandy Hook Bay (east of Thorns Ck)	Dissolved Oxygen	M
12	02030104910020-01	Sandy Hook Bay (east of Thorns Ck)	Pathogens	M
12	02030104910020-01	Sandy Hook Bay (east of Thorns Ck)	PAHs	M
12	02030104910020-01	Sandy Hook Bay (east of Thorns Ck)	PCBs	M
12	02030104910020-01	Sandy Hook Bay (east of Thorns Ck)	Pesticides	M
12	02030104920010-01	Atl Coast(Sandy H to Navesink R)Inshore	DDX	M
12	02030104920010-01	Atl Coast(Sandy H to Navesink R)Inshore	Dissolved Oxygen	M
12	02030104920010-01	Atl Coast(Sandy H to Navesink R)Inshore	Mercury	M
12	02030104920010-01	Atl Coast(Sandy H to Navesink R)Inshore	PCBs	M
12	02030104920010-02	Atl Coast(Sandy H to Navesink R)offshore	DDX	M
12	02030104920010-02	Atl Coast(Sandy H to Navesink R)offshore	Dissolved Oxygen	M
12	02030104920010-02	Atl Coast(Sandy H to Navesink R)offshore	Mercury	M
12	02030104920010-02	Atl Coast(Sandy H to Navesink R)offshore	PCBs	M
12	02030104920020-01	AtlCoast(Navesink R to WhalePond)inshore	DDX	M
12	02030104920020-01	AtlCoast(Navesink R to WhalePond)inshore	Dissolved Oxygen	M
12	02030104920020-01	AtlCoast(Navesink R to WhalePond)inshore	Mercury	M
12	02030104920020-01	AtlCoast(Navesink R to WhalePond)inshore	PCBs	M
21	02030104920020-02	AtlCoast(Navesink R to WhalePond)offshor	DDX	M
21	02030104920020-02	AtlCoast(Navesink R to WhalePond)offshor	Dissolved Oxygen	M
21	02030104920020-02	AtlCoast(Navesink R to WhalePond)offshor	Mercury	M
21	02030104920020-02	AtlCoast(Navesink R to WhalePond)offshor	PCBs	M
12	02030104930010-01	Atl Coast(Whale Pond to Shark R)inshore	DDX	M
12	02030104930010-01	Atl Coast(Whale Pond to Shark R)inshore	Dissolved Oxygen	M
12	02030104930010-01	Atl Coast(Whale Pond to Shark R)inshore	Mercury	M
12	02030104930010-01	Atl Coast(Whale Pond to Shark R)inshore	PCBs	M
12	02030104930010-02	Atl Coast(Whale Pond to Shark R)offshore	DDX	M
12	02030104930010-02	Atl Coast(Whale Pond to Shark R)offshore	Dissolved Oxygen	M
12	02030104930010-02	Atl Coast(Whale Pond to Shark R)offshore	Mercury	M
12	02030104930010-02	Atl Coast(Whale Pond to Shark R)offshore	PCBs	M
12	02030104930020-01	Atl Coast (Shark R to Manasquan)inshore	DDX	M
12	02030104930020-01	Atl Coast (Shark R to Manasquan)inshore	Dissolved Oxygen	M
12	02030104930020-01	Atl Coast (Shark R to Manasquan)inshore	Mercury	M
12	02030104930020-01	Atl Coast (Shark R to Manasquan)inshore	PCBs	M
21	02030104930020-02	Atl Coast (Shark R to Manasquan)offshore	DDX	M
21	02030104930020-02	Atl Coast (Shark R to Manasquan)offshore	Dissolved Oxygen	M
21	02030104930020-02	Atl Coast (Shark R to Manasquan)offshore	Mercury	M
21	02030104930020-02	Atl Coast (Shark R to Manasquan)offshore	PCBs	M
08	02030105010010-01	Drakes Brook (above Eyland Ave)	Pollutant Unknown	L
08	02030105010020-01	Drakes Brook (below Eyland Ave)	Pollutant Unknown	L
08	02030105010050-01	Raritan R SB(LongValley br to 74d44m15s)	Phosphorus	H
08	02030105010050-01	Raritan R SB(LongValley br to 74d44m15s)	Temperature	H
08	02030105010060-01	Raritan R SB(Califon br to Long Valley)	Phosphorus	H

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08	02030105010060-01	Raritan R SB(Califon br to Long Valley)	Temperature	H
08	02030105010070-01	Raritan R SB(StoneMill gage to Califon)	Phosphorus	H
08	02030105010070-01	Raritan R SB(StoneMill gage to Califon)	Temperature	H
08	02030105010080-01	Raritan R SB(Spruce Run-StoneMill gage)	Temperature	H
08	02030105020010-01	Spruce Run (above Glen Gardner)	Temperature	H
08	02030105020020-01	Spruce Run (Reservior to Glen Gardner)	Pollutant Unknown	L
08	02030105020030-01	Mulhockaway Creek	Temperature	M
08	02030105020040-01	Spruce Run Reservior / Willoughby Brook	Cadmium	M
08	02030105020040-01	Spruce Run Reservior / Willoughby Brook	pH	H
08	02030105020040-01	Spruce Run Reservior / Willoughby Brook	Phosphorus	M
08	02030105020040-01	Spruce Run Reservior / Willoughby Brook	Temperature	H
08	02030105020050-01	Beaver Brook (Clinton)	Phosphorus	H
08	02030105020060-01	Cakepoulin Creek	DDX	M
08	02030105020060-01	Cakepoulin Creek	Phosphorus	H
08	02030105020080-01	Raritan R SB(Prescott Bk to River Rd)	Arsenic	M
08	02030105020080-01	Raritan R SB(Prescott Bk to River Rd)	pH	H
08	02030105020080-01	Raritan R SB(Prescott Bk to River Rd)	Temperature	H
08	02030105020100-01	Raritan R SB(Three Bridges-Prescott Bk)	Arsenic	M
08	02030105020100-01	Raritan R SB(Three Bridges-Prescott Bk)	pH	H
08	02030105020100-01	Raritan R SB(Three Bridges-Prescott Bk)	Temperature	H
08	02030105030030-01	Headquarters trib (Third Neshanic River)	Dissolved Oxygen	H
08	02030105030040-01	Third Neshanic River	Dissolved Oxygen	H
08	02030105030050-01	Back Brook	Pollutant Unknown	L
08	02030105030060-01	Neshanic River (below FNR / SNR confl)	Arsenic	M
08	02030105030060-01	Neshanic River (below FNR / SNR confl)	Phosphorus	H
08	02030105040010-01	Raritan R SB(Pleasant Run-Three Bridges)	Arsenic	M
08	02030105040010-01	Raritan R SB(Pleasant Run-Three Bridges)	Phosphorus	H
08	02030105040020-01	Pleasant Run	Pathogens	H
08	02030105040020-01	Pleasant Run	Pollutant Unknown	L
08	02030105040030-01	Holland Brook	Pollutant Unknown	L
08	02030105040040-01	Raritan R SB(NB to Pleasant Run)	Arsenic	M
08	02030105040040-01	Raritan R SB(NB to Pleasant Run)	Phosphorus	H
08	02030105050020-01	Lamington R (Hillside Rd to Rt 10)	Pollutant Unknown	L
08	02030105050030-01	Lamington R (Furnace Rd to Hillside Rd)	Temperature	H
08	02030105050040-01	Lamington R(Pottersville gage-FurnaceRd)	Phosphorus	H
08	02030105050040-01	Lamington R(Pottersville gage-FurnaceRd)	Temperature	H
08	02030105050070-01	Lamington R(HallsBrRd-Pottersville gage)	Phosphorus	H
08	02030105050070-01	Lamington R(HallsBrRd-Pottersville gage)	Temperature	H
08	02030105050100-01	Rockaway Ck SB	Phosphorus	H
08	02030105050100-01	Rockaway Ck SB	Temperature	H
08	02030105050110-01	Lamington R (below Halls Bridge Rd)	pH	H
08	02030105050110-01	Lamington R (below Halls Bridge Rd)	Phosphorus	H
08	02030105070010-01	Raritan R NB (Rt 28 to Lamington R)	Phosphorus	H
08	02030105070020-01	Chambers Brook	Pollutant Unknown	L
08	02030105070030-01	Raritan R NB (below Rt 28)	Phosphorus	H
09	02030105080010-01	Peters Brook	Pollutant Unknown	L
09	02030105080030-01	Raritan R Lwr (Millstone to Rt 206)	Pollutant Unknown	L
10	02030105090010-01	Stony Bk (above 74d 49m 15s)	Mercury	M
10	02030105090010-01	Stony Bk (above 74d 49m 15s)	Pollutant Unknown	L
10	02030105090020-01	Stony Bk (74d 48m 10s to 74d 49m 15s)	Mercury	M
10	02030105090020-01	Stony Bk (74d 48m 10s to 74d 49m 15s)	Pollutant Unknown	L
10	02030105090030-01	Stony Bk (Baldwins Ck to 74d 48m 10s)	Mercury	M
10	02030105090030-01	Stony Bk (Baldwins Ck to 74d 48m 10s)	Pollutant Unknown	L

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
10	02030105090040-01	Stony Bk(74d46m dam to/incl Baldwins Ck)	Mercury	M
10	02030105090040-01	Stony Bk(74d46m dam to/incl Baldwins Ck)	Pollutant Unknown	L
10	02030105090050-01	Stony Bk(Province Line Rd to 74d46m dam)	Arsenic	M
10	02030105090050-01	Stony Bk(Province Line Rd to 74d46m dam)	Phosphorus	H
10	02030105090050-01	Stony Bk(Province Line Rd to 74d46m dam)	Total suspended solids	H
10	02030105090060-01	Stony Bk (Rt 206 to Province Line Rd)	Arsenic	M
10	02030105090060-01	Stony Bk (Rt 206 to Province Line Rd)	Phosphorus	H
10	02030105090060-01	Stony Bk (Rt 206 to Province Line Rd)	Total suspended solids	H
10	02030105090070-01	Stony Bk (Harrison St to Rt 206)	Arsenic	M
10	02030105090070-01	Stony Bk (Harrison St to Rt 206)	Phosphorus	H
10	02030105090070-01	Stony Bk (Harrison St to Rt 206)	Total suspended solids	H
10	02030105100010-01	Millstone River (above Rt 33)	Arsenic	M
10	02030105100010-01	Millstone River (above Rt 33)	pH	H
10	02030105100010-01	Millstone River (above Rt 33)	Phosphorus	H
10	02030105100010-01	Millstone River (above Rt 33)	Total suspended solids	H
10	02030105100020-01	Millstone R (Applegarth road to Rt 33)	Arsenic	M
10	02030105100020-01	Millstone R (Applegarth road to Rt 33)	pH	H
10	02030105100020-01	Millstone R (Applegarth road to Rt 33)	Phosphorus	H
10	02030105100020-01	Millstone R (Applegarth road to Rt 33)	Total suspended solids	H
10	02030105100030-01	Millstone R (RockyBk to Applegarth road)	Pollutant Unknown	L
10	02030105100040-01	Rocky Brook (above Monmouth Co line)	Arsenic	M
10	02030105100050-01	Rocky Brook (below Monmouth Co line)	Arsenic	M
10	02030105100050-01	Rocky Brook (below Monmouth Co line)	pH	H
10	02030105100050-01	Rocky Brook (below Monmouth Co line)	Phosphorus	H
10	02030105100060-01	Millstone R (Cranbury Bk to Rocky Bk)	Arsenic	M
10	02030105100060-01	Millstone R (Cranbury Bk to Rocky Bk)	pH	H
10	02030105100060-01	Millstone R (Cranbury Bk to Rocky Bk)	Phosphorus	H
10	02030105100070-01	Cranbury Brook (above NJ Turnpike)	pH	H
10	02030105100090-01	Cranbury Brook (below NJ Turnpike)	pH	H
10	02030105100110-01	Devils Brook	Pollutant Unknown	L
10	02030105100120-01	Bear Brook (above Trenton Road)	Unknown Toxic	L
10	02030105100130-01	Bear Brook (below Trenton Road)	Unknown Toxic	L
10	02030105100140-01	Millstone R (Rt 1 to Cranbury Bk)	Arsenic	M
10	02030105110010-01	Heathcote Brook	Pollutant Unknown	L
10	02030105110030-01	Millstone R (Beden Bk to Heathcote Bk)	Arsenic	M
10	02030105110030-01	Millstone R (Beden Bk to Heathcote Bk)	Mercury	M
10	02030105110030-01	Millstone R (Beden Bk to Heathcote Bk)	Pathogens	H
10	02030105110030-01	Millstone R (Beden Bk to Heathcote Bk)	pH	H
10	02030105110030-01	Millstone R (Beden Bk to Heathcote Bk)	Phosphorus	H
10	02030105110030-01	Millstone R (Beden Bk to Heathcote Bk)	Temperature	H
10	02030105110040-01	Beden Brook (above Province Line Rd)	Pollutant Unknown	L
10	02030105110050-01	Beden Brook (below Province Line Rd)	Arsenic	M
10	02030105110050-01	Beden Brook (below Province Line Rd)	Phosphorus	H
10	02030105110060-01	Rock Brook (above Camp Meeting Ave)	Pathogens	H
10	02030105110110-01	Millstone R (BlackwellsMills to BedenBk)	Arsenic	M
10	02030105110110-01	Millstone R (BlackwellsMills to BedenBk)	Phosphorus	H
10	02030105110120-01	Sixmile Run (above Middlebush Rd)	Phosphorus	H
10	02030105110140-01	Millstone R(AmwellRd to BlackwellsMills)	Arsenic	M
10	02030105110140-01	Millstone R(AmwellRd to BlackwellsMills)	Phosphorus	H
10	02030105110160-01	Royce Brook (below/incl Branch Royce Bk)	Pollutant Unknown	L
10	02030105110170-01	Millstone River (below Amwell Rd)	Arsenic	M
10	02030105110170-01	Millstone River (below Amwell Rd)	Mercury	M
10	02030105110170-01	Millstone River (below Amwell Rd)	pH	H

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
10	02030105110170-01	Millstone River (below Amwell Rd)	Phosphorus	H
09	02030105120020-01	Green Bk (N Plainfield gage to Blue Bk)	Pollutant Unknown	L
09	02030105120030-01	Stony Brook (North Plainfield)	Pollutant Unknown	L
09	02030105120040-01	Green Bk (Bound Bk to N Plainfield gage)	Pollutant Unknown	L
09	02030105120050-01	Middle Brook EB	Pollutant Unknown	L
09	02030105120080-01	South Fork of Bound Brook	PCBs	M
09	02030105120080-01	South Fork of Bound Brook	Phosphorus	H
09	02030105120090-01	Spring Lake Fork of Bound Brook	PCBs	M
09	02030105120090-01	Spring Lake Fork of Bound Brook	Phosphorus	H
09	02030105120100-01	Bound Brook (below fork at 74d 25m 15s)	PCBs	M
09	02030105120100-01	Bound Brook (below fork at 74d 25m 15s)	Phosphorus	H
09	02030105120120-01	Ambrose Brook (below Lake Nelson)	Pollutant Unknown	L
09	02030105120130-01	Green Brook (below Bound Brook)	PCBs	M
09	02030105120130-01	Green Brook (below Bound Brook)	Phosphorus	H
09	02030105120130-01	Green Brook (below Bound Brook)	Total suspended solids	H
09	02030105120140-01	Raritan R Lwr(I-287 Piscatway-Millstone)	Arsenic	M
09	02030105120140-01	Raritan R Lwr(I-287 Piscatway-Millstone)	Benzene	M
09	02030105120140-01	Raritan R Lwr(I-287 Piscatway-Millstone)	Mercury	M
09	02030105120140-01	Raritan R Lwr(I-287 Piscatway-Millstone)	Phosphorus	H
09	02030105120140-01	Raritan R Lwr(I-287 Piscatway-Millstone)	Total suspended solids	H
09	02030105120150-01	Mile Run	Pollutant Unknown	L
09	02030105120160-01	Raritan R Lwr (MileRun to I-287 Pisctwy)	Arsenic	M
09	02030105120160-01	Raritan R Lwr (MileRun to I-287 Pisctwy)	Benzene	M
09	02030105120160-01	Raritan R Lwr (MileRun to I-287 Pisctwy)	PCBs	M
09	02030105120160-01	Raritan R Lwr (MileRun to I-287 Pisctwy)	Phosphorus	H
09	02030105120160-01	Raritan R Lwr (MileRun to I-287 Pisctwy)	Total suspended solids	H
09	02030105120170-01	Raritan R Lwr (Lawrence Bk to Mile Run)	Arsenic	M
09	02030105120170-01	Raritan R Lwr (Lawrence Bk to Mile Run)	Cadmium	M
09	02030105120170-01	Raritan R Lwr (Lawrence Bk to Mile Run)	Phosphorus	H
09	02030105120170-01	Raritan R Lwr (Lawrence Bk to Mile Run)	Total suspended solids	H
09	02030105120170-01	Raritan R Lwr (Lawrence Bk to Mile Run)	Zinc	M
09	02030105130020-01	Lawrence Brook (above Deans Pond dam)	Arsenic	M
09	02030105130020-01	Lawrence Brook (above Deans Pond dam)	Mercury	M
09	02030105130040-01	Ireland Brook	Pathogens	H
09	02030105130040-01	Ireland Brook	pH	H
09	02030105130050-01	Lawrence Bk (Church Lane to Deans Pond)	Arsenic	M
09	02030105130050-01	Lawrence Bk (Church Lane to Deans Pond)	Mercury	M
09	02030105130050-01	Lawrence Bk (Church Lane to Deans Pond)	Pollutant Unknown	L
09	02030105130060-01	Lawrence Bk (Milltown to Church Lane)	Pollutant Unknown	L
09	02030105130070-01	Lawrence Bk (below Milltown/Herberts br)	Dioxin	M
09	02030105130070-01	Lawrence Bk (below Milltown/Herberts br)	PCBs	M
09	02030105140010-01	Manalapan Brook (above 40d 16m 15s)	Mercury	M
09	02030105140010-01	Manalapan Brook (above 40d 16m 15s)	pH	H
09	02030105140010-01	Manalapan Brook (above 40d 16m 15s)	Phosphorus	H
09	02030105140020-01	Manalapan Bk(incl LkManlpn to 40d16m15s)	Mercury	M
09	02030105140020-01	Manalapan Bk(incl LkManlpn to 40d16m15s)	pH	H
09	02030105140020-01	Manalapan Bk(incl LkManlpn to 40d16m15s)	Phosphorus	H
09	02030105140030-01	Manalapan Brook (below Lake Manalapan)	Arsenic	M
09	02030105140030-01	Manalapan Brook (below Lake Manalapan)	pH	H
09	02030105150010-01	Weamaconk Creek	pH	H
09	02030105150010-01	Weamaconk Creek	Phosphorus	H
09	02030105150010-01	Weamaconk Creek	Total suspended solids	H
09	02030105150020-01	McGellairds Brook (above Taylors Mills)	pH	H

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09	02030105150020-01	McGellairds Brook (above Taylors Mills)	Phosphorus	H
09	02030105150030-01	McGellairds Brook (below Taylors Mills)	pH	H
09	02030105150030-01	McGellairds Brook (below Taylors Mills)	Phosphorus	H
09	02030105150040-01	Matchaponix Brook (above/incl Pine Bk)	Pollutant Unknown	L
09	02030105150050-01	Barclay Brook	pH	H
09	02030105150060-01	Matchaponix Brook (below Pine Brook)	Nitrate	M
09	02030105150060-01	Matchaponix Brook (below Pine Brook)	pH	H
09	02030105150060-01	Matchaponix Brook (below Pine Brook)	Phosphorus	H
09	02030105160010-01	Deep Run (above Monmouth Co line)	pH	H
09	02030105160020-01	Deep Run (Rt 9 to Monmouth Co line)	pH	H
09	02030105160040-01	Deep Run (below Rt 9)	pH	H
09	02030105160050-01	Tennent Brook (above 74d 19m 05s)	Pollutant Unknown	L
09	02030105160070-01	South River (below Duhernal Lake)	Arsenic	M
09	02030105160070-01	South River (below Duhernal Lake)	Cadmium	M
09	02030105160070-01	South River (below Duhernal Lake)	Chromium	M
09	02030105160070-01	South River (below Duhernal Lake)	Copper	M
09	02030105160070-01	South River (below Duhernal Lake)	Dioxin	M
09	02030105160070-01	South River (below Duhernal Lake)	Lead	M
09	02030105160070-01	South River (below Duhernal Lake)	Mercury	M
09	02030105160070-01	South River (below Duhernal Lake)	PCBs	M
09	02030105160080-01	Mill Brook / Martins Creek	PCBs	M
09	02030105160090-01	Red Root Creek / Crows Mill Creek	Dioxin	M
09	02030105160090-01	Red Root Creek / Crows Mill Creek	PCBs	M
09	02030105160100-01	Raritan R Lwr (below Lawrence Bk)	Arsenic	M
09	02030105160100-01	Raritan R Lwr (below Lawrence Bk)	Cadmium	M
09	02030105160100-01	Raritan R Lwr (below Lawrence Bk)	Dioxin	M
09	02030105160100-01	Raritan R Lwr (below Lawrence Bk)	PCBs	M
16	02030902940020-01	At Coast(Corson to Townsends In)inshore	DDX	M
16	02030902940020-01	At Coast(Corson to Townsends In)inshore	Dissolved Oxygen	M
16	02030902940020-01	At Coast(Corson to Townsends In)inshore	Mercury	M
16	02030902940020-01	At Coast(Corson to Townsends In)inshore	PCBs	M
16	02030902940020-02	At Coast(Corson to Townsends In)offshore	DDX	M
16	02030902940020-02	At Coast(Corson to Townsends In)offshore	Dissolved Oxygen	M
16	02030902940020-02	At Coast(Corson to Townsends In)offshore	Mercury	M
16	02030902940020-02	At Coast(Corson to Townsends In)offshore	PCBs	M
16	02030902940030-01	Atl Cst(Townsends to Hereford In)inshor	DDX	M
16	02030902940030-01	Atl Cst(Townsends to Hereford In)inshor	Dissolved Oxygen	M
16	02030902940030-01	Atl Cst(Townsends to Hereford In)inshor	Mercury	M
16	02030902940030-01	Atl Cst(Townsends to Hereford In)inshor	PCBs	M
16	02030902940030-02	Atl Cst(Townsends to Hereford In)offshor	DDX	M
16	02030902940030-02	Atl Cst(Townsends to Hereford In)offshor	Dissolved Oxygen	M
16	02030902940030-02	Atl Cst(Townsends to Hereford In)offshor	Mercury	M
16	02030902940030-02	Atl Cst(Townsends to Hereford In)offshor	PCBs	M
01	02040104090020-01	Clove Brook (Delaware R)	Temperature	L
01	02040104130010-01	Little Flat Brook (Beerskill and above)	Phosphorus	M
01	02040104130010-01	Little Flat Brook (Beerskill and above)	Temperature	L
01	02040104130020-01	Little Flat Brook (Layton to Beerskill)	Phosphorus	M
01	02040104130020-01	Little Flat Brook (Layton to Beerskill)	Temperature	L
01	02040104130030-01	Little Flat Brook (Confluence to Layton)	Phosphorus	M
01	02040104130030-01	Little Flat Brook (Confluence to Layton)	Temperature	L
01	02040104140020-01	Forked Brook/Parker Brook	Temperature	L
01	02040104140030-01	Big Flat Brook (Kittle Rd to Forked Bk)	Temperature	L
01	02040104140040-01	Big Flat Brook (Confluence to Kittle Rd)	Temperature	L

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01	02040104150010-01	Flat Brook (Tillman Brook to Confluence)	Temperature	L
01	02040104150020-01	Flat Brook (below Tillman Brook)	Temperature	L
01	02040104240020-01	Dunnfield Creek (incl UDRV)	pH	M
01	02040105040050-01	Sparta Junction tribs	Pollutant Unknown	L
01	02040105040060-01	Paulins Kill (above Rt 15)	Dissolved Oxygen	M
01	02040105040060-01	Paulins Kill (above Rt 15)	Phosphorus	M
01	02040105040070-01	Paulins Kill (Dry Brook to Rt 15)	Arsenic	M
01	02040105040080-01	Paulins Kill (PK Lk outlet to Dry Brook)	Arsenic	M
01	02040105040090-01	Paulins Kill (Stillwater Vil to PK Lake)	Temperature	L
01	02040105050010-01	Paulins Kill (Blairstown to Stillwater)	Temperature	L
01	02040105050050-01	Paulins Kill (below Blairstown gage)	Temperature	L
01	02040105070030-01	Pequest River (above Brighton)	Pollutant Unknown	L
01	02040105070040-01	Pequest River (Trout Brook to Brighton)	Pollutant Unknown	L
01	02040105070050-01	Trout Brook/Lake Tranquility	Pollutant Unknown	L
01	02040105080010-01	Bear Brook (Sussex/Warren Co)	Pollutant Unknown	L
01	02040105080020-01	Bear Creek	Pollutant Unknown	L
01	02040105090020-01	Pequest R (Cemetary Road to Drag Strip)	Phosphorus	H
01	02040105090030-01	Pequest R (Furnace Bk to Cemetary Road)	Phosphorus	H
01	02040105090030-01	Pequest R (Furnace Bk to Cemetary Road)	Total suspended solids	L
01	02040105090050-01	Furnace Brook	Pollutant Unknown	L
01	02040105090060-01	Pequest R (below Furnace Brook)	Arsenic	M
01	02040105090060-01	Pequest R (below Furnace Brook)	pH	H
01	02040105090060-01	Pequest R (below Furnace Brook)	Phosphorus	H
01	02040105090060-01	Pequest R (below Furnace Brook)	Temperature	L
01	02040105090060-01	Pequest R (below Furnace Brook)	Total suspended solids	L
01	02040105100020-01	Honey Run	Dissolved Oxygen	M
01	02040105100020-01	Honey Run	Temperature	L
01	02040105110020-01	Buckhorn Creek (incl UDRV)	Pollutant Unknown	L
01	02040105120010-01	Lopatcong Creek (above Rt 57)	Pollutant Unknown	L
01	02040105120020-01	Lopatcong Creek (below Rt 57) incl UDRV	Pollutant Unknown	L
01	02040105140010-01	Pohatcong Creek (above Rt 31)	Temperature	L
01	02040105140020-01	Pohatcong Ck (Brass Castle Ck to Rt 31)	Phosphorus	M
01	02040105140020-01	Pohatcong Ck (Brass Castle Ck to Rt 31)	Temperature	L
01	02040105140030-01	Pohatcong Ck (Edison Rd-Brass Castle Ck)	Phosphorus	M
01	02040105140030-01	Pohatcong Ck (Edison Rd-Brass Castle Ck)	Temperature	L
01	02040105140050-01	Pohatcong Ck (Merrill Ck to Edison Rd)	Phosphorus	M
01	02040105140050-01	Pohatcong Ck (Merrill Ck to Edison Rd)	Temperature	L
01	02040105140060-01	Pohatcong Ck (Springtown to Merrill Ck)	Phosphorus	M
01	02040105140070-01	Pohatcong Ck(below Springtown) incl UDRV	Phosphorus	M
01	02040105150010-01	Weldon Brook/Beaver Brook	Pollutant Unknown	L
01	02040105150020-01	Lake Hopatcong	Pollutant Unknown	L
01	02040105150030-01	Musconetcong R (Wills Bk to LkHopatcong)	pH	M
01	02040105150030-01	Musconetcong R (Wills Bk to LkHopatcong)	Temperature	L
01	02040105150040-01	Lubbers Run (above/incl Dallis Pond)	Pollutant Unknown	L
01	02040105150050-01	Lubbers Run (below Dallis Pond)	Pollutant Unknown	L
01	02040105150070-01	Musconetcong R(Waterloo to/incl WillsBk)	Phosphorus	M
01	02040105150070-01	Musconetcong R(Waterloo to/incl WillsBk)	Temperature	L
01	02040105150080-01	Musconetcong R (SaxtonFalls to Waterloo)	Arsenic	M
01	02040105150100-01	Musconetcong R (Trout Bk to SaxtonFalls)	Arsenic	M
01	02040105160010-01	Musconetcong R (Hances Bk thru Trout Bk)	Arsenic	M
01	02040105160010-01	Musconetcong R (Hances Bk thru Trout Bk)	Temperature	L
01	02040105160020-01	Musconetcong R (Changewater to HancesBk)	Arsenic	M
01	02040105160020-01	Musconetcong R (Changewater to HancesBk)	Temperature	L

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01	02040105160070-01	Musconetcong R (below Warren Glen)	Temperature	L
11	02040105170030-01	Harihokake Creek (and to Hakihokake Ck)	Phosphorus	M
11	02040105170040-01	Nishisakawick Creek (above 40d 33m)	pH	M
11	02040105170050-01	Nishisakawick Creek (below 40d 33m)	pH	M
11	02040105170060-01	Kingwood Twp(Warford-Little Nishisakawk)	Phosphorus	M
11	02040105200060-01	Wickecheoke Creek (below Locktown)	Temperature	L
11	02040105210010-01	Alexauken Ck (above 74d 55m)	Temperature	L
11	02040105210020-01	Alexauken Ck (below 74d 55m to 11BA06)	Temperature	L
11	02040105210040-01	Moore Creek	Pollutant Unknown	L
11	02040105210070-01	Jacobs Creek (below/incl Woolsey Brook)	pH	M
11	02040105230020-01	Assunpink Ck (NewSharonBr to/incl Lake)	Pollutant Unknown	L
11	02040105230030-01	New Sharon Branch (Assunpink Creek)	Mercury	M
11	02040105230030-01	New Sharon Branch (Assunpink Creek)	pH	M
11	02040105230030-01	New Sharon Branch (Assunpink Creek)	Phosphorus	M
11	02040105230040-01	Assunpink Ck (TrentonRd to NewSharonBr)	Arsenic	M
11	02040105230040-01	Assunpink Ck (TrentonRd to NewSharonBr)	Mercury	M
11	02040105230040-01	Assunpink Ck (TrentonRd to NewSharonBr)	Pollutant Unknown	L
11	02040105230050-01	Assunpink Ck (Shipetaukin to Trenton Rd)	Arsenic	M
11	02040105230050-01	Assunpink Ck (Shipetaukin to Trenton Rd)	Mercury	M
11	02040105230050-01	Assunpink Ck (Shipetaukin to Trenton Rd)	Pollutant Unknown	L
11	02040105230060-01	Shipetaukin Creek	Pollutant Unknown	L
11	02040105240010-01	Shabakunk Creek	Mercury	M
11	02040105240010-01	Shabakunk Creek	Pollutant Unknown	L
11	02040105240030-01	Miry Run (Assunpink Cr)	Dissolved Oxygen	M
11	02040105240030-01	Miry Run (Assunpink Cr)	pH	M
11	02040105240030-01	Miry Run (Assunpink Cr)	Phosphorus	H
11	02040105240040-01	Pond Run	Total suspended solids	L
11	02040105240050-01	Assunpink Creek (below Shipetaukin Ck)	Arsenic	M
11	02040105240050-01	Assunpink Creek (below Shipetaukin Ck)	Lead	M
11	02040105240050-01	Assunpink Creek (below Shipetaukin Ck)	Mercury	M
11	02040105240050-01	Assunpink Creek (below Shipetaukin Ck)	Phosphorus	M
20	02040201030010-01	Duck Creek and UDRV to Assunpink Ck	Dioxin	M
20	02040201030010-01	Duck Creek and UDRV to Assunpink Ck	Mercury	M
20	02040201030010-01	Duck Creek and UDRV to Assunpink Ck	PCBs	M
20	02040201040030-01	South Run (Jumping Brook to 74d35m)	Pathogens	H
20	02040201040030-01	South Run (Jumping Brook to 74d35m)	pH	M
20	02040201040030-01	South Run (Jumping Brook to 74d35m)	Phosphorus	M
20	02040201040040-01	Jumping Brook (Monmouth Co)	Mercury	M
20	02040201040050-01	South Run (North Run to Jumping Brook)	Mercury	M
20	02040201040050-01	South Run (North Run to Jumping Brook)	pH	M
20	02040201040050-01	South Run (North Run to Jumping Brook)	Phosphorus	M
20	02040201040060-01	North Run (above Wrightstown bypass)	Phosphorus	M
20	02040201040060-01	North Run (above Wrightstown bypass)	Total suspended solids	L
20	02040201040070-01	Crosswicks Ck(NewEgypt to/incl NorthRun)	Mercury	M
20	02040201040070-01	Crosswicks Ck(NewEgypt to/incl NorthRun)	Phosphorus	M
20	02040201040070-01	Crosswicks Ck(NewEgypt to/incl NorthRun)	Total suspended solids	L
20	02040201050010-01	Lahaway Creek (above Prospertown)	Pollutant Unknown	L
20	02040201050020-01	Lahaway Ck(Allentwn/NE Road-Prospertown)	Phosphorus	M
20	02040201050030-01	Crosswicks Ck(Lahaway Ck to New Egypt)	Mercury	M
20	02040201050030-01	Crosswicks Ck(Lahaway Ck to New Egypt)	Phosphorus	M
20	02040201050040-01	Crosswicks Ck(Walnford to Lahaway Ck)	Arsenic	M
20	02040201050040-01	Crosswicks Ck(Walnford to Lahaway Ck)	Mercury	M
20	02040201050040-01	Crosswicks Ck(Walnford to Lahaway Ck)	pH	M

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20	02040201050040-01	Crosswicks Ck(Walnford to Lahaway Ck)	Phosphorus	M
20	02040201050040-01	Crosswicks Ck(Walnford to Lahaway Ck)	Total suspended solids	L
20	02040201050040-01	Crosswicks Ck(Walnford to Lahaway Ck)	Turbidity	L
20	02040201050050-01	Crosswicks Ck(Ellisdale trib - Walnford)	Arsenic	M
20	02040201050050-01	Crosswicks Ck(Ellisdale trib - Walnford)	Mercury	M
20	02040201050050-01	Crosswicks Ck(Ellisdale trib - Walnford)	pH	M
20	02040201050050-01	Crosswicks Ck(Ellisdale trib - Walnford)	Phosphorus	M
20	02040201050050-01	Crosswicks Ck(Ellisdale trib - Walnford)	Total suspended solids	L
20	02040201050060-01	Ellisdale trib (Crosswicks Creek)	Mercury	M
20	02040201050060-01	Ellisdale trib (Crosswicks Creek)	Pollutant Unknown	L
20	02040201050070-01	Crosswicks Ck(Doctors Ck-Ellisdale trib)	Arsenic	M
20	02040201050070-01	Crosswicks Ck(Doctors Ck-Ellisdale trib)	Dioxin	M
20	02040201050070-01	Crosswicks Ck(Doctors Ck-Ellisdale trib)	Mercury	M
20	02040201050070-01	Crosswicks Ck(Doctors Ck-Ellisdale trib)	PCBs	M
20	02040201050070-01	Crosswicks Ck(Doctors Ck-Ellisdale trib)	Phosphorus	M
20	02040201050070-01	Crosswicks Ck(Doctors Ck-Ellisdale trib)	Total suspended solids	L
20	02040201050070-01	Crosswicks Ck(Doctors Ck-Ellisdale trib)	Turbidity	L
20	02040201060020-01	Doctors Creek (Allentown to 74d28m40s)	pH	M
20	02040201060020-01	Doctors Creek (Allentown to 74d28m40s)	Phosphorus	H
20	02040201060030-01	Doctors Creek (below Allentown)	Phosphorus	H
20	02040201070010-01	Back Creek (above Yardville-H Sq Road)	Phosphorus	M
20	02040201070020-01	Crosswicks Ck(below Doctors Creek)	Dioxin	M
20	02040201070020-01	Crosswicks Ck(below Doctors Creek)	Mercury	M
20	02040201070020-01	Crosswicks Ck(below Doctors Creek)	PCBs	M
20	02040201070020-01	Crosswicks Ck(below Doctors Creek)	Phosphorus	M
20	02040201070020-01	Crosswicks Ck(below Doctors Creek)	Total suspended solids	L
20	02040201070030-01	Shady Brook/Spring Lake/Rowan Lake	Dioxin	M
20	02040201070030-01	Shady Brook/Spring Lake/Rowan Lake	Mercury	M
20	02040201070030-01	Shady Brook/Spring Lake/Rowan Lake	PCBs	M
20	02040201080020-01	Blacks Creek (Bacons Run to 40d06m10s)	pH	M
20	02040201080030-01	Blacks Creek (below Bacons Run)	Dioxin	M
20	02040201080030-01	Blacks Creek (below Bacons Run)	PCBs	M
20	02040201080030-01	Blacks Creek (below Bacons Run)	Phosphorus	M
20	02040201080030-01	Blacks Creek (below Bacons Run)	Total suspended solids	L
20	02040201090010-01	Crafts Creek (above Rt 206)	pH	M
20	02040201090010-01	Crafts Creek (above Rt 206)	Phosphorus	M
20	02040201090020-01	Crafts Creek (below Rt 206)	Dioxin	M
20	02040201090020-01	Crafts Creek (below Rt 206)	PCBs	M
20	02040201090020-01	Crafts Creek (below Rt 206)	pH	M
20	02040201090030-01	LDRV tribs (Assiscunk Ck to Blacks Ck)	Dioxin	M
20	02040201090030-01	LDRV tribs (Assiscunk Ck to Blacks Ck)	PCBs	M
20	02040201100010-01	Assiscunk Creek (above Rt 206)	pH	M
20	02040201100010-01	Assiscunk Creek (above Rt 206)	Phosphorus	M
20	02040201100020-01	Barkers Brook (above 40d02m30s)	pH	M
20	02040201100020-01	Barkers Brook (above 40d02m30s)	Phosphorus	H
20	02040201100040-01	Assiscunk Ck (Jacksonville rd to Rt 206)	Arsenic	M
20	02040201100040-01	Assiscunk Ck (Jacksonville rd to Rt 206)	Mercury	M
20	02040201100040-01	Assiscunk Ck (Jacksonville rd to Rt 206)	pH	M
20	02040201100050-01	Assiscunk Ck(Neck Rd to Jacksonville rd)	Arsenic	M
20	02040201100050-01	Assiscunk Ck(Neck Rd to Jacksonville rd)	Dioxin	M
20	02040201100050-01	Assiscunk Ck(Neck Rd to Jacksonville rd)	Mercury	M
20	02040201100050-01	Assiscunk Ck(Neck Rd to Jacksonville rd)	PCBs	M
20	02040201100050-01	Assiscunk Ck(Neck Rd to Jacksonville rd)	pH	M

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20	02040201100060-01	Assiscunk Creek (below Neck Rd)	Dioxin	M
20	02040201100060-01	Assiscunk Creek (below Neck Rd)	PCBs	M
20	02040201110010-01	LDRV tribs (Beverly to Assiscunk Ck)	Dioxin	M
20	02040201110010-01	LDRV tribs (Beverly to Assiscunk Ck)	PCBs	M
19	02040202020010-01	Gaunts Brook / Hartshorne Mill Stream	Copper	M
19	02040202020010-01	Gaunts Brook / Hartshorne Mill Stream	Lead	M
19	02040202020020-01	Ong Run / Jacks Run	pH	M
19	02040202020030-01	Rancocas Ck NB (incl Mirror Lk-GauntsBk)	Copper	M
19	02040202020030-01	Rancocas Ck NB (incl Mirror Lk-GauntsBk)	Lead	M
19	02040202020030-01	Rancocas Ck NB (incl Mirror Lk-GauntsBk)	Mercury	M
19	02040202020030-01	Rancocas Ck NB (incl Mirror Lk-GauntsBk)	Pathogens	H
19	02040202020030-01	Rancocas Ck NB (incl Mirror Lk-GauntsBk)	pH	M
19	02040202020030-01	Rancocas Ck NB (incl Mirror Lk-GauntsBk)	Phosphorus	H
19	02040202020040-01	Rancocas Ck NB (NL dam to Mirror Lk)	Mercury	M
19	02040202020040-01	Rancocas Ck NB (NL dam to Mirror Lk)	Pathogens	H
19	02040202020040-01	Rancocas Ck NB (NL dam to Mirror Lk)	pH	M
19	02040202020040-01	Rancocas Ck NB (NL dam to Mirror Lk)	Phosphorus	H
19	02040202030020-01	Mount Misery Bk NB (above 74d27m30s dam)	Pathogens	H
19	02040202030030-01	Mount Misery Bk MB/NB (below 74d27m30s)	Pathogens	H
19	02040202030040-01	Mount Misery Brook SB	Pathogens	H
19	02040202030090-01	Greenwood Br(below CountryLk & MM confl)	Pathogens	H
19	02040202040010-01	Rancocas Ck NB (Pemberton br to NL dam)	Copper	M
19	02040202040010-01	Rancocas Ck NB (Pemberton br to NL dam)	Lead	M
19	02040202040010-01	Rancocas Ck NB (Pemberton br to NL dam)	Mercury	M
19	02040202040010-01	Rancocas Ck NB (Pemberton br to NL dam)	pH	M
19	02040202040010-01	Rancocas Ck NB (Pemberton br to NL dam)	Phosphorus	H
19	02040202040020-01	Pemberton / Ft Dix trib (NB Rancocas Ck)	Pollutant Unknown	L
19	02040202040030-01	Rancocas Ck NB (Rt 206 to Pemberton br)	Arsenic	M
19	02040202040030-01	Rancocas Ck NB (Rt 206 to Pemberton br)	Copper	M
19	02040202040030-01	Rancocas Ck NB (Rt 206 to Pemberton br)	Lead	M
19	02040202040030-01	Rancocas Ck NB (Rt 206 to Pemberton br)	pH	M
19	02040202040030-01	Rancocas Ck NB (Rt 206 to Pemberton br)	Phosphorus	H
19	02040202040030-01	Rancocas Ck NB (Rt 206 to Pemberton br)	Total suspended solids	L
19	02040202040040-01	Rancocas Creek NB (Smithville to Rt 206)	Arsenic	M
19	02040202040040-01	Rancocas Creek NB (Smithville to Rt 206)	pH	M
19	02040202040040-01	Rancocas Creek NB (Smithville to Rt 206)	Phosphorus	H
19	02040202040050-01	Rancocas Creek NB (below Smithville)	Arsenic	M
19	02040202040050-01	Rancocas Creek NB (below Smithville)	Dioxin	M
19	02040202040050-01	Rancocas Creek NB (below Smithville)	PCBs	M
19	02040202040050-01	Rancocas Creek NB (below Smithville)	pH	M
19	02040202040050-01	Rancocas Creek NB (below Smithville)	Phosphorus	H
19	02040202050010-01	Burrs Mill Bk (above 39d51m30s road)	Dissolved Oxygen	M
19	02040202050020-01	Burrs Mill Bk (Burnt Br Br- 39-51-30 rd)	Dissolved Oxygen	M
19	02040202050030-01	Burrs Mill Bk (BursMill to Burnt Br Br)	Dissolved Oxygen	M
19	02040202050050-01	Friendship Ck (below/incl Burrs Mill Bk)	Lead	M
19	02040202050050-01	Friendship Ck (below/incl Burrs Mill Bk)	pH	M
19	02040202050050-01	Friendship Ck (below/incl Burrs Mill Bk)	Phosphorus	H
19	02040202050060-01	Rancocas Creek SB(above Friendship Ck)	PCBs	M
19	02040202050060-01	Rancocas Creek SB(above Friendship Ck)	Pollutant Unknown	L
19	02040202050070-01	Jade Run	Dissolved Oxygen	M
19	02040202050070-01	Jade Run	pH	M
19	02040202050070-01	Jade Run	Phosphorus	H
19	02040202050080-01	Rancocas Ck SB (Vincentown-FriendshipCk)	Lead	M

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19	02040202050080-01	Rancocas Ck SB (Vincentown-FriendshipCk)	PCBs	M
19	02040202050080-01	Rancocas Ck SB (Vincentown-FriendshipCk)	pH	M
19	02040202050080-01	Rancocas Ck SB (Vincentown-FriendshipCk)	Phosphorus	H
19	02040202050090-01	Rancocas Ck SB (BobbysRun to Vincentown)	Arsenic	M
19	02040202050090-01	Rancocas Ck SB (BobbysRun to Vincentown)	Dioxin	M
19	02040202050090-01	Rancocas Ck SB (BobbysRun to Vincentown)	Lead	M
19	02040202050090-01	Rancocas Ck SB (BobbysRun to Vincentown)	Pathogens	H
19	02040202050090-01	Rancocas Ck SB (BobbysRun to Vincentown)	PCBs	M
19	02040202050090-01	Rancocas Ck SB (BobbysRun to Vincentown)	pH	M
19	02040202050090-01	Rancocas Ck SB (BobbysRun to Vincentown)	Phosphorus	H
19	02040202060030-01	Haynes Creek (below Lake Pine)	Pollutant Unknown	L
19	02040202060040-01	Barton Run (above Kettle Run Road)	pH	M
19	02040202060050-01	Barton Run (below Kettle Run Road)	pH	M
19	02040202060070-01	Little Creek (above Bear Swamp River)	Pathogens	H
19	02040202060070-01	Little Creek (above Bear Swamp River)	pH	M
19	02040202060080-01	Rancocas Ck SW Branch (above Medford br)	Pathogens	H
19	02040202060080-01	Rancocas Ck SW Branch (above Medford br)	Phosphorus	H
19	02040202060090-01	Little Creek (below Bear Swamp River)	Pollutant Unknown	L
19	02040202060100-01	Rancocas Ck SW Branch (below Medford br)	Arsenic	M
19	02040202060100-01	Rancocas Ck SW Branch (below Medford br)	Dioxin	M
19	02040202060100-01	Rancocas Ck SW Branch (below Medford br)	PCBs	M
19	02040202060100-01	Rancocas Ck SW Branch (below Medford br)	Phosphorus	H
19	02040202070010-01	Bobbys Run	Dioxin	M
19	02040202070010-01	Bobbys Run	PCBs	M
19	02040202070020-01	Rancocas Creek SB (Rt 38 to Bobbys Run)	Arsenic	M
19	02040202070020-01	Rancocas Creek SB (Rt 38 to Bobbys Run)	Pathogens	H
19	02040202070020-01	Rancocas Creek SB (Rt 38 to Bobbys Run)	PCBs	M
19	02040202070020-01	Rancocas Creek SB (Rt 38 to Bobbys Run)	Phosphorus	H
19	02040202070030-01	Rancocas Creek SB (below Rt 38)	Arsenic	M
19	02040202070030-01	Rancocas Creek SB (below Rt 38)	Pathogens	H
19	02040202070030-01	Rancocas Creek SB (below Rt 38)	PCBs	M
19	02040202070030-01	Rancocas Creek SB (below Rt 38)	Phosphorus	H
19	02040202080010-01	Parkers Creek (above Marne Highway)	Phosphorus	H
19	02040202080020-01	Rancocas Creek (Martins Beach to NB/SB)	PCBs	M
19	02040202080020-01	Rancocas Creek (Martins Beach to NB/SB)	Phosphorus	H
19	02040202080030-01	Mill Creek (Willingboro)	Dioxin	M
19	02040202080030-01	Mill Creek (Willingboro)	PCBs	M
19	02040202080030-01	Mill Creek (Willingboro)	Phosphorus	H
19	02040202080040-01	Rancocas Creek (Rt 130 to Martins Beach)	PCBs	M
19	02040202080050-01	Rancocas Creek (below Rt 130)	PCBs	M
18	02040202090010-01	Swede Run	Dioxin	M
18	02040202090010-01	Swede Run	PCBs	M
18	02040202090010-01	Swede Run	Pollutant Unknown	L
18	02040202090030-01	Pompeston Ck (below Rt130/Swede to 40d)	Dioxin	M
18	02040202090030-01	Pompeston Ck (below Rt130/Swede to 40d)	PCBs	M
18	02040202090030-01	Pompeston Ck (below Rt130/Swede to 40d)	Pollutant Unknown	L
18	02040202100020-01	Pennsauken Ck NB (incl StrwbrdgLk-NJTPK)	Arsenic	M
18	02040202100020-01	Pennsauken Ck NB (incl StrwbrdgLk-NJTPK)	Phosphorus	H
18	02040202100030-01	Pennsauken Ck NB (below Strawbridge Lk)	Arsenic	M
18	02040202100030-01	Pennsauken Ck NB (below Strawbridge Lk)	Cadmium	M
18	02040202100030-01	Pennsauken Ck NB (below Strawbridge Lk)	Chromium	M
18	02040202100030-01	Pennsauken Ck NB (below Strawbridge Lk)	Copper	M
18	02040202100030-01	Pennsauken Ck NB (below Strawbridge Lk)	Lead	M

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18	02040202100030-01	Pennsauken Ck NB (below Strawbridge Lk)	Mercury	M
18	02040202100030-01	Pennsauken Ck NB (below Strawbridge Lk)	Phosphorus	H
18	02040202100040-01	Pennsauken Ck SB (above Rt 41)	Arsenic	M
18	02040202100040-01	Pennsauken Ck SB (above Rt 41)	Phosphorus	H
18	02040202100040-01	Pennsauken Ck SB (above Rt 41)	Total suspended solids	L
18	02040202100050-01	Pennsauken Ck SB (below Rt 41)	Arsenic	M
18	02040202100050-01	Pennsauken Ck SB (below Rt 41)	Phosphorus	H
18	02040202100050-01	Pennsauken Ck SB (below Rt 41)	Total suspended solids	L
18	02040202100060-01	Pennsauken Ck (below NB / SB)	Arsenic	M
18	02040202100060-01	Pennsauken Ck (below NB / SB)	Cadmium	M
18	02040202100060-01	Pennsauken Ck (below NB / SB)	Chlordane	M
18	02040202100060-01	Pennsauken Ck (below NB / SB)	Chromium	M
18	02040202100060-01	Pennsauken Ck (below NB / SB)	Copper	M
18	02040202100060-01	Pennsauken Ck (below NB / SB)	DDX	M
18	02040202100060-01	Pennsauken Ck (below NB / SB)	Lead	M
18	02040202100060-01	Pennsauken Ck (below NB / SB)	Mercury	M
18	02040202100060-01	Pennsauken Ck (below NB / SB)	PCBs	M
18	02040202100060-01	Pennsauken Ck (below NB / SB)	Phosphorus	H
18	02040202110010-01	Cooper River NB(above Springdale Road)	Arsenic	M
18	02040202110010-01	Cooper River NB(above Springdale Road)	DDX	M
18	02040202110010-01	Cooper River NB(above Springdale Road)	PCBs	M
18	02040202110010-01	Cooper River NB(above Springdale Road)	pH	M
18	02040202110020-01	Cooper River NB(below Springdale Road)	Arsenic	M
18	02040202110020-01	Cooper River NB(below Springdale Road)	DDX	M
18	02040202110020-01	Cooper River NB(below Springdale Road)	PCBs	M
18	02040202110020-01	Cooper River NB(below Springdale Road)	pH	M
18	02040202110030-01	Cooper River (above Evesham Road)	Arsenic	M
18	02040202110030-01	Cooper River (above Evesham Road)	DDX	M
18	02040202110030-01	Cooper River (above Evesham Road)	Lead	M
18	02040202110030-01	Cooper River (above Evesham Road)	PCBs	M
18	02040202110030-01	Cooper River (above Evesham Road)	PCE/TCE	M
18	02040202110030-01	Cooper River (above Evesham Road)	Turbidity	L
18	02040202110040-01	Cooper R (Wallworth gage to Evesham Rd)	Arsenic	M
18	02040202110040-01	Cooper R (Wallworth gage to Evesham Rd)	DDX	M
18	02040202110040-01	Cooper R (Wallworth gage to Evesham Rd)	Lead	M
18	02040202110040-01	Cooper R (Wallworth gage to Evesham Rd)	PCBs	M
18	02040202110040-01	Cooper R (Wallworth gage to Evesham Rd)	PCE/TCE	M
18	02040202110040-01	Cooper R (Wallworth gage to Evesham Rd)	Turbidity	L
18	02040202110050-01	Cooper River (Rt 130 to Wallworth gage)	Arsenic	M
18	02040202110050-01	Cooper River (Rt 130 to Wallworth gage)	DDX	M
18	02040202110050-01	Cooper River (Rt 130 to Wallworth gage)	Lead	M
18	02040202110050-01	Cooper River (Rt 130 to Wallworth gage)	Mercury	M
18	02040202110050-01	Cooper River (Rt 130 to Wallworth gage)	PCBs	M
18	02040202110050-01	Cooper River (Rt 130 to Wallworth gage)	PCE/TCE	M
18	02040202110050-01	Cooper River (Rt 130 to Wallworth gage)	Turbidity	L
18	02040202110060-01	Cooper River (below Rt 130)	Arsenic	M
18	02040202110060-01	Cooper River (below Rt 130)	DDX	M
18	02040202110060-01	Cooper River (below Rt 130)	Lead	M
18	02040202110060-01	Cooper River (below Rt 130)	Mercury	M
18	02040202110060-01	Cooper River (below Rt 130)	PCBs	M
18	02040202110060-01	Cooper River (below Rt 130)	PCE/TCE	M
18	02040202120010-01	Big Timber Creek NB (above Laurel Rd)	Mercury	M
18	02040202120010-01	Big Timber Creek NB (above Laurel Rd)	Phosphorus	M

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18	02040202120020-01	Big Timber Creek NB (below Laurel Rd)	Mercury	M
18	02040202120020-01	Big Timber Creek NB (below Laurel Rd)	Phosphorus	M
18	02040202120030-01	Big Timber Creek SB (above Lakeland Rd)	Mercury	M
18	02040202120030-01	Big Timber Creek SB (above Lakeland Rd)	Pollutant Unknown	L
18	02040202120040-01	Big T Ck SB(incl Bull Run to LakelandRd)	Arsenic	M
18	02040202120040-01	Big T Ck SB(incl Bull Run to LakelandRd)	Mercury	M
18	02040202120050-01	Big Timber Creek SB (below Bull Run)	Dioxin	M
18	02040202120050-01	Big Timber Creek SB (below Bull Run)	Mercury	M
18	02040202120050-01	Big Timber Creek SB (below Bull Run)	PCBs	M
18	02040202120050-01	Big Timber Creek SB (below Bull Run)	Phosphorus	M
18	02040202120060-01	Almonesson Creek	Dioxin	M
18	02040202120060-01	Almonesson Creek	Mercury	M
18	02040202120060-01	Almonesson Creek	PCBs	M
18	02040202120070-01	Little Timber Creek (Gloucester City)	Dioxin	M
18	02040202120070-01	Little Timber Creek (Gloucester City)	PCBs	M
18	02040202120080-01	Big Timber Creek (below NB/SB confl)	Dioxin	M
18	02040202120080-01	Big Timber Creek (below NB/SB confl)	Mercury	M
18	02040202120080-01	Big Timber Creek (below NB/SB confl)	PCBs	M
18	02040202120090-01	Newton Creek (LDRV-Kaighn Ave to LT Ck)	Copper	M
18	02040202120090-01	Newton Creek (LDRV-Kaighn Ave to LT Ck)	Mercury	M
18	02040202120090-01	Newton Creek (LDRV-Kaighn Ave to LT Ck)	pH	M
18	02040202120090-01	Newton Creek (LDRV-Kaighn Ave to LT Ck)	Phosphorus	M
18	02040202120090-01	Newton Creek (LDRV-Kaighn Ave to LT Ck)	Temperature	L
18	02040202120090-01	Newton Creek (LDRV-Kaighn Ave to LT Ck)	Zinc	M
18	02040202120100-01	Woodbury Creek (above Rt 45)	pH	M
18	02040202120110-01	Woodbury Ck (below Rt 45)/LDRV to B T Ck	Dioxin	M
18	02040202120110-01	Woodbury Ck (below Rt 45)/LDRV to B T Ck	PCBs	M
18	02040202120110-01	Woodbury Ck (below Rt 45)/LDRV to B T Ck	pH	M
18	02040202120120-01	Main Ditch / Little Mantua Creek	Dioxin	M
18	02040202120120-01	Main Ditch / Little Mantua Creek	PCBs	M
18	02040202130010-01	Mantua Creek (above Rt 47)	Pollutant Unknown	L
18	02040202130040-01	Mantua Ck (Edwards Run to rd to Sewell)	Dioxin	M
18	02040202130040-01	Mantua Ck (Edwards Run to rd to Sewell)	PCBs	M
18	02040202130040-01	Mantua Ck (Edwards Run to rd to Sewell)	Phosphorus	M
18	02040202130050-01	Edwards Run	Dioxin	M
18	02040202130050-01	Edwards Run	PCBs	M
18	02040202130050-01	Edwards Run	Phosphorus	M
18	02040202130060-01	Mantua Creek (below Edwards Run)	Dioxin	M
18	02040202130060-01	Mantua Creek (below Edwards Run)	PCBs	M
18	02040202140040-01	Moss Branch / Little Timber Ck (Repaupo)	Dioxin	M
18	02040202140040-01	Moss Branch / Little Timber Ck (Repaupo)	Mercury	M
18	02040202140040-01	Moss Branch / Little Timber Ck (Repaupo)	PCBs	M
18	02040202140050-01	RepaupoCk(belowTomlin Sta Rd)/CedarSwamp	Dioxin	M
18	02040202140050-01	RepaupoCk(belowTomlin Sta Rd)/CedarSwamp	Mercury	M
18	02040202140050-01	RepaupoCk(belowTomlin Sta Rd)/CedarSwamp	PCBs	M
18	02040202150010-01	Raccoon Ck (above Clems Run)	Pollutant Unknown	L
18	02040202150030-01	Raccoon Ck SB	Pollutant Unknown	L
18	02040202150040-01	Raccoon Ck (Russell Mill Rd to Rt 45)	Arsenic	M
18	02040202150040-01	Raccoon Ck (Russell Mill Rd to Rt 45)	Chlordane	M
18	02040202150040-01	Raccoon Ck (Russell Mill Rd to Rt 45)	DDX	M
18	02040202150040-01	Raccoon Ck (Russell Mill Rd to Rt 45)	Mercury	M
18	02040202150040-01	Raccoon Ck (Russell Mill Rd to Rt 45)	PCBs	M
18	02040202150040-01	Raccoon Ck (Russell Mill Rd to Rt 45)	Phosphorus	M

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18	02040202150040-01	Raccoon Ck (Russell Mill Rd to Rt 45)	Silver	M
18	02040202150040-01	Raccoon Ck (Russell Mill Rd to Rt 45)	Turbidity	L
18	02040202150060-01	Raccoon Ck (below Swedesboro rd)/BirchCk	Phosphorus	M
18	02040202150060-01	Raccoon Ck (below Swedesboro rd)/BirchCk	Total suspended solids	L
18	02040202160010-01	Oldmans Creek (above Commissioners Rd)	pH	M
18	02040202160020-01	Oldmans Creek (Rt45 to Commissioners Rd)	pH	M
18	02040202160040-01	Beaver Creek (Oldmans Creek)	Dioxin	M
18	02040202160040-01	Beaver Creek (Oldmans Creek)	PCBs	M
18	02040202160050-01	Oldmans Creek (Center Sq Rd to KingsHwy)	Dioxin	M
18	02040202160050-01	Oldmans Creek (Center Sq Rd to KingsHwy)	PCBs	M
18	02040202160050-01	Oldmans Creek (Center Sq Rd to KingsHwy)	Phosphorus	M
18	02040202160050-01	Oldmans Creek (Center Sq Rd to KingsHwy)	Total suspended solids	L
18	02040202160060-01	Oldmans Creek (below Center Sq Rd)	Dioxin	M
18	02040202160060-01	Oldmans Creek (below Center Sq Rd)	PCBs	M
17	02040204910010-01	Dl Bay(CapeMay Pt to Dennis Ck)inshore	DDX	M
17	02040204910010-01	Dl Bay(CapeMay Pt to Dennis Ck)inshore	Dissolved Oxygen	M
17	02040204910010-01	Dl Bay(CapeMay Pt to Dennis Ck)inshore	Mercury	M
17	02040204910010-01	Dl Bay(CapeMay Pt to Dennis Ck)inshore	PCBs	M
17	02040204910010-02	Dl Bay(CapeMay Pt to Dennis Ck)offshore	DDX	M
17	02040204910010-02	Dl Bay(CapeMay Pt to Dennis Ck)offshore	Dissolved Oxygen	M
17	02040204910010-02	Dl Bay(CapeMay Pt to Dennis Ck)offshore	Mercury	M
17	02040204910010-02	Dl Bay(CapeMay Pt to Dennis Ck)offshore	PCBs	M
17	02040204910020-01	Dl Bay(DennisCk to Egg Islnd Pt)inshore	DDX	M
17	02040204910020-01	Dl Bay(DennisCk to Egg Islnd Pt)inshore	Dissolved Oxygen	M
17	02040204910020-01	Dl Bay(DennisCk to Egg Islnd Pt)inshore	Mercury	M
17	02040204910020-01	Dl Bay(DennisCk to Egg Islnd Pt)inshore	PCBs	M
17	02040204910020-02	Dl Bay(DennisCk to Egg Islnd Pt)offshore	DDX	M
17	02040204910020-02	Dl Bay(DennisCk to Egg Islnd Pt)offshore	Dissolved Oxygen	M
17	02040204910020-02	Dl Bay(DennisCk to Egg Islnd Pt)offshore	Mercury	M
17	02040204910020-02	Dl Bay(DennisCk to Egg Islnd Pt)offshore	PCBs	M
17	02040204910030-01	Dl Bay(Egg Is Pt to Cohansey R)Inshore	Dissolved Oxygen	M
17	02040204910030-01	Dl Bay(Egg Is Pt to Cohansey R)Inshore	PCBs	M
17	02040204910030-02	Dl Bay(Egg Is Pt to Cohansey R)Offshore	Dissolved Oxygen	M
17	02040204910030-02	Dl Bay(Egg Is Pt to Cohansey R)Offshore	PCBs	M
17	02040204910040-01	Delaware Bay (Cohansey R to FishingCk)	Chlordane	M
17	02040204910040-01	Delaware Bay (Cohansey R to FishingCk)	DDX	M
17	02040204910040-01	Delaware Bay (Cohansey R to FishingCk)	Dieldrin	M
17	02040204910040-01	Delaware Bay (Cohansey R to FishingCk)	Dissolved Oxygen	M
17	02040204910040-01	Delaware Bay (Cohansey R to FishingCk)	Mercury	M
17	02040204910040-01	Delaware Bay (Cohansey R to FishingCk)	PCBs	M
17	02040206020010-01	LDRV tribs (Lakeview Ave to Oldmans Ck)	Dioxin	M
17	02040206020010-01	LDRV tribs (Lakeview Ave to Oldmans Ck)	PCBs	M
17	02040206020020-01	LDRV tribs (Marsh Pt-Main St Pennsville)	DDX	M
17	02040206020020-01	LDRV tribs (Marsh Pt-Main St Pennsville)	Dioxin	M
17	02040206020020-01	LDRV tribs (Marsh Pt-Main St Pennsville)	Mercury	M
17	02040206020020-01	LDRV tribs (Marsh Pt-Main St Pennsville)	PCBs	M
17	02040206030010-01	Salem River (above Woodstown gage)	pH	M
17	02040206030010-01	Salem River (above Woodstown gage)	Phosphorus	M
17	02040206030030-01	Salem R (CountyHomeRd to Woodstown gage)	pH	M
17	02040206030030-01	Salem R (CountyHomeRd to Woodstown gage)	Phosphorus	M
17	02040206030040-01	Salem R (CoursesLanding to CountyHomeRd)	Phosphorus	M
17	02040206030040-01	Salem R (CoursesLanding to CountyHomeRd)	Temperature	L
17	02040206030040-01	Salem R (CoursesLanding to CountyHomeRd)	Total suspended solids	L

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
17	02040206030050-01	Game Creek (above Rt 48)	Phosphorus	M
17	02040206030060-01	Salem R (39-40-14 dam-CoursesLndg)/Canal	Phosphorus	M
17	02040206030060-01	Salem R (39-40-14 dam-CoursesLndg)/Canal	Temperature	L
17	02040206040020-01	Fenwick Creek / Keasbeys Creek	Dioxin	M
17	02040206040020-01	Fenwick Creek / Keasbeys Creek	PCBs	M
17	02040206040030-01	Salem R (Fenwick Ck to 39d40m14s dam)	Dioxin	M
17	02040206040030-01	Salem R (Fenwick Ck to 39d40m14s dam)	PCBs	M
17	02040206040040-01	Salem R (below Fenwick Creek)	Dioxin	M
17	02040206040040-01	Salem R (below Fenwick Creek)	PCBs	M
17	02040206060020-01	Alloway Ck (above Alloway-Woodstown Rd)	Phosphorus	M
17	02040206060050-01	Alloway Ck (Quinton to Alloway-WdstwnRd)	Dioxin	M
17	02040206060050-01	Alloway Ck (Quinton to Alloway-WdstwnRd)	PCBs	M
17	02040206060060-01	Alloway Creek (New Bridge to Quinton)	Dioxin	M
17	02040206060060-01	Alloway Creek (New Bridge to Quinton)	PCBs	M
17	02040206060070-01	Harmony trib (Alloway Creek)	Dioxin	M
17	02040206060070-01	Harmony trib (Alloway Creek)	PCBs	M
17	02040206060080-01	Alloway Ck (HancocksBridge to NewBridge)	Dioxin	M
17	02040206060080-01	Alloway Ck (HancocksBridge to NewBridge)	PCBs	M
17	02040206060090-01	Alloway Ck (below HancocksBr) to Salem R	Dioxin	M
17	02040206060090-01	Alloway Ck (below HancocksBr) to Salem R	PCBs	M
17	02040206060100-01	Hope Creek / Artificial Island	Dioxin	M
17	02040206060100-01	Hope Creek / Artificial Island	PCBs	M
17	02040206070010-01	Fishing Creek / Bucks Ditch/Pattys Fork	Dioxin	M
17	02040206070010-01	Fishing Creek / Bucks Ditch/Pattys Fork	PCBs	M
17	02040206070020-01	Mad Horse Ck / Little Ck / Turners Fork	Dioxin	M
17	02040206070020-01	Mad Horse Ck / Little Ck / Turners Fork	PCBs	M
17	02040206070030-01	Canton Drain (above Maskell Mill)	pH	M
17	02040206070040-01	Canton Drain (below Maskell Mill)	Dioxin	M
17	02040206070040-01	Canton Drain (below Maskell Mill)	PCBs	M
17	02040206070040-01	Canton Drain (below Maskell Mill)	Pollutant Unknown	L
17	02040206070060-01	Stow Creek (Canton Road to Jericho Road)	Dioxin	M
17	02040206070060-01	Stow Creek (Canton Road to Jericho Road)	Dissolved Oxygen	M
17	02040206070060-01	Stow Creek (Canton Road to Jericho Road)	PCBs	M
17	02040206070070-01	Raccoon Ditch (Stow Creek)	Dioxin	M
17	02040206070070-01	Raccoon Ditch (Stow Creek)	Dissolved Oxygen	M
17	02040206070070-01	Raccoon Ditch (Stow Creek)	PCBs	M
17	02040206070080-01	Stow Creek (below Canton Rd)	Dioxin	M
17	02040206070080-01	Stow Creek (below Canton Rd)	Dissolved Oxygen	M
17	02040206070080-01	Stow Creek (below Canton Rd)	PCBs	M
17	02040206070090-01	Phillips Creek / Jacobs Creek	Dioxin	M
17	02040206070090-01	Phillips Creek / Jacobs Creek	PCBs	M
17	02040206080010-01	Cohansey River (above Beals Mill)	pH	M
17	02040206080020-01	Cohansey R (incl HandsPond - Beals Mill)	pH	M
17	02040206080040-01	Cohansey R (incl Beebe Run to HandsPond)	pH	M
17	02040206080050-01	Cohansey R (incl CornwellRun - BeebeRun)	pH	M
17	02040206090030-01	Cohansey R (Rocaps Run to Cornwell Run)	PCBs	M
17	02040206090050-01	Mill Creek (below Maple House Bk)	PCBs	M
17	02040206090060-01	Cohansey R (75d15m to/incl Rocaps Run)	PCBs	M
17	02040206090070-01	Cohansey R (75d17m50s to 75d15m)	PCBs	M
17	02040206090080-01	Cohansey R (Greenwich to 75d17m50s)	Chlordane	M
17	02040206090080-01	Cohansey R (Greenwich to 75d17m50s)	DDX	M
17	02040206090080-01	Cohansey R (Greenwich to 75d17m50s)	Mercury	M
17	02040206090080-01	Cohansey R (Greenwich to 75d17m50s)	PCBs	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
17	02040206090100-01	Cohansey R (below Greenwich)	Chlordane	M
17	02040206090100-01	Cohansey R (below Greenwich)	DDX	M
17	02040206090100-01	Cohansey R (below Greenwich)	Mercury	M
17	02040206090100-01	Cohansey R (below Greenwich)	PCBs	M
17	02040206100010-01	Middle Marsh Ck (DrumboCk to Sea Breeze)	PCBs	M
17	02040206100020-01	Bridges Sticks Creek / Ogden Creek	PCBs	M
17	02040206100030-01	Back Creek (Sea Breeze Rd to Cedar Ck)	PCBs	M
17	02040206100050-01	Cedar Creek (below Rt 553)	PCBs	M
17	02040206100060-01	Nantuxent Creek (above Newport Landing)	PCBs	M
17	02040206100060-01	Nantuxent Creek (above Newport Landing)	pH	M
17	02040206100070-01	Nantuxent Creek (below Newport Landing)	PCBs	M
17	02040206110010-01	Newport Neck (Nantuxent to Beadons Ck)	PCBs	M
17	02040206110020-01	Fortesque Ck / Fishing Ck / Straight Ck	PCBs	M
17	02040206110030-01	Oranoaken Creek	Dissolved Oxygen	M
17	02040206110030-01	Oranoaken Creek	PCBs	M
17	02040206110040-01	Mill Creek (Dividing Creek)	PCBs	M
17	02040206110050-01	Dividing Creek (above Mill Creek)	Dissolved Oxygen	M
17	02040206110050-01	Dividing Creek (above Mill Creek)	PCBs	M
17	02040206110060-01	Dividing Creek (below Mill Creek)	Dissolved Oxygen	M
17	02040206110060-01	Dividing Creek (below Mill Creek)	PCBs	M
17	02040206110070-01	New England Creek (Kenny Pt to Elder Pt)	PCBs	M
17	02040206120010-01	Little Ease Run (above Academy Rd)	pH	M
17	02040206120020-01	Little Ease Run (below Academy Rd)	pH	M
17	02040206120030-01	Still Run (above Silver Lake Road)	Pollutant Unknown	L
17	02040206120050-01	Still Run (WillowGroveLk - SilverLakeRd)	pH	M
17	02040206130030-01	Indian Branch (Scotland Run)	pH	M
17	02040206140010-01	MauriceR(BlkwtrBr to/incl WillowGroveLk)	Arsenic	M
17	02040206140010-01	MauriceR(BlkwtrBr to/incl WillowGroveLk)	pH	M
17	02040206140020-01	Burnt Mill Branch / Hudson Branch	Arsenic	M
17	02040206140040-01	Blackwater Branch (above/incl Pine Br)	pH	M
17	02040206140050-01	Blackwater Branch (below Pine Branch)	pH	M
17	02040206140060-01	Maurice R (Sherman Ave to Blackwater Br)	Arsenic	M
17	02040206140060-01	Maurice R (Sherman Ave to Blackwater Br)	pH	M
17	02040206140070-01	Parvin Branch / Tarkiln Branch	Pollutant Unknown	L
17	02040206150030-01	Palatine Branch (Muddy Run)	pH	M
17	02040206150030-01	Palatine Branch (Muddy Run)	Phosphorus	M
17	02040206150040-01	Indian Run (Muddy Run)	Pollutant Unknown	L
17	02040206160030-01	Maurice River(Union Lake to Sherman Ave)	Arsenic	M
17	02040206160030-01	Maurice River(Union Lake to Sherman Ave)	pH	M
17	02040206170010-01	Hankins Pond trib (Millville)	PCBs	M
17	02040206170020-01	White Marsh Run (Millville)	pH	M
17	02040206170030-01	Maurice River(Menantico Ck to UnionLake)	PCBs	M
17	02040206170040-01	Buckshutem Creek (above Rt 555)	Pathogens	H
17	02040206170050-01	Buckshutem Creek (below Rt 555)	Pathogens	H
17	02040206170050-01	Buckshutem Creek (below Rt 555)	PCBs	M
17	02040206180020-01	Cedar Branch (Menantico Creek)	Pollutant Unknown	L
17	02040206180030-01	Menantico Creek (above Rt 552)	Pollutant Unknown	L
17	02040206180050-01	Menantico Creek (below Rt 552)	PCBs	M
17	02040206180050-01	Menantico Creek (below Rt 552)	pH	M
17	02040206180050-01	Menantico Creek (below Rt 552)	Phosphorus	M
17	02040206190030-01	Manumuskin River (below Rt 49)	PCBs	M
17	02040206190030-01	Manumuskin River (below Rt 49)	pH	M
17	02040206200020-01	Muskee Creek	PCBs	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
17	02040206200020-01	Muskee Creek	Pollutant Unknown	L
17	02040206200030-01	Maurice River (Rt 548 to Menantico Ck)	PCBs	M
17	02040206200040-01	Maurice River (Leesburg to Rt 548)	PCBs	M
17	02040206200050-01	Maurice River (below Leesburg) to EastPt	Dissolved Oxygen	M
17	02040206200050-01	Maurice River (below Leesburg) to EastPt	PCBs	M
16	02040206210010-01	Riggins Ditch (Moores Beach to East Pt)	PCBs	M
16	02040206210040-01	West Ck (below PaperMillRd) to MooresBch	PCBs	M
16	02040206210060-01	East Creek	PCBs	M
16	02040206220010-01	Dennis Ck / Cedar Swamp(Rt 47 to Rt 550)	Dissolved Oxygen	M
16	02040206220010-01	Dennis Ck / Cedar Swamp(Rt 47 to Rt 550)	PCBs	M
16	02040206220020-01	Sluice Creek	PCBs	M
16	02040206220030-01	Dennis Creek (Jakes Landing Rd to Rt 47)	Dissolved Oxygen	M
16	02040206220030-01	Dennis Creek (Jakes Landing Rd to Rt 47)	PCBs	M
16	02040206220030-01	Dennis Creek (Jakes Landing Rd to Rt 47)	pH	M
16	02040206220040-01	Dennis Creek (below Jakes Landing Rd)	Dissolved Oxygen	M
16	02040206220040-01	Dennis Creek (below Jakes Landing Rd)	PCBs	M
16	02040206220040-01	Dennis Creek (below Jakes Landing Rd)	pH	M
16	02040206230010-01	Bidwell Creek (above Rt 47)	Dissolved Oxygen	M
16	02040206230010-01	Bidwell Creek (above Rt 47)	PCBs	M
16	02040206230020-01	Bidwell Ck(below Rt 47)-Dias to GoshenCk	Dissolved Oxygen	M
16	02040206230020-01	Bidwell Ck(below Rt 47)-Dias to GoshenCk	PCBs	M
16	02040206230030-01	Dias Creek	Dissolved Oxygen	M
16	02040206230030-01	Dias Creek	PCBs	M
16	02040206230040-01	Green Ck (Norburys Landng to Pierces Pt)	Dissolved Oxygen	M
16	02040206230040-01	Green Ck (Norburys Landng to Pierces Pt)	PCBs	M
16	02040206230040-01	Green Ck (Norburys Landng to Pierces Pt)	pH	M
16	02040206230040-01	Green Ck (Norburys Landng to Pierces Pt)	Phosphorus	M
16	02040206230040-01	Green Ck (Norburys Landng to Pierces Pt)	Total dissolved solids	L
16	02040206230050-01	Fishing Creek / Fishing Mill Stream	PCBs	M
16	02040206230050-01	Fishing Creek / Fishing Mill Stream	pH	M
16	02040206230060-01	Cox Hall Creek / Mickels Run (to Villas)	Dissolved Oxygen	M
16	02040206230060-01	Cox Hall Creek / Mickels Run (to Villas)	Pathogens	H
16	02040206230060-01	Cox Hall Creek / Mickels Run (to Villas)	PCBs	M
16	02040206230070-01	Pond Creek / Cape May Canal West	PCBs	M
13	02040301020010-01	Metedeconk R NB(above I-195)	Dissolved Oxygen	M
13	02040301020010-01	Metedeconk R NB(above I-195)	pH	M
13	02040301020020-01	Metedeconk R NB(Rt 9 to I-195)	Dissolved Oxygen	M
13	02040301020020-01	Metedeconk R NB(Rt 9 to I-195)	pH	M
13	02040301020020-01	Metedeconk R NB(Rt 9 to I-195)	Phosphorus	M
13	02040301020020-01	Metedeconk R NB(Rt 9 to I-195)	Temperature	L
13	02040301020030-01	Haystack Brook	pH	M
13	02040301020030-01	Haystack Brook	Phosphorus	M
13	02040301020040-01	Muddy Ford Brook	pH	M
13	02040301020040-01	Muddy Ford Brook	Phosphorus	M
13	02040301020040-01	Muddy Ford Brook	Total suspended solids	L
13	02040301020050-01	Metedeconk R NB (confluence to Rt 9)	pH	M
13	02040301020050-01	Metedeconk R NB (confluence to Rt 9)	Temperature	L
13	02040301030010-01	Metedeconk R SB (above I-195 exit 21 rd)	pH	M
13	02040301030020-01	Metedeconk R SB (74d19m15s to I-195 X21)	pH	M
13	02040301030030-01	Metedeconk R SB(BennettsPd to 74d19m15s)	pH	M
13	02040301030040-01	Metedeconk R SB (Rt 9 to Bennetts Pond)	pH	M
13	02040301030040-01	Metedeconk R SB (Rt 9 to Bennetts Pond)	Phosphorus	M
13	02040301030050-01	Metedeconk R SB (confluence to Rt 9)	pH	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
13	02040301040020-01	Metedeconk R (Beaverdam Ck to confl)	pH	M
13	02040301040030-01	Metedeconk R (below Beaverdam Creek)	Dissolved Oxygen	M
13	02040301050020-01	Kettle Creek (below Lake Riviera outlet)	Pollutant Unknown	L
13	02040301050050-01	Barnegat Bay North (above Rt 37 bridge)	Dissolved Oxygen	M
13	02040301060010-01	Toms River (above Francis Mills)	Dioxin	M
13	02040301060010-01	Toms River (above Francis Mills)	PCBs	M
13	02040301060010-01	Toms River (above Francis Mills)	pH	M
13	02040301060010-01	Toms River (above Francis Mills)	Phosphorus	M
13	02040301060020-01	Toms River (74-22-30 rd to FrancisMills)	pH	M
13	02040301060030-01	Toms River (Bowman Rd to 74-22-30 road)	pH	M
13	02040301060060-01	Toms River (Hope Chapel Rd to Bowman Rd)	Dioxin	M
13	02040301060060-01	Toms River (Hope Chapel Rd to Bowman Rd)	PCBs	M
13	02040301060060-01	Toms River (Hope Chapel Rd to Bowman Rd)	pH	M
13	02040301060070-01	Toms River (Rt 70 to Hope Chapel Road)	pH	M
13	02040301060080-01	Toms River (Oak Ridge Parkway to Rt 70)	Dioxin	M
13	02040301060080-01	Toms River (Oak Ridge Parkway to Rt 70)	PCBs	M
13	02040301060080-01	Toms River (Oak Ridge Parkway to Rt 70)	pH	M
13	02040301070010-01	Shannae Brook	pH	M
13	02040301070030-01	Ridgeway Br (Hope Chapel Rd to HarrisBr)	Mercury	M
13	02040301070040-01	Ridgeway Br (below Hope Chapel Rd)	Mercury	M
13	02040301070040-01	Ridgeway Br (below Hope Chapel Rd)	pH	M
13	02040301070080-01	Manapaqua Brook	Mercury	M
13	02040301070090-01	Union Branch (below Blacks Br 74d22m05s)	Mercury	M
13	02040301070090-01	Union Branch (below Blacks Br 74d22m05s)	pH	M
13	02040301080050-01	Wrangel Brook (below Michaels Branch)	pH	M
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Arsenic	M
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Chlordane	M
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Chromium	M
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Copper	M
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	DDX	M
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Lead	M
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Mercury	M
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Nickel	M
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	PCBs	M
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	pH	M
13	02040301080060-01	Toms R Lwr (Rt 166 to Oak Ridge Pkwy)	Zinc	M
13	02040301080070-01	Jakes Branch (Lower Toms River)	Dissolved Oxygen	M
13	02040301080080-01	Long Swamp Creek	Pollutant Unknown	L
13	02040301080090-01	Toms R Lwr (below Rt 166)	Arsenic	M
13	02040301080090-01	Toms R Lwr (below Rt 166)	Chromium	M
13	02040301080090-01	Toms R Lwr (below Rt 166)	Copper	M
13	02040301080090-01	Toms R Lwr (below Rt 166)	Lead	M
13	02040301080090-01	Toms R Lwr (below Rt 166)	Nickel	M
13	02040301080090-01	Toms R Lwr (below Rt 166)	Zinc	M
13	02040301090060-01	Cedar Creek (below GS Parkway)	pH	M
13	02040301110010-01	Forked River NB(above old RR grade)	Dissolved Oxygen	M
13	02040301110050-01	Oyster Creek (below Rt 532)	Dissolved Oxygen	M
13	02040301120010-01	Waretown Creek / Lochiel Creek	pH	M
13	02040301130020-01	Mill Ck (above GS Parkway)	pH	M
13	02040301130030-01	Mill Ck (below GS Parkway)/Manahawkin Ck	pH	M
13	02040301130040-01	Cedar Run	pH	M
13	02040301140020-01	Mill Branch (below GS Parkway)	pH	M
13	02040301140040-01	LEH Bay tribs(Westecunk Ck-Tuckerton Ck)	Dissolved Oxygen	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
14	02040301150010-01	Batsto River (above Hampton Gate)	pH	M
14	02040301150030-01	Indian Mills Brook / Muskingum Brook	pH	M
14	02040301150040-01	Springers Brook / Deep Run	Copper	M
14	02040301150040-01	Springers Brook / Deep Run	pH	M
14	02040301150050-01	Batsto River (CNJRR to Hampton Gate)	pH	M
14	02040301150060-01	Batsto River (Quaker Bridge to CNJRR)	pH	M
14	02040301150080-01	Batsto R (Batsto gage to Quaker Bridge)	Copper	M
14	02040301150080-01	Batsto R (Batsto gage to Quaker Bridge)	pH	M
14	02040301160020-01	Mullica River (above Jackson Road)	DDX	M
14	02040301160020-01	Mullica River (above Jackson Road)	Dissolved Oxygen	M
14	02040301160020-01	Mullica River (above Jackson Road)	Mercury	M
14	02040301160020-01	Mullica River (above Jackson Road)	PCBs	M
14	02040301160020-01	Mullica River (above Jackson Road)	pH	M
14	02040301160030-01	Mullica River (Rt 206 to Jackson Road)	DDX	M
14	02040301160030-01	Mullica River (Rt 206 to Jackson Road)	Dissolved Oxygen	M
14	02040301160030-01	Mullica River (Rt 206 to Jackson Road)	Lead	M
14	02040301160030-01	Mullica River (Rt 206 to Jackson Road)	Mercury	M
14	02040301160030-01	Mullica River (Rt 206 to Jackson Road)	PCBs	M
14	02040301160040-01	Wisickaman Creek	Pollutant Unknown	L
14	02040301160050-01	Hays Mill Creek (above Tremont Ave)	pH	M
14	02040301160060-01	Sleeper Branch (Rt 206 to Tremont Ave)	pH	M
14	02040301160070-01	Pump Branch (above 74d53m road)	pH	M
14	02040301160080-01	Pump Branch (below 74d53m road)	pH	M
14	02040301160100-01	Blue Anchor Brook	pH	M
14	02040301160100-01	Blue Anchor Brook	Temperature	L
14	02040301160110-01	Albertson Brook / Gun Branch	pH	M
14	02040301160120-01	Great Swamp Branch (above Rt 206)	Nitrate	M
14	02040301160120-01	Great Swamp Branch (above Rt 206)	pH	M
14	02040301160130-01	Great Swamp Branch (below Rt 206)	Nitrate	M
14	02040301160130-01	Great Swamp Branch (below Rt 206)	pH	M
14	02040301160140-01	Mullica River (39d40m30s to Rt 206)	DDX	M
14	02040301160140-01	Mullica River (39d40m30s to Rt 206)	Lead	M
14	02040301160140-01	Mullica River (39d40m30s to Rt 206)	Mercury	M
14	02040301160140-01	Mullica River (39d40m30s to Rt 206)	PCBs	M
14	02040301160140-01	Mullica River (39d40m30s to Rt 206)	pH	M
14	02040301160150-01	Mullica R (Pleasant Mills to 39d40m30s)	DDX	M
14	02040301160150-01	Mullica R (Pleasant Mills to 39d40m30s)	Mercury	M
14	02040301160150-01	Mullica R (Pleasant Mills to 39d40m30s)	PCBs	M
14	02040301160150-01	Mullica R (Pleasant Mills to 39d40m30s)	pH	M
14	02040301170010-01	Hammonton Creek (above 74d43m)	Arsenic	M
14	02040301170010-01	Hammonton Creek (above 74d43m)	Mercury	M
14	02040301170010-01	Hammonton Creek (above 74d43m)	Nitrate	M
14	02040301170010-01	Hammonton Creek (above 74d43m)	pH	M
14	02040301170010-01	Hammonton Creek (above 74d43m)	Phosphorus	M
14	02040301170010-01	Hammonton Creek (above 74d43m)	Zinc	M
14	02040301170020-01	Hammonton Creek (Columbia Rd to 74d43m)	Arsenic	M
14	02040301170020-01	Hammonton Creek (Columbia Rd to 74d43m)	Mercury	M
14	02040301170020-01	Hammonton Creek (Columbia Rd to 74d43m)	Nitrate	M
14	02040301170020-01	Hammonton Creek (Columbia Rd to 74d43m)	pH	M
14	02040301170020-01	Hammonton Creek (Columbia Rd to 74d43m)	Phosphorus	M
14	02040301170020-01	Hammonton Creek (Columbia Rd to 74d43m)	Zinc	M
14	02040301170040-01	Mullica River (BatstoR to PleasantMills)	Copper	M
14	02040301170040-01	Mullica River (BatstoR to PleasantMills)	DDX	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
14	02040301170040-01	Mullica River (BatstoR to PleasantMills)	Mercury	M
14	02040301170040-01	Mullica River (BatstoR to PleasantMills)	PCBs	M
14	02040301170040-01	Mullica River (BatstoR to PleasantMills)	pH	M
14	02040301170060-01	Mullica River (Rt 563 to Batsto River)	Mercury	M
14	02040301170060-01	Mullica River (Rt 563 to Batsto River)	PCBs	M
14	02040301170060-01	Mullica River (Rt 563 to Batsto River)	pH	M
14	02040301170060-01	Mullica River (Rt 563 to Batsto River)	Phosphorus	M
14	02040301170060-01	Mullica River (Rt 563 to Batsto River)	Temperature	L
14	02040301170080-01	Mullica River (Lower Bank Rd to Rt 563)	Mercury	M
14	02040301170080-01	Mullica River (Lower Bank Rd to Rt 563)	PCBs	M
14	02040301170080-01	Mullica River (Lower Bank Rd to Rt 563)	pH	M
14	02040301170080-01	Mullica River (Lower Bank Rd to Rt 563)	Phosphorus	M
14	02040301170080-01	Mullica River (Lower Bank Rd to Rt 563)	Temperature	L
14	02040301170090-01	Indian Cabin Creek	Dissolved Oxygen	M
14	02040301170100-01	Landing Creek (above Rt 563)	Pollutant Unknown	L
14	02040301170130-01	Mullica River(Turtle Ck to Lower BankRd)	Mercury	M
14	02040301170130-01	Mullica River(Turtle Ck to Lower BankRd)	PCBs	M
14	02040301180070-01	Oswego River (below Andrews Road)	Zinc	M
14	02040301190050-01	Wading River WB (Jenkins Rd to Rt 563)	Mercury	M
14	02040301190050-01	Wading River WB (Jenkins Rd to Rt 563)	Phosphorus	M
14	02040301190070-01	Wading River WB (Oswego R to Jenkins Rd)	Mercury	M
14	02040301190070-01	Wading River WB (Oswego R to Jenkins Rd)	Phosphorus	M
14	02040301200010-01	Beaver Branch (Wading River)	Mercury	M
14	02040301200020-01	Wading River (Rt 542 to Oswego River)	Dissolved Oxygen	M
14	02040301200020-01	Wading River (Rt 542 to Oswego River)	Mercury	M
14	02040301200030-02	Wading River (below Rt 542)	Dissolved Oxygen	M
14	02040301200030-02	Wading River (below Rt 542)	Mercury	M
14	02040301200050-02	Bass River EB	Copper	M
14	02040301200050-02	Bass River EB	Lead	M
14	02040301200080-02	Mullica River (GSP bridge to Turtle Ck)	Mercury	M
14	02040301200080-02	Mullica River (GSP bridge to Turtle Ck)	PCBs	M
14	02040301200100-02	Morses Mill Stream	Pollutant Unknown	L
14	02040301200110-02	Mattix Run (Nacote Creek)	pH	M
14	02040301200120-02	Nacote Creek (below/incl Mill Pond)	Dissolved Oxygen	M
14	02040301210010-02	Mullica River (below GSP bridge)	Dissolved Oxygen	M
14	02040301210010-02	Mullica River (below GSP bridge)	Mercury	M
14	02040301210010-02	Mullica River (below GSP bridge)	PCBs	M
13	02040301910010-01	Atl Coast(Manasquan/Herring Is)inshore	DDX	M
13	02040301910010-01	Atl Coast(Manasquan/Herring Is)inshore	Dissolved Oxygen	M
13	02040301910010-01	Atl Coast(Manasquan/Herring Is)inshore	Mercury	M
13	02040301910010-01	Atl Coast(Manasquan/Herring Is)inshore	PCBs	M
13	02040301910010-02	Atl Coast(Manasquan/Herring Is)offshore	DDX	M
13	02040301910010-02	Atl Coast(Manasquan/Herring Is)offshore	Dissolved Oxygen	M
13	02040301910010-02	Atl Coast(Manasquan/Herring Is)offshore	Mercury	M
13	02040301910010-02	Atl Coast(Manasquan/Herring Is)offshore	PCBs	M
13	02040301910020-01	Atl Coast (Herring Is to Rt 37)inshore	DDX	M
13	02040301910020-01	Atl Coast (Herring Is to Rt 37)inshore	Dissolved Oxygen	M
13	02040301910020-01	Atl Coast (Herring Is to Rt 37)inshore	Mercury	M
13	02040301910020-01	Atl Coast (Herring Is to Rt 37)inshore	PCBs	M
13	02040301910020-02	Atl Coast (Herring Is to Rt 37)offshore	DDX	M
13	02040301910020-02	Atl Coast (Herring Is to Rt 37)offshore	Dissolved Oxygen	M
13	02040301910020-02	Atl Coast (Herring Is to Rt 37)offshore	Mercury	M
13	02040301910020-02	Atl Coast (Herring Is to Rt 37)offshore	PCBs	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
13	02040301910030-01	Atl Cst(Rt 37 to Barnegat Inlet)inshore	DDX	M
13	02040301910030-01	Atl Cst(Rt 37 to Barnegat Inlet)inshore	Dissolved Oxygen	M
13	02040301910030-01	Atl Cst(Rt 37 to Barnegat Inlet)inshore	Mercury	M
13	02040301910030-01	Atl Cst(Rt 37 to Barnegat Inlet)inshore	PCBs	M
13	02040301910030-02	Atl Cst(Rt 37 to Barnegat Inlet)offshore	DDX	M
13	02040301910030-02	Atl Cst(Rt 37 to Barnegat Inlet)offshore	Dissolved Oxygen	M
13	02040301910030-02	Atl Cst(Rt 37 to Barnegat Inlet)offshore	Mercury	M
13	02040301910030-02	Atl Cst(Rt 37 to Barnegat Inlet)offshore	PCBs	M
13	02040301920010-01	Atl Coast(Barnegat to Surf City)inshore	DDX	M
13	02040301920010-01	Atl Coast(Barnegat to Surf City)inshore	Dissolved Oxygen	M
13	02040301920010-01	Atl Coast(Barnegat to Surf City)inshore	Mercury	M
13	02040301920010-01	Atl Coast(Barnegat to Surf City)inshore	PCBs	M
13	02040301920010-02	Atl Coast(Barnegat to Surf City)offshore	DDX	M
13	02040301920010-02	Atl Coast(Barnegat to Surf City)offshore	Dissolved Oxygen	M
13	02040301920010-02	Atl Coast(Barnegat to Surf City)offshore	Mercury	M
13	02040301920010-02	Atl Coast(Barnegat to Surf City)offshore	PCBs	M
13	02040301920020-01	Atl Coast(Surf City to Haven Be)inshore	DDX	M
13	02040301920020-01	Atl Coast(Surf City to Haven Be)inshore	Dissolved Oxygen	M
13	02040301920020-01	Atl Coast(Surf City to Haven Be)inshore	Mercury	M
13	02040301920020-01	Atl Coast(Surf City to Haven Be)inshore	PCBs	M
13	02040301920020-02	Atl Coast(Surf City to Haven Be)offshore	DDX	M
13	02040301920020-02	Atl Coast(Surf City to Haven Be)offshore	Dissolved Oxygen	M
13	02040301920020-02	Atl Coast(Surf City to Haven Be)offshore	Mercury	M
13	02040301920020-02	Atl Coast(Surf City to Haven Be)offshore	PCBs	M
13	02040301920030-01	Atl Coast(Haven Bch to Lit Egg)inshore	DDX	M
13	02040301920030-01	Atl Coast(Haven Bch to Lit Egg)inshore	Dissolved Oxygen	M
13	02040301920030-01	Atl Coast(Haven Bch to Lit Egg)inshore	Mercury	M
13	02040301920030-01	Atl Coast(Haven Bch to Lit Egg)inshore	PCBs	M
13	02040301920030-02	Atl Coast(Haven Bch to Lit Egg)offshore	DDX	M
13	02040301920030-02	Atl Coast(Haven Bch to Lit Egg)offshore	Dissolved Oxygen	M
13	02040301920030-02	Atl Coast(Haven Bch to Lit Egg)offshore	Mercury	M
13	02040301920030-02	Atl Coast(Haven Bch to Lit Egg)offshore	PCBs	M
15	02040302020010-01	Absecon Creek NB	pH	M
15	02040302020020-01	Absecon Creek SB	Mercury	M
15	02040302020030-01	Absecon Ck (AC Reserviors) (gage to SB)	Mercury	M
15	02040302020040-01	Absecon Creek (below gage)	Dissolved Oxygen	M
15	02040302030010-01	Great Egg Harbor R(above New Freedom Rd)	pH	M
15	02040302030020-01	GEHR (AC Expressway to New Freedom Rd)	pH	M
15	02040302030030-01	Four Mile Branch (GEHR)	pH	M
15	02040302030040-01	GEHR (Broad Lane road to AC Expressway)	Copper	M
15	02040302030040-01	GEHR (Broad Lane road to AC Expressway)	Lead	M
15	02040302030040-01	GEHR (Broad Lane road to AC Expressway)	pH	M
15	02040302030050-01	Squankum Branch (GEHR)	Mercury	M
15	02040302030050-01	Squankum Branch (GEHR)	pH	M
15	02040302030060-01	GEHR (Piney Hollow Rd to Broad Lane rd)	Copper	M
15	02040302030060-01	GEHR (Piney Hollow Rd to Broad Lane rd)	Lead	M
15	02040302030060-01	GEHR (Piney Hollow Rd to Broad Lane rd)	pH	M
15	02040302030070-01	Penny Pot Stream (GEHR)	pH	M
15	02040302030080-01	GEHR (Hospitality Br to Piney Hollow Rd)	Copper	M
15	02040302030080-01	GEHR (Hospitality Br to Piney Hollow Rd)	Lead	M
15	02040302030080-01	GEHR (Hospitality Br to Piney Hollow Rd)	pH	M
15	02040302040010-01	Hospitality Branch (above Whitehouse Rd)	pH	M
15	02040302040020-01	Hospitality Br (Rt 538 to Whitehouse Rd)	pH	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
15	02040302040030-01	Hospitality Br (Piney HollowRd to Rt538)	pH	M
15	02040302040050-01	Collings Lakes trib (Hospitality Branch)	pH	M
15	02040302040070-01	Hospitality Br (below Piney Hollow Rd)	pH	M
15	02040302040080-01	GEHR (39d32m50s to Hospitality Branch)	Copper	M
15	02040302040080-01	GEHR (39d32m50s to Hospitality Branch)	Mercury	M
15	02040302040080-01	GEHR (39d32m50s to Hospitality Branch)	pH	M
15	02040302040090-01	GEHR (Rt 322 to 39d32m50s)	Copper	M
15	02040302040090-01	GEHR (Rt 322 to 39d32m50s)	Mercury	M
15	02040302040090-01	GEHR (Rt 322 to 39d32m50s)	pH	M
15	02040302040110-01	GEHR (Mare Run to Rt 322)	Copper	M
15	02040302040110-01	GEHR (Mare Run to Rt 322)	Mercury	M
15	02040302040110-01	GEHR (Mare Run to Rt 322)	pH	M
15	02040302040120-01	Deep Run (GEHR)	pH	M
15	02040302040130-01	GEHR (Lake Lenape to Mare Run)	Copper	M
15	02040302040130-01	GEHR (Lake Lenape to Mare Run)	Mercury	M
15	02040302040130-01	GEHR (Lake Lenape to Mare Run)	pH	M
15	02040302050010-01	Watering Race Branch (Babcock Creek)	pH	M
15	02040302050020-01	Babcock Creek (GEHR)	pH	M
15	02040302050030-01	South River (above 39d26m15s)	pH	M
15	02040302050040-01	South River (below 39d26m15s)	pH	M
15	02040302050060-01	GEHR (Miry Run to Lake Lenape)	Arsenic	M
15	02040302050060-01	GEHR (Miry Run to Lake Lenape)	Cadmium	M
15	02040302050060-01	GEHR (Miry Run to Lake Lenape)	Lead	M
15	02040302050060-01	GEHR (Miry Run to Lake Lenape)	Mercury	M
15	02040302050060-01	GEHR (Miry Run to Lake Lenape)	Nickel	M
15	02040302050060-01	GEHR (Miry Run to Lake Lenape)	Zinc	M
15	02040302050080-01	Stephen Creek (GEHR)	pH	M
15	02040302050090-01	English Creek / Flat Ck / Cranberry Ck	Dissolved Oxygen	M
15	02040302050120-01	Middle River / Peters Creek	Dissolved Oxygen	M
15	02040302050130-01	Great Egg Harbor R (GEH Bay to Miry Run)	Arsenic	M
15	02040302050130-01	Great Egg Harbor R (GEH Bay to Miry Run)	Cadmium	M
15	02040302050130-01	Great Egg Harbor R (GEH Bay to Miry Run)	Dissolved Oxygen	M
15	02040302050130-01	Great Egg Harbor R (GEH Bay to Miry Run)	Lead	M
15	02040302050130-01	Great Egg Harbor R (GEH Bay to Miry Run)	Mercury	M
15	02040302050130-01	Great Egg Harbor R (GEH Bay to Miry Run)	Nickel	M
15	02040302050130-01	Great Egg Harbor R (GEH Bay to Miry Run)	Zinc	M
15	02040302060010-01	Mill Br (above Cardiff-Bargaintown rd)	pH	M
15	02040302060020-01	Maple Run/Mill Br(Zion Rd to Cardiff rd)	pH	M
15	02040302060040-01	GEH Bay/Lakes Bay/Skull Bay/Peck Bay	Dissolved Oxygen	M
15	02040302070010-01	Tuckahoe R (above Cumberland Ave)	pH	M
15	02040302070020-01	Tuckahoe R (39d19m52s to Cumberland Ave)	pH	M
15	02040302070040-01	Tuckahoe River (Rt 49 to 39d19m52s)	pH	M
15	02040302070050-01	Tarkiln Brook (Tuckahoe River)	pH	M
15	02040302070110-01	Tuckahoe River (below Rt 49)	Dissolved Oxygen	M
16	02040302080010-01	Crook Horn Creek (above Devils Island)	Dissolved Oxygen	M
14	02040302910010-01	Atl Coast(Ltl Egg to Absecon In)inshore	DDX	M
14	02040302910010-01	Atl Coast(Ltl Egg to Absecon In)inshore	Dissolved Oxygen	M
14	02040302910010-01	Atl Coast(Ltl Egg to Absecon In)inshore	Mercury	M
14	02040302910010-01	Atl Coast(Ltl Egg to Absecon In)inshore	PCBs	M
14	02040302910010-02	Atl Coast(Ltl Egg to Absecon In)offshore	DDX	M
14	02040302910010-02	Atl Coast(Ltl Egg to Absecon In)offshore	Dissolved Oxygen	M
14	02040302910010-02	Atl Coast(Ltl Egg to Absecon In)offshore	Mercury	M
14	02040302910010-02	Atl Coast(Ltl Egg to Absecon In)offshore	PCBs	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
15	02040302920010-01	Atl Coast(Absecon In to Ventnor)inshore	DDX	M
15	02040302920010-01	Atl Coast(Absecon In to Ventnor)inshore	Dissolved Oxygen	M
15	02040302920010-01	Atl Coast(Absecon In to Ventnor)inshore	Mercury	M
15	02040302920010-01	Atl Coast(Absecon In to Ventnor)inshore	PCBs	M
15	02040302920010-02	Atl Coast(Absecon In to Ventnor)offshore	DDX	M
15	02040302920010-02	Atl Coast(Absecon In to Ventnor)offshore	Dissolved Oxygen	M
15	02040302920010-02	Atl Coast(Absecon In to Ventnor)offshore	Mercury	M
15	02040302920010-02	Atl Coast(Absecon In to Ventnor)offshore	PCBs	M
15	02040302920020-01	Atl Coast(Ventnor to Great Egg)inshore	DDX	M
15	02040302920020-01	Atl Coast(Ventnor to Great Egg)inshore	Dissolved Oxygen	M
15	02040302920020-01	Atl Coast(Ventnor to Great Egg)inshore	Mercury	M
15	02040302920020-01	Atl Coast(Ventnor to Great Egg)inshore	PCBs	M
15	02040302920020-02	Atl Coast(Ventnor to Great Egg)offshore	DDX	M
15	02040302920020-02	Atl Coast(Ventnor to Great Egg)offshore	Dissolved Oxygen	M
15	02040302920020-02	Atl Coast(Ventnor to Great Egg)offshore	Mercury	M
15	02040302920020-02	Atl Coast(Ventnor to Great Egg)offshore	PCBs	M
15	02040302930010-01	Atl Coast(Great Egg to 34th St)inshore	DDX	M
15	02040302930010-01	Atl Coast(Great Egg to 34th St)inshore	Dissolved Oxygen	M
15	02040302930010-01	Atl Coast(Great Egg to 34th St)inshore	Mercury	M
15	02040302930010-01	Atl Coast(Great Egg to 34th St)inshore	PCBs	M
21	02040302930010-02	Atl Coast(Great Egg to 34th St)offshore	DDX	M
21	02040302930010-02	Atl Coast(Great Egg to 34th St)offshore	Dissolved Oxygen	M
21	02040302930010-02	Atl Coast(Great Egg to 34th St)offshore	Mercury	M
21	02040302930010-02	Atl Coast(Great Egg to 34th St)offshore	PCBs	M
16	02040302940010-01	Atl Coast(34th St to Corson Inl)inshore	DDX	M
16	02040302940010-01	Atl Coast(34th St to Corson Inl)inshore	Dissolved Oxygen	M
16	02040302940010-01	Atl Coast(34th St to Corson Inl)inshore	Mercury	M
16	02040302940010-01	Atl Coast(34th St to Corson Inl)inshore	PCBs	M
16	02040302940010-02	Atl Coast(34th St to Corson Inl)offshore	DDX	M
16	02040302940010-02	Atl Coast(34th St to Corson Inl)offshore	Dissolved Oxygen	M
16	02040302940010-02	Atl Coast(34th St to Corson Inl)offshore	Mercury	M
16	02040302940010-02	Atl Coast(34th St to Corson Inl)offshore	PCBs	M
16	02040302940040-01	Atl Cst(Hereford to Cape May In)inshore	DDX	M
16	02040302940040-01	Atl Cst(Hereford to Cape May In)inshore	Dissolved Oxygen	M
16	02040302940040-01	Atl Cst(Hereford to Cape May In)inshore	Mercury	M
16	02040302940040-01	Atl Cst(Hereford to Cape May In)inshore	PCBs	M
16	02040302940040-02	Atl Cst(Hereford to Cape May In)offshore	DDX	M
16	02040302940040-02	Atl Cst(Hereford to Cape May In)offshore	Dissolved Oxygen	M
16	02040302940040-02	Atl Cst(Hereford to Cape May In)offshore	Mercury	M
16	02040302940040-02	Atl Cst(Hereford to Cape May In)offshore	PCBs	M
16	02040302940050-01	Atl Cst(CM Inlet to Cape May Pt)inshore	DDX	M
16	02040302940050-01	Atl Cst(CM Inlet to Cape May Pt)inshore	Dissolved Oxygen	M
16	02040302940050-01	Atl Cst(CM Inlet to Cape May Pt)inshore	Mercury	M
16	02040302940050-01	Atl Cst(CM Inlet to Cape May Pt)inshore	PCBs	M
16	02040302940050-02	Atl Cst(CM Inlet to Cape May Pt)offshore	DDX	M
16	02040302940050-02	Atl Cst(CM Inlet to Cape May Pt)offshore	Dissolved Oxygen	M
16	02040302940050-02	Atl Cst(CM Inlet to Cape May Pt)offshore	Mercury	M
16	02040302940050-02	Atl Cst(CM Inlet to Cape May Pt)offshore	PCBs	M
Zone 1	Delaware River 1	Delaware River 1C2	Arsenic	M
Zone 1	Delaware River 1	Delaware River 1C2	Chlordane	M
Zone 1	Delaware River 1	Delaware River 1C2	Chromium	M
Zone 1	Delaware River 1	Delaware River 1C2	Copper	M
Zone 1	Delaware River 1	Delaware River 1C2	DDX	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
Zone 1	Delaware River 1	Delaware River 1C2	Lead	M
Zone 1	Delaware River 1	Delaware River 1C2	Mercury	M
Zone 1	Delaware River 1	Delaware River 1C2	PCBs	M
Zone 1	Delaware River 10	Delaware River 1E1	Arsenic	M
Zone 1	Delaware River 10	Delaware River 1E1	Cadmium	M
Zone 1	Delaware River 10	Delaware River 1E1	Chlordane	M
Zone 1	Delaware River 10	Delaware River 1E1	Chromium	M
Zone 1	Delaware River 10	Delaware River 1E1	Copper	M
Zone 1	Delaware River 10	Delaware River 1E1	DDX	M
Zone 1	Delaware River 10	Delaware River 1E1	Lead	M
Zone 1	Delaware River 10	Delaware River 1E1	Mercury	M
Zone 1	Delaware River 10	Delaware River 1E1	PCBs	M
Zone 1	Delaware River 11	Delaware River 1E2	Arsenic	M
Zone 1	Delaware River 11	Delaware River 1E2	Chlordane	M
Zone 1	Delaware River 11	Delaware River 1E2	Chromium	M
Zone 1	Delaware River 11	Delaware River 1E2	Copper	M
Zone 1	Delaware River 11	Delaware River 1E2	DDX	M
Zone 1	Delaware River 11	Delaware River 1E2	Lead	M
Zone 1	Delaware River 11	Delaware River 1E2	Mercury	M
Zone 1	Delaware River 11	Delaware River 1E2	Pathogens	M
Zone 1	Delaware River 11	Delaware River 1E2	PCBs	M
Zone 1	Delaware River 12	Delaware River 1E3	Arsenic	M
Zone 1	Delaware River 12	Delaware River 1E3	Chlordane	M
Zone 1	Delaware River 12	Delaware River 1E3	Chromium	M
Zone 1	Delaware River 12	Delaware River 1E3	Copper	M
Zone 1	Delaware River 12	Delaware River 1E3	DDX	M
Zone 1	Delaware River 12	Delaware River 1E3	Lead	M
Zone 1	Delaware River 12	Delaware River 1E3	Mercury	M
Zone 1	Delaware River 12	Delaware River 1E3	Pathogens	M
Zone 1	Delaware River 12	Delaware River 1E3	PCBs	M
Zone 1	Delaware River 13	Delaware River 1E4	Arsenic	M
Zone 1	Delaware River 13	Delaware River 1E4	Chlordane	M
Zone 1	Delaware River 13	Delaware River 1E4	Chromium	M
Zone 1	Delaware River 13	Delaware River 1E4	Copper	M
Zone 1	Delaware River 13	Delaware River 1E4	DDX	M
Zone 1	Delaware River 13	Delaware River 1E4	Lead	M
Zone 1	Delaware River 13	Delaware River 1E4	Mercury	M
Zone 1	Delaware River 13	Delaware River 1E4	Pathogens	M
Zone 1	Delaware River 13	Delaware River 1E4	PCBs	M
Zone 1	Delaware River 14	Delaware River 1E5	Arsenic	M
Zone 1	Delaware River 14	Delaware River 1E5	Chlordane	M
Zone 1	Delaware River 14	Delaware River 1E5	Chromium	M
Zone 1	Delaware River 14	Delaware River 1E5	Copper	M
Zone 1	Delaware River 14	Delaware River 1E5	DDX	M
Zone 1	Delaware River 14	Delaware River 1E5	Lead	M
Zone 1	Delaware River 14	Delaware River 1E5	Mercury	M
Zone 1	Delaware River 14	Delaware River 1E5	Pathogens	M
Zone 1	Delaware River 14	Delaware River 1E5	PCBs	M
Zone 2	Delaware River 15	Delaware River 2	Cadmium	M
Zone 2	Delaware River 15	Delaware River 2	Chlordane	M
Zone 2	Delaware River 15	Delaware River 2	DDX	M
Zone 2	Delaware River 15	Delaware River 2	Dieldrin	M
Zone 2	Delaware River 15	Delaware River 2	Dioxin	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
Zone 2	Delaware River 15	Delaware River 2	Mercury	M
Zone 2	Delaware River 15	Delaware River 2	Pathogens	M
Zone 3	Delaware River 16	Delaware River 3	Arsenic	M
Zone 3	Delaware River 16	Delaware River 3	Cadmium	M
Zone 3	Delaware River 16	Delaware River 3	Chlordane	M
Zone 3	Delaware River 16	Delaware River 3	DDX	M
Zone 3	Delaware River 16	Delaware River 3	Dieldrin	M
Zone 3	Delaware River 16	Delaware River 3	Dioxin	M
Zone 3	Delaware River 16	Delaware River 3	Mercury	M
Zone 3	Delaware River 16	Delaware River 3	Pesticides	M
Zone 4	Delaware River 17	Delaware River 4	Chlordane	M
Zone 4	Delaware River 17	Delaware River 4	Copper	M
Zone 4	Delaware River 17	Delaware River 4	DDX	M
Zone 4	Delaware River 17	Delaware River 4	Dieldrin	M
Zone 4	Delaware River 17	Delaware River 4	Mercury	M
Zone 4	Delaware River 17	Delaware River 4	Pesticides	M
Zone 5	Delaware River 18	Delaware River 5A	Chlordane	M
Zone 5	Delaware River 18	Delaware River 5A	Copper	M
Zone 5	Delaware River 18	Delaware River 5A	DDX	M
Zone 5	Delaware River 18	Delaware River 5A	Dieldrin	M
Zone 5	Delaware River 18	Delaware River 5A	Mercury	M
Zone 5	Delaware River 18	Delaware River 5A	Pesticides	M
Zone 5	Delaware River 19	Delaware River 5B	Chlordane	M
Zone 5	Delaware River 19	Delaware River 5B	Copper	M
Zone 5	Delaware River 19	Delaware River 5B	DDX	M
Zone 5	Delaware River 19	Delaware River 5B	Dieldrin	M
Zone 5	Delaware River 19	Delaware River 5B	Mercury	M
Zone 5	Delaware River 19	Delaware River 5B	Pesticides	M
Zone 1	Delaware River 2	Delaware River 1C3	Arsenic	M
Zone 1	Delaware River 2	Delaware River 1C3	Chlordane	M
Zone 1	Delaware River 2	Delaware River 1C3	Chromium	M
Zone 1	Delaware River 2	Delaware River 1C3	Copper	M
Zone 1	Delaware River 2	Delaware River 1C3	DDX	M
Zone 1	Delaware River 2	Delaware River 1C3	Lead	M
Zone 1	Delaware River 2	Delaware River 1C3	Mercury	M
Zone 1	Delaware River 2	Delaware River 1C3	PCBs	M
Zone 5	Delaware River 20	Delaware River 5C	Chlordane	M
Zone 5	Delaware River 20	Delaware River 5C	DDX	M
Zone 5	Delaware River 20	Delaware River 5C	Dieldrin	M
Zone 5	Delaware River 20	Delaware River 5C	Dissolved Oxygen	M
Zone 5	Delaware River 20	Delaware River 5C	Mercury	M
Zone 5	Delaware River 20	Delaware River 5C	Pesticides	M
Zone 1	Delaware River 3	Delaware River 1C4	Arsenic	M
Zone 1	Delaware River 3	Delaware River 1C4	Chlordane	M
Zone 1	Delaware River 3	Delaware River 1C4	Chromium	M
Zone 1	Delaware River 3	Delaware River 1C4	Copper	M
Zone 1	Delaware River 3	Delaware River 1C4	DDX	M
Zone 1	Delaware River 3	Delaware River 1C4	Lead	M
Zone 1	Delaware River 3	Delaware River 1C4	Mercury	M
Zone 1	Delaware River 3	Delaware River 1C4	PCBs	M
Zone 1	Delaware River 4	Delaware River 1D1	Arsenic	M
Zone 1	Delaware River 4	Delaware River 1D1	Chlordane	M
Zone 1	Delaware River 4	Delaware River 1D1	Chromium	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
Zone 1	Delaware River 4	Delaware River 1D1	Copper	M
Zone 1	Delaware River 4	Delaware River 1D1	DDX	M
Zone 1	Delaware River 4	Delaware River 1D1	Lead	M
Zone 1	Delaware River 4	Delaware River 1D1	Mercury	M
Zone 1	Delaware River 4	Delaware River 1D1	PCBs	M
Zone 1	Delaware River 5	Delaware River 1D2	Arsenic	M
Zone 1	Delaware River 5	Delaware River 1D2	Chlordane	M
Zone 1	Delaware River 5	Delaware River 1D2	Chromium	M
Zone 1	Delaware River 5	Delaware River 1D2	Copper	M
Zone 1	Delaware River 5	Delaware River 1D2	DDX	M
Zone 1	Delaware River 5	Delaware River 1D2	Lead	M
Zone 1	Delaware River 5	Delaware River 1D2	Mercury	M
Zone 1	Delaware River 5	Delaware River 1D2	PCBs	M
Zone 1	Delaware River 5	Delaware River 1D2	Total dissolved solids	M
Zone 1	Delaware River 6	Delaware River 1D3	Arsenic	M
Zone 1	Delaware River 6	Delaware River 1D3	Chlordane	M
Zone 1	Delaware River 6	Delaware River 1D3	Chromium	M
Zone 1	Delaware River 6	Delaware River 1D3	Copper	M
Zone 1	Delaware River 6	Delaware River 1D3	DDX	M
Zone 1	Delaware River 6	Delaware River 1D3	Lead	M
Zone 1	Delaware River 6	Delaware River 1D3	Mercury	M
Zone 1	Delaware River 6	Delaware River 1D3	Pathogens	M
Zone 1	Delaware River 6	Delaware River 1D3	PCBs	M
Zone 1	Delaware River 7	Delaware River 1D4	Arsenic	M
Zone 1	Delaware River 7	Delaware River 1D4	Chlordane	M
Zone 1	Delaware River 7	Delaware River 1D4	Chromium	M
Zone 1	Delaware River 7	Delaware River 1D4	Copper	M
Zone 1	Delaware River 7	Delaware River 1D4	DDX	M
Zone 1	Delaware River 7	Delaware River 1D4	Lead	M
Zone 1	Delaware River 7	Delaware River 1D4	Mercury	M
Zone 1	Delaware River 7	Delaware River 1D4	PCBs	M
Zone 1	Delaware River 7	Delaware River 1D4	Total dissolved solids	M
Zone 1	Delaware River 8	Delaware River 1D5	Arsenic	M
Zone 1	Delaware River 8	Delaware River 1D5	Chlordane	M
Zone 1	Delaware River 8	Delaware River 1D5	Chromium	M
Zone 1	Delaware River 8	Delaware River 1D5	Copper	M
Zone 1	Delaware River 8	Delaware River 1D5	DDX	M
Zone 1	Delaware River 8	Delaware River 1D5	Lead	M
Zone 1	Delaware River 8	Delaware River 1D5	Mercury	M
Zone 1	Delaware River 8	Delaware River 1D5	PCBs	M
Zone 1	Delaware River 8	Delaware River 1D5	Total dissolved solids	M
Zone 1	Delaware River 9	Delaware River 1D6	Arsenic	M
Zone 1	Delaware River 9	Delaware River 1D6	Cadmium	M
Zone 1	Delaware River 9	Delaware River 1D6	Chlordane	M
Zone 1	Delaware River 9	Delaware River 1D6	Chromium	M
Zone 1	Delaware River 9	Delaware River 1D6	Copper	M
Zone 1	Delaware River 9	Delaware River 1D6	DDX	M
Zone 1	Delaware River 9	Delaware River 1D6	Lead	M
Zone 1	Delaware River 9	Delaware River 1D6	Mercury	M
Zone 1	Delaware River 9	Delaware River 1D6	Pathogens	M
Zone 1	Delaware River 9	Delaware River 1D6	PCBs	M
17	4 Seasons Campground Po	4 Seasons Campground Pond-17	Pathogens	H
18	Alcyon Lake-18	Alcyon Lake-18	Mercury	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
14	Anchor Lake One-14	Anchor Lake One-14	Pollutant Unknown	L
11	Assunpink Lake-11	Assunpink Lake-11	Mercury	M
14	Atco Lake-14	Atco Lake-14	Pollutant Unknown	L
15	Atlantic City Reservoir 1-15	Atlantic City Reservoir 1-15	Mercury	M
15	Atlantic City Reservoir 2-15	Atlantic City Reservoir 2-15	Mercury	M
14	Atsion Lake-14	Atsion Lake-14	Mercury	M
13	Bamber Lake-13	Bamber Lake-13	Pathogens	H
14	Batsto Lake-14	Batsto Lake-14	Mercury	M
14	Beaverdam Lake-14	Beaverdam Lake-14	Pollutant Unknown	L
	Beiser's Pond	Beiser's Pond	Pathogens	H
06	Boonton Reservoir-06	Boonton Reservoir-06	Chlordane	M
06	Boonton Reservoir-06	Boonton Reservoir-06	Mercury	M
06	Boonton Reservoir-06	Boonton Reservoir-06	PCBs	M
06	Boonton Reservoir-06	Boonton Reservoir-06	Chlordane	M
06	Boonton Reservoir-06	Boonton Reservoir-06	Dioxin	M
06	Boonton Reservoir-06	Boonton Reservoir-06	DDX	M
15	Braddock Lake-15	Braddock Lake-15	Pathogens	H
04	Branchbrook Park Lake-04	Branchbrook Park Lake-04	PCBs	M
04	Branchbrook Park Lake-04	Branchbrook Park Lake-04	Dioxin	M
04	Branchbrook Park Lake-04	Branchbrook Park Lake-04	DDX	M
04	Branchbrook Park Lake-04	Branchbrook Park Lake-04	Chlordane	M
03	Bubbling Springs-03	Bubbling Springs-03	Pathogens	H
08	Budd Lake-08	Budd Lake-08	Mercury	M
08	Budd Lake-08	Budd Lake-08	Pathogens	H
15	Buena Vista CG-15	Buena Vista CG-15	Pathogens	H
13	Butterfly Pond-13	Butterfly Pond-13	Mercury	M
06	Camp Lewis-06	Camp Lewis-06	Pathogens	H
03	Canistear Reservoir-03	Canistear Reservoir-03	Mercury	M
13	Carasaljo Lake-13	Carasaljo Lake-13	Mercury	M
13	Carasaljo Lake-13	Carasaljo Lake-13	Pathogens	H
10	Carnegie Lake-10	Carnegie Lake-10	Mercury	M
15	Cedar Lake 1-15	Cedar Lake 1-15	Mercury	M
17	Cedar Lake-17	Cedar Lake-17	Pathogens	H
18	Clementon Lake-18	Clementon Lake-18	Mercury	M
03	Clinton Reservoir-03	Clinton Reservoir-03	Mercury	M
01	Clove Lake-01	Clove Lake-01	Phosphorus	M
12	Como Lake-12	Como Lake-12	Phosphorus	M
18	Cooper River Lake-18	Cooper River Lake-18	PCBs	M
18	Cooper River Lake-18	Cooper River Lake-18	Dioxin	M
18	Cooper River Lake-18	Cooper River Lake-18	DDX	M
18	Cooper River Lake-18	Cooper River Lake-18	Chlordane	M
06	Cozy Lake-06	Cozy Lake-06	Pathogens	H
01	Cranberry Lake-01	Cranberry Lake-01	Mercury	M
01	Crater Lake-01	Crater Lake-01	Mercury	M
03	Crystal Lake-03	Crystal Lake-03	Pathogens	H
20	Crystal Lake-20	Crystal Lake-20	Mercury	M
02	Crystal Springs-02	Crystal Springs-02	Pathogens	H
15	Cushman Lake-15	Cushman Lake-15	Pathogens	H
12	Deal Lake-12	Deal Lake-12	Pathogens	H
13	Deer Head Lake-13	Deer Head Lake-13	Pathogens	H
02	Deer Trail Lake-02	Deer Trail Lake-02	Pathogens	H
09	Delaware & Raritan Canal-0	Delaware & Raritan Canal-09	Mercury	M
09	Devoe Lake-09	Devoe Lake-09	Mercury	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
13	Double Trouble State Park-1	Double Trouble State Park-13	Mercury	M
04	Dundee Lake-04	Dundee Lake-04	Mercury	M
16	East Creek Lake-16	East Creek Lake-16	Mercury	M
17	Eastern Gate Lake-17	Eastern Gate Lake-17	Pathogens	H
03	Echo Lake-03	Echo Lake-03	Mercury	M
14	Elm (James) Lake-14	Elm (James) Lake-14	Pollutant Unknown	L
03	Erskine Lake-03	Erskine Lake-03	Pathogens	H
18	Evans Pond-18	Evans Pond-18	PCBs	M
18	Evans Pond-18	Evans Pond-18	Dioxin	M
18	Evans Pond-18	Evans Pond-18	DDX	M
18	Evans Pond-18	Evans Pond-18	Chlordane	M
03	Forest Hill Lake-03	Forest Hill Lake-03	Pathogens	H
01	Forest Lake-01	Forest Lake-01	Pathogens	H
01	Fox Hollow Lake-01	Fox Hollow Lake-01	Pathogens	H
06	Foxs Pond-06	Foxs Pond-06	Pathogens	H
17	Franklinville Lake-17	Franklinville Lake-17	Pathogens	H
01	Furnace Lake-01	Furnace Lake-01	Pathogens	H
03	Green Turtle Lake-03	Green Turtle Lake-03	Mercury	M
03	Greenwood Lake-03	Greenwood Lake-03	Mercury	M
03	Greenwood Lake-03	Greenwood Lake-03	Dissolved Oxygen	M
03	Greenwood Lake-03	Greenwood Lake-03	Total Suspended Solids	M
18	Grenlock Lake-18	Grenlock Lake-18	Phosphorus	M
10	Grove Mill Pond-10	Grove Mill Pond-10	Mercury	M
	Hainesville Pond	Hainesville Pond	Mercury	M
14	Hammonton Lake-14	Hammonton Lake-14	Pathogens	H
14	Hammonton Lake-14	Hammonton Lake-14	Pollutant Unknown	L
14	Harrisville Lake-14	Harrisville Lake-14	Mercury	M
13	Holiday Lake-13	Holiday Lake-13	Pathogens	H
17	Holly Green Campground Po	Holly Green Campground Pond-17	Pathogens	H
12	Hooks Creek Lake-12	Hooks Creek Lake-12	Pathogens	H
06	Indian Lake-06	Indian Lake-06	Pathogens	H
14	Indian Mills Lake-14	Indian Mills Lake-14	Pollutant Unknown	L
06	Intervale Lake-06	Intervale Lake-06	Pathogens	H
17	Iona Lake-17	Iona Lake-17	Pathogens	H
19	Jennings Lake-19	Jennings Lake-19	Pollutant Unknown	L
03	Kitchell Lake-03	Kitchell Lake-03	Pathogens	H
01	Lackawanna Lake-01	Lackawanna Lake-01	Pathogens	H
13	Lake Barnegat-13	Lake Barnegat-13	Pathogens	H
03	Lake Edenwold-03	Lake Edenwold-03	Pathogens	H
01	Lake Hopatcong-01	Lake Hopatcong-01	Pollutant Unknown	M
01	Lake Hopatcong-01	Lake Hopatcong-01	Mercury	M
01	Lake Hopatcong-01	Lake Hopatcong-01	Pathogens	H
03	Lake Ioscoe-03	Lake Ioscoe-03	Pathogens	H
19	Lake James-19	Lake James-19	Pathogens	H
16	Lake Laurie-16	Lake Laurie-16	Pathogens	H
02	Lake Mohawk-02	Lake Mohawk-02	Pathogens	H
14	Lake Mo-Li-Th-Ma-14	Lake Mo-Li-Th-Ma-14	Pollutant Unknown	L
16	Lake Nummy-16	Lake Nummy-16	Mercury	M
	Lake Silvestro	Lake Silvestro	Pathogens	H
06	Lake Swannanoa-06	Lake Swannanoa-06	Pathogens	H
12	Lake Takanassee-12	Lake Takanassee-12	Phosphorus	H
12	Lake Takanassee-12	Lake Takanassee-12	Pathogens	H
05	Lake Tappan-05	Lake Tappan-05	Mercury	M

WMA	Assessment Unit ID	Assessment Unit Name	Parameter	Ranking
01	Lake Winona-01	Lake Winona-01	Pathogens	H
19	Lake1523-19	Lake1523-19	Pollutant Unknown	L
14	Lake1757-14	Lake1757-14	Pollutant Unknown	L
14	Lake1950-14	Lake1950-14	Pollutant Unknown	L
14	Lake1970-14	Lake1970-14	Pollutant Unknown	L
15	Lenape Lake-15	Lenape Lake-15	Mercury	M
18	Linden Lake-18	Linden Lake-18	Mercury	M
03	Lionhead Lake-03	Lionhead Lake-03	Pathogens	H
16	Ludlams Pond-16	Ludlams Pond-16	Pathogens	H
17	Malaga Lake-17	Malaga Lake-17	Mercury	M
17	Malaga Lake-17	Malaga Lake-17	Pathogens	H
13	Manahawkin Lake-13	Manahawkin Lake-13	Pathogens	H
12	Manasquan Reservoir-12	Manasquan Reservoir-12	Mercury	M
18	Marlton Lake-18	Marlton Lake-18	Mercury	M
17	Maskells Mill Pond-17	Maskells Mill Pond-17	Mercury	M
17	Memorial Lake-17	Memorial Lake-17	Mercury	M
01	Merrill Creek Reservoir-01	Merrill Creek Reservoir-01	Mercury	M
19	Mirror Lake-19	Mirror Lake-19	Mercury	M
19	Mirror Lake-19	Mirror Lake-19	Pathogens	H
03	Monksville Reservoir-03	Monksville Reservoir-03	Mercury	M
06	Morris Co. Park Lake	Morris Co. Park Lake	Pathogens	H
01	Mountain Lake-01	Mountain Lake-01	Mercury	M
06	Mountain Lake-06	Mountain Lake-06	Mercury	M
06	Mountain Lake-06	Mountain Lake-06	Pathogens	H
15	New Brooklyn Lake-15	New Brooklyn Lake-15	Mercury	M
09	New Market Pond-09	New Market Pond-09	PCBs	M
09	New Market Pond-09	New Market Pond-09	Dioxin	M
09	New Market Pond-09	New Market Pond-09	Pollutant Unknown	L
03	Oak Ridge Reservoir-03	Oak Ridge Reservoir-03	Mercury	M
13	Ocean County Park Lake-13	Ocean County Park Lake-13	Pathogens	H
13	Ocean Twp Bathing Beach-1	Ocean Twp Bathing Beach-13	Pathogens	H
05	Oradell Reservoir-05	Oradell Reservoir-05	Mercury	M
06	Parsippany Lake-06	Parsippany Lake-06	Pathogens	H
17	Parvin Lake-17	Parvin Lake-17	Pathogens	H
13	Pine Lake-13	Pine Lake-13	Pathogens	H
03	Pompton Lake-03	Pompton Lake-03	Mercury	M
03	Pompton Lake-03	Pompton Lake-03	PCBs	M
03	Pompton Lake-03	Pompton Lake-03	Dioxin	M
03	Pompton Lake-03	Pompton Lake-03	DDX	M
03	Pompton Lake-03	Pompton Lake-03	Chlordane	M
06	Pond at Conference Center	Pond at Conference Center (Left & Rt.)	Pathogens	H
06	Powder Mill Pond-06	Powder Mill Pond-06	Pathogens	H
06	Rainbow Lakes-06	Rainbow Lakes-06	Pathogens	H
03	Ramapo Lake-03	Ramapo Lake-03	Mercury	M

Appendix C Delisted Waters

(Crosswalk 2004 303(d) List to 2006 Assessment Units)

2006 Rational Codes for Delisting

For waters listed on previous 303(d) Lists, there are several possible scenarios that may result in a waterbody being removed from a 303(d) list (Sublist 5). Each delisting will be documented. Some scenarios that could result in the removal of a waterbody from Sublist 5 follow:

1. A determination is made that the waterbody is meeting the designated use (i.e., no TMDL is required). For example:

a) An error was made in the initial listing causing an erroneous listing;

b) New Information: More recent and/or more accurate data, which meets the QA/QC requirements identified in Section 5 of this Methods Document, demonstrates that a designated use is being met for the waterbody (with or without a TMDL). See additional information regarding metals data in Section 8.3 below;

c) Revisions to the SWQS may cause a waterbody to come into compliance.

2. Reassessment of available information or data: Waterbody listed on previous 303d list is based on data which are insufficient to meet current data quality requirements. Some examples:

a) New Macroinvertebrate Protocol: Macroinvertebrate data had been collected under conditions not calibrated to reference conditions specified in the sampling protocol. See Section 4.1 for detailed information.

b) Criterion not measurable.

c) Sufficient data not available (i.e., frequency, number of samples or QA/QC requirements not met).

3. TMDL has been completed. A waterbody will be removed from Sublist 5 and placed in Sublist 4a once a TMDL, which is expected to result in full attainment of the designated use, has been developed and approved by the USEPA.

4. Other enforceable pollution control requirements are reasonably expected to result in the attainment of the designated use in the near future. These requirements must be specifically applicable to the particular water quality problem. This includes the installation of new control equipment or elimination

5. Impairment is not caused by a pollutant. In cases of biological impairment, the Department will follow its protocol to determine the cause(s) of impairment (Stressor Identification or SI) and will evaluate if these causes are pollutants to be scheduled for TMDLs or “pollution” whereby the

6. New spatial extent – When sufficient data warrants, waterbodies previously listed on a large scale may be broken down into smaller assessment units and placed in other sublists, if appropriate.

7. Natural causes – These are waters that do not meet the designated where it can be documented that there are no human contributions to the standard exceedance (See Section 5.1 for definition for

8. Benthic Macroinvertebrate will no longer be listed as a pollutant. It will be replaced with a specific aquatic life pollutant when possible and if no pollutant is identified, it will be replaced with “pollutant unknowm” or toxic unknon”.

9. Dams removed. Lake no longer exists.

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
02	Wallkill River at Sparta	01367625, Wallkill A	Temperature	02020007010010-01		Temperature-1B; Benthic Macroinvertebrates, 1B
02	Wallkill River at Rt 15 (near municipal bldg) in Sparta	AN0297	Benthic Macroinvertebrates			
02	Wallkill River near Franklin	01367700, Wallkill C, 2-WAL-1	Arsenic	02020007010040-01	Temperature, Mercury, Phosphorus	Arsenic-3; Benthic Macroinvertebrates, 8
02	Wallkill River at Kennedy Ave in Ogdensburg	AN0298	Benthic Macroinvertebrates			
02	Beaver Run at Cemetery Rd in Wantage	AN0301	Benthic Macroinvertebrates	02020007010060-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
02	Wallkill River at Scott Rd in Franklin	01367715, Wallkill D, 2-WAL-2	Arsenic	02020007010070-01	Mercury, Phosphorus, TDS	Benthic Macroinvertebrates,8 Arsenic 1B
02	Wallkill River near Sussex	01367770, 2-WAL-4	Arsenic			
02	Wallkill River at Rt 94 in Hamburg	2-WAL-3	Arsenic			
02	Wallkill River at Scott Rd in Franklin	AN0299	Benthic Macroinvertebrates			
02	Wallkill River at Rt 94 in Hamburg	AN0300	Benthic Macroinvertebrates			
02	Papakating Creek at Rt 565 in Frankford	AN0304	Benthic Macroinvertebrates, Unknown Toxicity	02020007020030-01	Unknown Toxicity	Benthic Macroinvertebrates- 8
02	Papakating Creek W Br at Rt 565 in Wantage	AN0306	Benthic Macroinvertebrates	02020007020050-01		Benthic Macroinvertebrates, 1B
02	Clove Brook UNK Trib at Rose Marrow Ave in Wantage	AN0308	Unknown Toxicity	02020007020060-01	Pathogens, Temperature, Unknown Toxicity	Benthic Macroinvertebrates, 8
02	Clove Brook at Loomis Ave in Sussex	AN0309	Benthic Macroinvertebrates			
02	Papakating Creek at Sussex	01367910, 01367909, 2-PAP-1	Phosphorus, Arsenic	02020007020070-01	Nitrate	Phosphorus, Arsenic - 3;Benthic Macroinvertebrates, 1B
02	Papakating Creek at Rt 565 in Wantage	AN0307	Benthic Macroinvertebrates			
02	Wallkill River at Rt 565 in Wantage	AN0302	Benthic Macroinvertebrates	02020007030010-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
02	Wallkill River near Unionville	01368000, Wallkill E, 2-WAL-5	Arsenic	02020007030030-01	Phosphorus,	Arsenic-3

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
02	Black Creek near Vernon	01368950, Wallkill H	Phosphorus	02020007040020-01	DO	Phosphorus - 3;Benthic Macroinvertebrates, 8
02	Black Creek at Marker Rd in Vernon	AN0296	Benthic Macroinvertebrates			
06	Great Brook at Woodland Rd (Gr Swamp WMA) in Harding	AN0219	Benthic Macroinvertebrates	02030103010050-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
06	Black Brook at Southern Blvd in Chatham	AN0222	Benthic Macroinvertebrates	02030103010060-01	Phosphorus, Arsenic	Benthic Macroinvertebrates, 8
06	Black Brook at New Vernon Rd in Long Hill	AN0223	Benthic Macroinvertebrates			
06	Black Brook at Madison	01378855	Phosphorus, Arsenic			
06	Passaic River at S Main Ave in Warren	AN0228	Benthic Macroinvertebrates	02030103010110-01	Phosphorus, Total Suspended Solids, Arsenic, Copper, Lead, Mercury, Cyanide	Benthic Macroinvertebrates, 8
06	Passaic River at Snyder Ave in Berkeley	AN0229B	Benthic Macroinvertebrates	02030103010120-01	Phosphorus, Arsenic, Copper, Lead, Mercury, Cyanide, TSS	Benthic Macroinvertebrates, 8
06	Passaic River near Chatham	01379500, 6-SITE-1, 6-PAS-2	Phosphorus, Total Suspended Solids, Arsenic, Cadmium, Copper, Lead, Mercury, Silver, Zinc, Cyanide	02030103010130-01	Phosphorus, Total Suspended Solids, Arsenic, Copper, Lead, Mercury, Cyanide	Benthic Macroinvertebrates, 8; cadmium, Silver, Zinc 1B
06	Passaic River at Stanley Ave in Summit	AN0229	Benthic Macroinvertebrates			
06	Passaic River at Fairmount Ave in Long Hill	AN0229C	Benthic Macroinvertebrates			
06	Passaic River at Summit Ave in Summit	AN0230	Benthic Macroinvertebrates			
06	Passaic River at Watchung Ave in Chatham	AN0230A	Benthic Macroinvertebrates			
06	Canoe Brook at Parsonage Hill Rd in Millburn	AN0231D	Benthic Macroinvertebrates	02030103010140-01		Benthic Macroinvertebrates, 1B

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06	Passaic River at Passaic Ave in Millburn	AN0231A	Benthic Macroinvertebrates	02030103010150-01	Phosphorus, Total Suspended Solids, Arsenic, Copper, Lead, Mercury, Cyanide, TDS	Benthic Macroinvertebrates, 8
06	Passaic River at Old Mt Pleasant Ave in E Hanover	AN0231B	Benthic Macroinvertebrates	02030103010160-01	Phosphorus, Total Suspended Solids, TDS	Benthic Macroinvertebrates, 8
06	Slough Brook at Parsonage Hill Rd in Millburn	AN0231C	Benthic Macroinvertebrates			
06	Passaic River at Eagle Rock Ave in East Hanover	AN0231	Benthic Macroinvertebrates	02030103010170-01	Chlordane, DDX, Mercury, PCB's, Phosphorus, Total Suspended Solids, TDS	Benthic Macroinvertebrates, 8
06	Whippany River at Whitehead Rd in Morris	AN0233	Benthic Macroinvertebrates	02030103020020-01	Temperature	Benthic Macroinvertebrates, 8
06	Watnong Brook at W Hanover Rd in Morris	AN0234B	Benthic Macroinvertebrates	02030103020030-01		Benthic Macroinvertebrates, 1B
06	Whippany River at Jefferson Rd in Hanover	AN0235	Benthic Macroinvertebrates	02030103020050-01	Phosphorus	Benthic Macroinvertebrates, 8
06	Whippany River near Pine Brook	01381800, 6-WHI-2	Phosphorus, Lead	02030103020100-01	DO, Lead,Phosphorus	Benthic Macroinvertebrates, 8
06	Whippany River at Edwards Rd in Parsippany-Troy Hills	AN0238	Benthic Macroinvertebrates			
06	Rockaway River	Rockaway River	Fish-Mercury	02030103030030-01, 02030103030040-01, 02030103030070-01, 02030103030090-01, 02030103030140-01, 02030103030150-01, 02030103030170-01,	Mercury	
06	Rockaway River at Berkshire Valley Rd in Jefferson	AN0241	Benthic Macroinvertebrates	02030103030040-01	Mercury, Pollutant Unknown	Benthic Macroinvertebrates, 8
06	Beaver Brook at Morris Ave in Denville	AN0246	Benthic Macroinvertebrates	02030103030110-01	Mercury, Ph	Benthic Macroinvertebrates, 8

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
06	Stony Brook at Valley Rd in Boonton	AN0249	Benthic Macroinvertebrates	02030103030130-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
06	Rockaway River at Morris Ave in Boonton	AN0250	Benthic Macroinvertebrates	02030103030150-01	Arsenic,Mercury, PCE/TCE	Benthic Macroinvertebrates, 8
06	Rockaway River at Pine Brook	01381200, 6-SITE-10, 6-ROC-1	Phosphorus, Tetrachloroethylene, Tricholoroethylene	02030103030170-01	Mercury, PCE/TCE, Phosphorus	
06	Passaic River at Two Bridges	01382000, 6-SITE-3	Phosphorus, Arsenic, Mercury	02030103040010-01	Arsenic, Chlordane, DDX, Mercury, PCB's, Phosphorus	Benthic Macroinvertebrates, 8
06	Passaic River at Willard St in Montville	AN0274A	Benthic Macroinvertebrates			
06	Passaic River	Great Piece	Fish-Mercury			
04	Passaic River Lower, Estuary and Tribs	Passaic River Lower, Estuary and Tribs	Fish-PCB, Fish-Dioxin	02030103040010-01, 02030103120080-01, 02030103120090-01, 02030103120100-01, 02030103150030-01, 02030103150040-01, 02030103150050-01	PCB's, Dioxin	
03	Pequannock River at Rt 515 in Hardyston	AN0258	Benthic Macroinvertebrates	02030103050030-01		Benthic Macroinvertebrates-1B; Temperature-3
03	Pequannock River at Rt 23 (abv res) in West Milford	AN0259	Benthic Macroinvertebrates			
03	Pequannock River below Pacock	PQ3	Temperature			
03	Pequannock River above Clinton	PQ4	Temperature	02030103050050-01		Temperature-3
03	Pequannock River below Clinton	PQ5	Temperature			

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03	Macopin River at Macopin Reservoir	01382450, PQ6	Temperature	02030103050060-01	Dissolved Oxygen	Temperature-3; Lead - 1B
03	Macopin River at Macopin Reservoir	01382450, PQ6	Temperature			
03	Pequannock River at Macopin Intake Dam	01382500, PQ8, 3-SITE-8, 3-PEQ-1	Temperature, Dissolved Oxygen, Lead			
03	MacopIn River at Echo Lake	01382410	Dissolved Oxygen, Temperature			
03	Pequannock River above Macopin	PQ7	Temperature			
03	Pequannock River at Macopin Intake Dam	01382500, PQ8, 3-SITE-8, 3-PEQ-1	Temperature, Dissolved Oxygen, Lead	02030103050080-01	Chlordane, DDX, Mercury, PCB's,	Temperature -3; Dissolved Oxygen, Lead -1B
03	Pequannock River - Butler	PQ10	Temperature			
03	Belchers Brook at Union Valley Rd in West Milford	AN0255C	Benthic Macroinvertebrates	02030103070020-01	Temperature	Benthic Macroinvertebrates, 8
03	Wanaque River at E Shore Dr in West Milford	AN0255	Unknown Toxicity	02030103070030-01	Unknown Toxicity	
03	Wanaque River at Wanaque	01387000	Phosphorus, Fecal Coliform, Dissolved Oxygen	02030103070050-01	DO, Pathogens, Phosphorus, Temperature	
03	Meadow Brook at Highland Ave in Wanaque	AN0256A	Benthic Macroinvertebrates	02030103070060-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
03	Wanaque River at Pompton Lakes	01387014, 01387041	Phosphorus	02030103070070-01	Unknown Toxicity, Phosphorus	Benthic Macroinvertebrates- 8
03	Wanaque River at Highland Ave (blw STP) in Wanaque	AN0256	Benthic Macroinvertebrates, Unknown Toxicity			
03	Wanaque River at Wanaque Ave in Pompton Lakes	AN0257	Unknown Toxicity			
03	Ramapo River near Mahwah	01387500, 3-SITE-9, 3-RAM-1	Phosphorus	02030103100010-01		Phosphorus-3
03	Pompton River at Pompton Plains	01388500, 3-SITE-7	Lead	02030103110020-01	Chlordane, DDX, Mercury, PCB's, Lead, Phosphorus, Unknown Toxicity	Benthic Macroinvertebrates-8
03	Pompton River at Newark Pompton Tnpk in Pequannock	AN0268	Benthic Macroinvertebrates, Unknown Toxicity			
03	Pompton River at Pompton Plains Cross Rd in Pequannock	AN0268A	Benthic Macroinvertebrates, Unknown Toxicity			
04	Peckman River at McBride Ave in West Paterson	AN0275	Benthic Macroinvertebrates	02030103120020-01	Dioxin, PCB's, Pollutant Unknown	Benthic Macroinvertebrates, 8

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04	Preakness Brook at French Hill Rd in Wayne	AN0273	Benthic Macroinvertebrates	02030103120030-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
04	Naachtpunkt Brook at Continental Dr (abv outfall) in Wayne	AN0273A	Benthic Macroinvertebrates			
04	Naachtpunkt Brook at Continental Dr (blw outfall) in Wayne	AN0273B	Benthic Macroinvertebrates			
04	Molly Ann Brook at Totowa Ave in Paterson	AN0276	Benthic Macroinvertebrates	02030103120040-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
04	Goffle Brook at Wagaraw Rd in Hawthorne	AN0277	Benthic Macroinvertebrates	02030103120050-01	TDS	Benthic Macroinvertebrates, 8
04	Deepavaal Brook at Ltl Falls Ave in Fairfield	AN0271	Benthic Macroinvertebrates	02030103120060-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
04	Passaic River at Elmwood Park	01389880, 01389870, Passaic-8 , Passaic-9, Passaic-10, 4-SITE-5	Phosphorus, Fecal Coliform, Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Silver, Thallium, Zinc, Cyanide	02030103120080-01	Arsenic, Chlordane, Cyanide, DDX, Dioxin, Mercury, PCB's, Pathogens, Phosphorus	Cadmium, Chromium, Lead, Copper, Silver, Thallium, Zinc-1B
04	Passaic River - Tidal	Passaic River - Tidal	Arsenic, Mercury	02030103120080-01, 02030103120090-01, 02030103120100-01, 02030103150030-01, 02030103150040-01, 02030103150050-01	Arsenic, Mercury	
04	Passaic River at River Rd (Dundee Dam) in Garfield	AN0292O	Benthic Macroinvertebrates	02030103120090-01	Arsenic, Chlordane, Cyanide, DDX, Dioxin, Mercury, PCB's, Pathogens, Phosphorus	Benthic Macroinvertebrates, 8

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
04	Passaic River at Singac	01389130, 4-PAS-4	Phosphorus, Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Silver, Thallium, Zinc, Cyanide	02030103120100-01	Arsenic, Cadmium, Chlordane, Chromium, Copper, Cyanide, DDX, Dioxin, Lead, Mercury, PCB's, Pathogens, Phosphorus, Silver, Thallum, zinc	
04	Passaic River at Little Falls	01389500, Passaic-11, Passaic-12, 4-SITE-6, 4-PAS-3	Phosphorus, Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Silver, Thallium, Zinc, Cyanide			
04	Valentine Brook at Forest Ave in Allendale	AN0284	Unknown Toxicity	02030103140020-01	Unknown Toxicity	Benthic Macroinvertebrates, 8
04	Hohokus Brook at Park Ave in Allendale	AN0285	Benthic Macroinvertebrates			
04	Ramsey Brook at Masonicus Rd in Mahwah	AN0286	Benthic Macroinvertebrates			
04	Ramsey Brook at Grenadier Dr W of Cortland Tr in Mahwah	AN0286X	Benthic Macroinvertebrates			
04	Ramsey Brook at Park Ave in Allendale	AN0287	Benthic Macroinvertebrates, Unknown Toxicity			
04	Hohokus Brook at Spring St in Ridgewood Village	AN0288	Benthic Macroinvertebrates, Unknown Toxicity	02030103140030-01	Unknown Toxicity	Benthic Macroinvertebrates-8
04	Saddle River at Ridgewood	01390500, 01390518, 01390510	pH	02030103140040-01	Unknown Toxicity, Ph, Temperature	Benthic Macroinvertebrates, 8
04	Saddle River at Ridgewood	01390500, 01390518, 01390510	pH			
04	Saddle River at Ridgewood	01390500, 01390518, 01390510	pH			
04	Saddle River W Br at Old Stone Church Rd in Upper Saddle River	AN0280	Benthic Macroinvertebrates			
04	Saddle River at E Allendale Ave in Saddle River	AN0281	Benthic Macroinvertebrates, Unknown Toxicity			

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04	Saddle River at Dunkerhook Rd in Fair Lawn	AN0289	Benthic Macroinvertebrates, Unknown Toxicity	02030103140050-01	Arsenic, Mercury, Ph, Phosphorus, TDS, TSS,	Benthic Macroinvertebrates, 8
04	Saddle River at Lodi	01391500, 01391200, 01391490, 01391550, Passaic-7, 4-SITE-12, 4-SITE-13, 4-SAD-1	Phosphorus, Dissolved Solids, Arsenic	02030103140060-01	Arsenic, Mercury, Phosphorus, TDS, TSS, Unknown Toxicity	Benthic Macroinvertebrates- 8
04	Saddle River at Lodi	01391500, 01391200, 01391490, 01391550, Passaic-7, 4-SITE-12, 4-SITE-13, 4-SAD-1	Phosphorus, Dissolved Solids, Arsenic			
04	Saddle River at Lodi	01391500, 01391200, 01391490, 01391550, Passaic-7, 4-SITE-12, 4-SITE-13, 4-SAD-1	Phosphorus, Dissolved Solids, Arsenic			
04	Saddle River at Railroad Ave in Rochelle Park	AN0290	Benthic Macroinvertebrates, Unknown Toxicity			
04	Saddle River at Marcellus Pl in Garfield	AN0291	Benthic Macroinvertebrates, Unknown Toxicity	02030103140070-01	Arsenic, dioxin, Mercury, PCBs, Phosphorus, TDS, TSS, Unknown Toxicity	Benthic Macroinvertebrates, Unknown Toxicity, 8
04	Third River at Kingland Ave in Clifton	AN0292	Benthic Macroinvertebrates	02030103150010-01	Dioxin, PCB's, Pollutant Unknown	Benthic Macroinvertebrates, 8
04	Second River at McCarter Hwy in Belleville	AN0293	Benthic Macroinvertebrates	02030103150020-01	Pathogens, Ph, Phosphorus	Benthic Macroinvertebrates, 8
05	Pascack Brook at Westwood	01377500, 5-PAS-1	Phosphorus, Arsenic, Mercury	02030103170020-01	Arsenic, Mercury, TDS	Phosphorus- 3; Benthic Macroinvertebrates, 8
05	Musquapsink River at Harrington Ave in Westwood	AN0206	Benthic Macroinvertebrates			

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05	Musquapsink Brook at River Vale	01377499	Phosphorus, Arsenic	02030103170040-01	Arsenic, Mercury, Pollutant Unknown	Phosphorus-1B; Benthic Macroinvertebrates, 8
05	Tenakill Brook at Cedar Lane at Closter	01378387, 5-TEN-2	Arsenic			
05	Tenakill Brook at Cedar Ln in Closter	AN0209	Benthic Macroinvertebrates			
05	Dwars Kill on Blanch Ave., Norwood	5-DWA-1	Mercury	02030103170050-01	Mercury	
06	Rockaway River at Boonton	01380500, 01380450, 6-SITE-11	Arsenic, Cadmium, Chromium, Lead, Mercury, Selenium, Zinc, Tetrachloroethylene, Tricholorethylene	02030103170060-01	Arsenic, Mercury, Pathogens, Phosphorus	Cadmium, Chromium, Lead, Selenium, Zinc, Tetrachloroethylene, Tricholorethylene
05	Coles Brook at Hackensack	01378560	Phosphorus	02030103180010-01		Phosphorus-3; Benthic Macroinvertebrates-1B
05	Van Saun Brook at Main St & Rt 4 in Hackensack	AN0211	Benthic Macroinvertebrates			
05	Hackensack River - Tidal	Hackensack River - Tidal	Mercury, Fish-PCB, Fish-Dioxin	02030103180050-01	PCB's, Dioxin	Mercury-6
05	Hackensack River - Tidal	Hackensack River - Tidal	Mercury, Fish-PCB, Fish-Dioxin	02030103180030-01, 02030103180040-01, 02030103180060-01, 02030103180070-01, 02030103180080-01, 02030103180090-01, 02030103180100-01, 02030104010010-01	Mercury, PCB's, Dioxin	
05	Berry's Creek	Berry's Creek Reach 02030103-034	Mercury, Arsenic, Lead, Copper, PCB	02030103180060-01	Arsenic, Copper, Dioxin, Lead, Mercury, PCB's, Turbidity	
05	Berry's Creek	Berry's Creek Reach 02030103-034	Mercury, Arsenic, Lead, Copper, PCB	02030103180070-01	Arsenic,Chlorinated Benzene, Chromium, Copper, Dioxin, Lead, Mercury,	
05	Ackermans Creek	Adjacent to Berry's Creek Reach 02030103-034-0.11	Chromium, Mercury, PCB, Chlorinated Benzenes			
07	Kill Van Kull	UH-11	Mercury, Fish-PCB, Fish-Dioxin	02030104010020-01	Dioxin, PCB'S, Pesticides	
07	Newark Bay	Newark Bay	Mercury, Fish-PCB, Fish-Dioxin	02030104010020-02	Dioxin, PAH's, PCB's, Pesticides	

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07	Kill Van Kull	UH-11	Mercury, Fish-PCB, Fish-Dioxin	02030104010030-01	Dioxin, PAH's, PCB's, Pesticides	
07	Elizabeth River W Br near Union	01393350, 7-WBE-1	Phosphorus	02030104020020-01	Mercury, Phosphorus, TDS	
07	Rahway River W Br at Northfield Av at West Orange	01393960	Phosphorus, Dissolved Solids, Chloride	02030104050010-01	Phosphorus, Sulfate, TDS	Chloride-1B
07	Rahway River near Springfield	01394500	Phosphorus	02030104050040-01	Arsenic, Phosphorus	Benthic Macroinvertebrates, 8
07	Rahway River at Washington Ave (Rt 82) in Springfield	AN0193	Benthic Macroinvertebrates			
07	Rahway River at Kenilworth Blvd in Cranford	AN0194	Benthic Macroinvertebrates			
07	Rahway River at Rahway	01395000, 7-RAH-1	Phosphorus, Arsenic, TCE	02030104050060-01	Arsenic, Mercury, TSS, Phosphorus	Benthic Macroinvertebrates, 8; TCE-1B
07	Robinson Branch at Scotch Plains	01395200	Phosphorus			
07	Rahway River at River Rd & Church St in Rahway	AN0195	Benthic Macroinvertebrates			
07	Robinsons Branch at Goodmans Crossing in Scotch Plains	AN0196	Benthic Macroinvertebrates	02030104050070-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
07	Robinson Branch at St Georges Av at Rahway	01396003, 7-ROB-1	Phosphorus, Arsenic	02030104050080-01	Arsenic, Mercury, Phosphorus	Benthic Macroinvertebrates, 8
07	Robinsons Branch at Rt 27 in Rahway	AN0199	Benthic Macroinvertebrates			
07	Rahway River S Br at Parsonnage Rd in Edison	AN0200	Benthic Macroinvertebrates	02030104050090-01	Dioxin, Mercury, PCB's, TDS, Phosphorus	Benthic Macroinvertebrates, 8
07	Rahway River S Br at Merrill Park in Woodbridge	AN0201	Benthic Macroinvertebrates			
07	Arthur Kill	Arthur Kill-4	Total Coliform	02030104050120-01	Dioxin, PCB's, PAH's, Pesticides	Pathogens-1B
07	Arthur Kill and Tidal Tributaries	Arthur Kill and Tidal Tributaries	Fish-PCB, Fish-Dioxin	02030104050120-01, 02030104050100-01, 02030104050110-01, 02030104020030-02, 02030104030010-02	Dioxin, PCB's	
09	NY-NJ Harbor	NY-NJ Harbor wide	PCB, Dioxin, PAHs, Pesticides	02030104050120-01, 02030104910020-01,	Dioxin, PCB's,	Mercury-3

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07	NY-NJ Harbor	NYC and Battery (HR1, HR2)	Mercury	02030104910010-01, 02030104010030-02,	PAH's, Pesticides	Mercury-3
07	NY-NJ Harbor	Upper New York Harbor	Mercury, Fish-PCB, Fish-Dioxin	02030104050120-01, 02030104910020-01, 02030104910010-01, 02030104010030-02, 02030104010020-01, 02030104030010-01	Mercury, PCB's, Dioxin	
12	Lefferts Lake-12	66, Lefferts Lake	Phosphorus, Fish Community	02030104060020-01	Arsenic, Copper, Lead, PCB's, Ph	Fish Community-8, Phosphorus
12	Gravelly Brook at Lloyd Rd in Marlboro	20	Phosphorus	02030104060030-01	Chlordane, DDX, DO, Mercury, Pathogens, PCB's, Ph, Phosphorus	Benthic Macroinvertebrates, 8
12	Lapattatong Creek at 1st St - Peterson's Marina in Keyport	51	Fecal Coliform			
12	Matawan Creek-Tidal	8, R62	Fecal Coliform, Dissolved Oxygen			
12	Gravelly Brook at Church St in Aberdeen	AN0457	Benthic Macroinvertebrates			

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12	Chingarora Creek-Tidal	36, R64	Fecal Coliform, Dissolved Oxygen	02030104060040-01	Chlordane, DDX, DO, Mercury, Pathogens, PCB's	Benthic Macroinvertebrates, 8
12	Flat Creek at Middle Rd in Hazlet	AN0459	Benthic Macroinvertebrates			
12	Waackaack Creek-Tidal	35, R65	Fecal Coliform, Total Coliform	02030104060050-01	Chlordane, DDX, DO, Mercury, PCB's	Fecal Coliform, Total Coliform
12	Ramanessin Brook at Willow Rd in Holmdel	53	Phosphorus	02030104070010-01	Phosphorus, Temperature, TSS	
12	Willow Brook at Willow Brook Rd in Holmdel	52	Phosphorus	02030104070020-01	Pathogens, Phosphorus, TSS	Benthic Macroinvertebrates, 8
12	Willow Brook at Schank Rd in Holmdel	AN0467	Benthic Macroinvertebrates			
12	Willow Brook at Willow Brook Rd in Colts Neck	AN0468	Benthic Macroinvertebrates			
12	Willow Brook Trib at Igoe Rd in Marlboro	AN0468A	Benthic Macroinvertebrates			
12	Big Brook at Cross Rd in Colts Neck	AN0470	Benthic Macroinvertebrates	02030104070030-01	Phosphorus	Benthic Macroinvertebrates, 8
12	Big Brook at Colts Neck	EWQ0470, 21, 57	Phosphorus			
12	Big Brook at Colts Neck	EWQ0470, 21, 57	Phosphorus			
12	Mine Brook at Creamery Rd in Colts Neck	AN0473	Benthic Macroinvertebrates	02030104070050-01	pH	Benthic Macroinvertebrates, 8
12	Yellow Brook at Creamery Rd in Colts Neck	AN0472	Benthic Macroinvertebrates	02030104070060-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
12	Bordons Brook at Rt 520 in Holmdel	54	Phosphorus	02030104070070-01	Pathogens, pH, Phosphorus, TSS	
12	Trout Brook at Richdale Rd in Colts Neck	55	Fecal Coliform			
12	Barren Neck Brook at Long Bridge Rd in Colts Neck	56	Phosphorus			
12	Hockhockson Brook at Hockhockson Rd in Colts Neck	AN0475	Benthic Macroinvertebrates	02030104070080-01	pH	Benthic Macroinvertebrates, 8
12	Pine Brook at Tinton Ave (Rt 537) in Tinton Falls	AN0476	Benthic Macroinvertebrates			
12	Pine Brook at Squankum Rd in Macedonia	AN0476A	Benthic Macroinvertebrates			

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12	Navesink River Estuary	Shrewsbury/Navesink Estuary-4 thru 7	Total Coliform	02030104070100-01	DDX, DO, PCB's	Total Coliform
12	Navesink River Estuary	Shrewsbury/Navesink Estuary-4 thru 7	Total Coliform	02030104070110-01	DDX, DO, PCB's, Mercury, pH, Turbidity	Total Coliform
12	Lafetras Brook at Hope Rd in Tinton Falls	32	Phosphorus	02030104080020-01	DDX, DO, Mercury, PCB's, pH, Phosphorus	Total Coliform-3
12	Shrewsbury River Estuary	Shrewsbury/Navesink Estuary-4 thru 8	Total Coliform			
12	Lanes Creek at Edwards Ave in Long Branch	46	Fecal Coliform	02030104080030-01	DDX, DO, Mercury, PCB's	Fecal Coliform-3
12	Troutmans Creek at Atlantic Ave in Long Branch	47	Fecal Coliform			
12	Mannahasset Creek at Mannahasset Ave in Long Branch	48	Fecal Coliform			
12	Troutmans Creek at Joline Ave in Long Branch	62	Fecal Coliform			
12	Lake Takanassee-12	50	Phosphorus, Fecal Coliform	02030104090010-01	pH	Phosphorus-1B; Total Coliform -3; Benthic Macroinvertebrates, 8
12	Whale Pond Brook at Route 35 in Eatontown	01407617, 31	pH			
12	Whale Pond Brook at Larchwood Ave in Ocean	AN0477	Benthic Macroinvertebrates			
12	Poplar Brook at Deal	01407630, 59	Phosphorus	02030104090020-01	Phosphorus	
12	Shark River Brook at Shark River Station Rd in Tinton Falls	30	Phosphorus	02030104090040-01	Chlordane, DDX, Mercury, PCB's, Pollutant Unknown	Phosphorus-1B; Benthic Macroinvertebrates, 8
12	Shark River at Shark River Sta Rd in Wall	AN0481	Benthic Macroinvertebrates			
12	Jumping Brook at Green Grove	01407720	pH	02030104090050-01	pH	Fecal coliform-3; Benthic Macroinvertebrates, 8
12	Jumping Brook near Neptune	01407760	Fecal Coliform, pH			
12	Jumping Brook at Corlies Ave in Neptune	AN0480	Benthic Macroinvertebrates			
12	Musquash Brook at Brighton Ave in Neptune Twnshp	11	Fecal Coliform	02030104090060-01	Chlordane, DDX, DO, Mercury, PCB's, pH	Fecal Coliform-3; Phosphorus - 1B; Benthic Macroinvertebrates, 8
12	Shark River near Neptune	01407750, EWQ0482	Phosphorus, Fecal Coliform			
12	Shark River at Remsens Mills Rd in Neptune	AN0482	Benthic Macroinvertebrates			

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12	Wreck Pond Brook at Old Mill Rd in Wall	AN0483	Benthic Macroinvertebrates	02030104090080-01	pH	Benthic Macroinvertebrates, 8
12	Turkey Swamp Brook below Turkey Swamp Lk in Freehold	AN0489A	Benthic Macroinvertebrates	02030104100010-01		Benthic Macroinvertebrates-1B
12	Long Brook at Wyckoff Mills	01407868, 25	Phosphorus, pH	02030104100020-01	TSS	Phosphorus-3; pH-1B
12	Long Brook at Wyckoff Mills	01407868, 25	Phosphorus, pH	02030104100020-01	TSS	Phosphorus-3; pH-1B
12	Manasquan River at Rt 9 in Howell	AN0489	Benthic Macroinvertebrates	02030104100030-01	pH, Temperature, TSS	Benthic Macroinvertebrates, 8
12	Marsh Bog Brook at Squankum	01407997, 24	pH	02030104100050-01	pH, TSS	Phosphorus 3; Benthic Macroinvertebrates, 8
12	Manasquan River at Squankum	01408000, EWQ0489, 12-MA-1, 12-MA-2, 12-MA-3	Phosphorus	02030104100050-01	pH, TSS	Phosphorus 3; Benthic Macroinvertebrates, 8
12	Manasquan River at W Farms Rd in Howell	AN0490	Benthic Macroinvertebrates	02030104100050-01	pH, TSS	Phosphorus 3; Benthic Macroinvertebrates, 8
12	Manasquan River at Rt 547 in Howell	AN0493	Benthic Macroinvertebrates	02030104100050-01	pH, TSS	Phosphorus 3; Benthic Macroinvertebrates, 8
12	Mingamahone Brook near Earle	01408009	pH, Total Suspended Solids	02030104100060-01	pH, TSS, Turbidity	
12	Mingamahone Brook at Rt 524 in Howell	AN0495	Benthic Macroinvertebrates	02030104100070-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
13	Point Pleasant Canal	1308C	Total Coliform	02030104100100-01	Chlordane, DDX, Dioxin, DO, Mercury, PCB's, Pathogens	
09	Raritan River Estuary	Raritan River Estuary	Total Coliform	02030104910010-01	Dioxin, DO,PCB's, Pathogens	Mercury-3
09	Raritan Bay and Tidal Tributaries	Raritan Bay and Tidal Tributaries	Fish-PCB, Fish-Dioxin	02030104910010-01	Dioxin, DO,PCB's, Pathogens	Mercury-3
09	Raritan Bay	Raritan Bay-1 thru 7	Total Coliform	02030104910010-01	Dioxin, DO,PCB's, Pathogens	Mercury-3
09	Raritan Bay and Tidal Tributaries	Raritan Bay and Tidal Tributaries	Fish-PCB, Fish-Dioxin	02030104910020-01	Chlordane, DDX, Dioxin, DO, Mercury, PAH's,	
09	Raritan Bay	Raritan Bay-1 thru 7	Total Coliform	02030104910020-01	Chlordane, DDX, Dioxin, DO, Mercury, PAH's,	

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12	Northern Coastal Waters - Raritan Bay to Barnegat Inlet	Northern Coastal Waters - Raritan Bay to Barnegat Inlet	Fish-PCB	02030104920010-01, 02030104920010-02, 02030104920020-01, 02030104920020-02 02030104930010-01, 02030104930010-02, 02030104930020-01, 02030104930020-02 02040301910010-01, 02040301910010-02, 02040301910020-01, 02040301910020-02, 02040301910030-01, 02040301910030-02, 02040301920010-02, 02040301920010-01, 02040301920020-02 02040301920020-01 02040301920030-02 02040301920030-01	PCB's	
12	Shark River Estuary	Shark River Estuary-1	Dissolved Oxygen, Total Coliform	02030104930010-01	DDX, DO, Mercury, PCB's	Pathogens -3
08	Raritan River S Br at Middle Valley	01396280, EWQ0316, 8-SB-1	Phosphorus, Temperature	02030105010060-01	Phosphorus, Temperature	
08	Raritan River S Br Arch St at High Bridge	01396535, 8-SB-2	Temperature	02030105010080-01	Temperature	
08	Spruce Run at Newport	01396550	Temperature	02030105020010-01	Temperature	
08	Spruce Run near Glen Gardner	01396588, 8-SP-2	Temperature	02030105020020-01	Pollutant Unknown	Temperature-1B
08	Spruce Run at Clinton	01396800, 8-SP-1	Phosphorus, Temperature, pH, Cadmium	02030105020040-01	Phosphorus, Temperature, pH, Cadmium	
08	Beaver Brook at Lehigh St in Clinton	AN0324	Benthic Macroinvertebrates	02030105020050-01	Phosphorus	Benthic Macroinvertebrates, 8

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08	Cakepoulin Creek	Cakepoulin Creek Reach 02030105-043-0.00	DDT	02030105020060-01	DDX, Phosphorus	
08	Raritan River S Br at Station Rd in Raritan	AN0326	Benthic Macroinvertebrates	02030105020080-01	Arsenic, pH, Temperature	Benthic Macroinvertebrates, 8
08	Raritan River S Br at Stanton Station	01397000, 8-SB-3	pH, Temperature, Arsenic	02030105020100-01	Arsenic, pH, Temperature	Phosphorus-1B
08	Raritan River S Br at Three Bridges	01397400, 8-SB-4	Phosphorus			
08	Second Neshanic River at Rt 31 in Raritan	AN0331	Benthic Macroinvertebrates	02030105030020-01		Benthic Macroinvertebrates-1B
08	Third Neshanic River at Rt 31 in Raritan	AN0332	Benthic Macroinvertebrates	02030105030040-01	DO	Benthic Macroinvertebrates, 8
08	Back Brook at Rt 609 in East Amwell	AN0335	Benthic Macroinvertebrates	02030105030050-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
08	Neshanic River at Reaville	01398000, 8-NE-1	Phosphorus, Total Suspended Solids, Copper	02030105030060-01	Arsenic, Phosphorus	TSS, Copper-1B; Benthic Macroinvertebrates, 8
08	Neshanic River at Reaville - Everitt Rd in Raritan	AN0333	Benthic Macroinvertebrates			
08	Neshanic River at Rt 514 in Hillsborough	AN0337	Benthic Macroinvertebrates			
08	Pleasant Run at S Br Rd in Branchburg	AN0340	Benthic Macroinvertebrates	02030105040020-01	Pathogens, Pollutant Unknown	Benthic Macroinvertebrates, 8
08	Holland Brook at S Br Rd in Branchburg	AN0343	Benthic Macroinvertebrates	02030105040030-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
08	Raritan River S Br at South Branch	01398102, 01398070, 8-SB-6	Phosphorus, pH, Arsenic, Chromium, Copper, Lead	02030105040040-01	Arsenic, Phosphorus	Chromium, Copper, Lead, pH
08	Lamington River near Ironia	01399200	Phosphorus, Dissolved Oxygen	02030105050020-01	Pollutant Unknown	Phosphorus, Dissolved Oxygen - 1B ; Benthic Macroinvertebrates, 8
08	Lamington River at Ironia Rd in Chester	AN0356	Benthic Macroinvertebrates			
08	Lamington River near Pottersville	01399500	Phosphorus	02030105050040-01	Phosphorus, Temperature	
08	Rockaway Creek S Br at Rt 22 in Readington	AN0368	Benthic Macroinvertebrates	02030105050100-01	Phosphorus, Temperature	Benthic Macroinvertebrates, 8
08	Rockaway Creek at Whitehouse	01399700, EWQ0369, 8-RO-1	Phosphorus, Lead, Mercury	02030105050110-01	Phosphorus, pH	Lead, Mercury -1B
08	Lamington River at Burnt Mills	01399780	Phosphorus			

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08	Raritan River N Br at Roxitucus Rd in Mendham	AN0351A	Benthic Macroinvertebrates	02030105060030-01		Benthic Macroinvertebrates, 1B

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08	Mine Brook at Bernardsville Rd in Bernardsville	AN0352	Benthic Macroinvertebrates	02030105060070-01		Benthic Macroinvertebrates, 1B
08	Mine Brook at Far Hills Rd (Rt 512) in Far Hills	AN0353	Benthic Macroinvertebrates			
08	Raritan River N Br at Burnt Mills	01399120, 8-NB-2	Copper	02030105060090-01		Copper-1B
09	Peters Brook at Rt 28 in Somerville	AN0376	Benthic Macroinvertebrates	02030105080010-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Raritan River at Manville	01400500	Phosphorus	02030105080030-01	Pollutant Unknown	Phosphorus-1B
09	Raritan River abv Millstone River conf in Bridgewater	AN0377	Benthic Macroinvertebrates	02030105080030-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
10	Stony Brook at Linvale Rd in Amwell	AN0391A	Benthic Macroinvertebrates	02030105090010-01	Mercury, Pollutant Unknown	Benthic Macroinvertebrates, 8
10	Stony Brook on Mine Rd in Hopewell	10-STO-3	Mercury	02030105090030-01	Pollutant Unknown, Mercury	Benthic Macroinvertebrates, 8
10	Stony Brook at Mine Rd in Hopewell	AN0391	Benthic Macroinvertebrates			
10	Stony Brook at Pennington-Rocky Hill Rd in Hopewell	AN0392A	Benthic Macroinvertebrates	02030105090040-01	Pollutant Unknown, Mercury	Benthic Macroinvertebrates, 8
10	Stony Brook at Old Mill Rd in Hopewell	AN0392	Benthic Macroinvertebrates	02030105090050-01	Phosphorus, TSS	Benthic Macroinvertebrates, 8
10	Stony Brook at Province Line Rd in Princeton.	AN0393A	Benthic Macroinvertebrates			
10	Stony Brook at Carter Rd in Lawrence.	AN0393B	Benthic Macroinvertebrates			
10	Stony Brook at Rt 206 in Princeton	AN0393	Benthic Macroinvertebrates	02030105090060-01	Arsenic, Phosphorus, TSS	Benthic Macroinvertebrates, 8
10	Stony Brook at Princeton	01401000, 10-STO-1, 10-STO-4	Phosphorus, pH, Total Suspended Solids, Arsenic	02030105090070-01	Arsenic, Phosphorus, TSS	pH-1B
10	Millstone River near Manalapan	01400540, 01400530, 5, 10-MIL-1	Phosphorus, pH, Total Suspended Solids, Arsenic	02030105100010-01	Arsenic, Phosphorus, TSS, pH	Benthic Macroinvertebrates, 8
10	Millstone River near Manalapan	01400540, 01400530, 5, 10-MIL-1	Phosphorus, pH, Total Suspended Solids, Arsenic			
10	Millstone River at Rt 33 in Millstone	AN0379, AN0378, MB-MILL2	Benthic Macroinvertebrates			

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10	Millstone River at Applegarth Rd in Monearoe	AN0382D	Benthic Macroinvertebrates	02030105100020-01	Arsenic, Phosphorus, TSS, pH	Benthic Macroinvertebrates, 8
10	Rocky Brook at PerrIneville	01400585	Arsenic, Chromium, Lead, Zinc	02030105100040-01	Arsenic	Chromium, Lead, Zinc-1B
10	Rocky Brook on Rte 33 in Hightstown	10-ROC-1	Arsenic, Chromium, Lead, Zinc	02030105100050-01	Arsenic, pH, Phosphorus	Chromium, Lead, Zinc-1B; Benthic Macroinvertebrates, 8
10	Rocky Brook on Rte 130 in Hightstown	10-ROC-2	Chromium, Lead, Zinc			
10	Rocky Brook at Rt 33 in Hightstown	AN0381	Benthic Macroinvertebrates			
10	Millstone River near Grovers Mills	01400640, 01400650	Phosphorus, Arsenic	02030105100060-01	Arsenic, pH, Phosphorus	Benthic Macroinvertebrates, 8
10	Millstone River near Grovers Mills	01400640, 01400650	Phosphorus, Arsenic			
10	Millstone River at Grovers Mills Rd in Plainsboro	AN0382	Benthic Macroinvertebrates			
10	Millstone River at Rt 535 in East Windsor	AN0382B	Benthic Macroinvertebrates	02030105100060-01	Arsenic, pH, Phosphorus	Benthic Macroinvertebrates, 8
10	Cranbury Book near Prospect Plains	01400690	pH	02030105100070-01	pH	Benthic Macroinvertebrates, 8
10	Cranbury Brook at Applegarth Rd in Monearoe	AN0385	Benthic Macroinvertebrates			
10	Cranbury Brook at Edgemere Ave in Plainsboro	AN0386	Benthic Macroinvertebrates	02030105100090-01	pH	Benthic Macroinvertebrates, 8
10	Devils Brook at New Rd in South Brunswick	AN0387	Benthic Macroinvertebrates	02030105100110-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
10	Devils Brook at Schalk's Rd in Plainsboro	AN0389	Benthic Macroinvertebrates			
10	Big Bear Brook at Old Trenton Rd (Rt 535) in West Windsor	AN0383	Benthic Macroinvertebrates, Unknown Toxicity	02030105100130-01	Unknown Toxicity	Benthic Macroinvertebrates-8
10	Bear Brook at Stobbe Ln in West WIndsor	AN0384	Unknown Toxicity	02030105100130-01	Unknown Toxicity	
10	Millstone River off Rte 1 in Plainsboro	10-MIL-7	Arsenic	02030105100140-01	Arsenic	
10	Millstone River at Kingston	01401440, 10-MIL-2	Phosphorus, Fecal Coliform, pH, Temperature, Arsenic, Mercury	02030105110030-01	Arsenic, Mercury, Pathogens, pH, Phosphorus, Temperature	

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10	Bedens Brook at Aunt Molly Rd (abv STP) in Hopewell	AN0398, 10-BED-1	Benthic Macroinvertebrates	02030105110040-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
10	Bedens Brook near Rocky Hill	01401600, 10-BED-2, 10-BED-3	Phosphorus, Arsenic, Lead	02030105110050-01	Arsenic, Phosphorous	Lead-1B; Benthic Macroinvertebrates, 8
10	Bedens Brook at Rt 206 in Montgomery	AN0401	Benthic Macroinvertebrates			
10	Beden Brook at Great Rd in Blawenburg	AN0401B	Benthic Macroinvertebrates			
10	Pike Run at Rt 533 in Montgomery	AN0405	Benthic Macroinvertebrates			
10	Rock Brook at Burnt Hill Rd in Montgomery	AN0400, 10-RO-1	Benthic Macroinvertebrates	02030105110070-01		Benthic Macroinvertebrates-1B
10	Pike Run near Rocky Hill	01401700	Phosphorus	02030105110100-01		Phosphorus-1B
10	Millstone River at Blackwells Mills	01402000, 10-MIL-5, 10-MIL-6	Phosphorus, Arsenic	02030105110140-01	Arsenic, Phosphorous	Benthic Macroinvertebrates, 8
10	Six Mile Run at Canal Rd in Franklin	AN0409	Benthic Macroinvertebrates			
10	Millstone River at Blackwells Mills Rd in Hillsborough	AN0410	Benthic Macroinvertebrates			
10	Royce Brook at Rt 533 in Manville	AN0413	Benthic Macroinvertebrates	02030105110160-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
10	Millstone River at Weston	01402540, 10-MIL-3	Phosphorus, pH, Arsenic	02030105110170-01	Arsenic, Mercury, pH, Phosphorous	
09	Green Brook at Apple Tree Rd in Watchung.	AN0421B	Benthic Macroinvertebrates	02030105120010-01		Benthic Macroinvertebrates-1B
09	Green Brook at New Providence Rd in Seeleys Mill	AN0421A	Benthic Macroinvertebrates	02030105120020-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Stony Brook at Westend Ave in North Plainfield	AN0422	Benthic Macroinvertebrates	02030105120030-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Stony Brook at Sunlit Dr. in Watchung	AN0422A	Benthic Macroinvertebrates	02030105120030-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Bound Brook at Woodbrook Rd in South Plainfield	AN0424B	Benthic Macroinvertebrates	02030105120080-01	PCB's, Phosphorus	Benthic Macroinvertebrates, 8
09	Cedar Brook at Cedarbook Ave in So. Plainfield	AN0424A	Benthic Macroinvertebrates	02030105120090-01	PCB's, Phosphorus	Benthic Macroinvertebrates, 8
09	Bound Brook at Route 28 at Middlesex	01403385	Phosphorus	02030105120100-01	PCB's, Phosphorus	Benthic

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09	Bound Brook at Bound Brook Rd in Middlesex	AN0424	Benthic Macroinvertebrates	02030105120100-01	PCB's, Phosphorus	Macroinvertebrates, 8
09	Ambrose Brook at School St. in No. Stelton	AN0425B	Benthic Macroinvertebrates	02030105120110-01		Benthic Macroinvertebrates-1B
09	Ambrose Brook at Raritan Ave in Middlesex	AN0425	Benthic Macroinvertebrates	02030105120120-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Bound Brook at Middlesex	01403900	Phosphorus, Total Suspended Solids	02030105120130-01	PCB's, Phosphorus, TSS	Benthic Macroinvertebrates, 8
09	Green Brook at off Mill Rd in Sebrings Mill	AN0426A	Benthic Macroinvertebrates			
09	Raritan River at Queens Bridge	01403300	Phosphorus, Total Suspended Solids, Arsenic, Benzene	02030105120140-01	Arsenic, Benzene, Mercury, Phosphorus	TSS-1B
09	Raritan River	Raritan River	Fish-Mercury			
09	Mile Run at Rt 527 in Franklin	AN0429	Benthic Macroinvertebrates	02030105120150-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Raritan River Estuary	Raritan River Estuary, Reach 02030105-002	Arsenic, Cadmium, PCB	02030105120160-01	Arsenic, Benzene, PCB's, Phosphorus, TSS	Cadmium-1B
09	Raritan River Estuary	Raritan River Estuary, Reach 02030105-001	Arsenic, Cadmium, Zinc	02030105120170-01	Arsenic, Cadmium, Phosphorus, TSS, Zinc	
09	Lawrence Brook at Ridge Rd in South Brunswick	AN0430	Benthic Macroinvertebrates	02030105130020-01	Arsenic, Mercury	Benthic Macroinvertebrates, 8
09	Ireland Brook at Patricks Corners	01404470	pH	02030105130040-01	Pathogens, pH	Benthic Macroinvertebrates, 8
09	Ireland Brook at Riva Rd in South Brunswick	AN0433	Benthic Macroinvertebrates			
09	Lawrence Brook on Davidson's Mill Rd, Black Horse	9-LAW-1	Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Zinc	02030105130050-01	Arsenic, Mercury, Pollutant Unknown	Cadmium, Chromium, Copper, Lead, Zinc-1B
09	Lawrence Brook at Davidsons Mill Rd in South Brunswick	AN0431	Benthic Macroinvertebrates	02030105130050-01	Arsenic, Mercury, Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Lawrence Brook at Riva Rd in Milltown	AN0434	Benthic Macroinvertebrates	02030105130060-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Manalapan Brook at Federal Rd near Manalapan	01405340, 9-MAN-1	Phosphorus, pH, Lead	02030105140020-01	Mercury, pH,	Benthic

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09	Manalapan Brook at Federal Rd in Monearoe	AN0439	Benthic Macroinvertebrates	02030105140020-01	Phosphorus	Macroinvertebrates, 8
09	Manalapan Brook near Spotswood	01405440, EWQ0440, 9-MAN-2	pH, Lead, Zinc	02030105140030-01	Arsenic, pH	Lead, Zinc-1B
09	Manalapan Brook at Old Forge Rd in Monearoe	AN0440	Benthic Macroinvertebrates	02030105140030-01	Arsenic, pH	Benthic Macroinvertebrates, 8
09	Weemaconk Creek at Main St in Manalapan	9	Phosphorus	02030105150010-01	TSS, pH, Phosphorus	Benthic Macroinvertebrates, 8
09	Wemrock Brook at Rt #9 (Before Pipes) in Freehold	68	Phosphorus			
09	Wemrock Brook at Rt #9 (After 1St Pipe) in Freehold	69	Phosphorus			
09	Weamaconk Creek at Rt 522 in Englishtown	AN0443, MB-81	Benthic Macroinvertebrates			
09	Weamaconk Creek at Rt 522 in Englishtown	AN0443, MB-81	Benthic Macroinvertebrates			
09	Lake Topanemus Lake at Pond Rd in Freehold	61	Phosphorus	02030105150020-01	pH, Phosphorus	
09	McGolliard Brook at Main St in Englishtown	22	Phosphorus	02030105150030-01	pH, Phosphorus	
09	McGellairds Brook at Rt 527 in Englishtown	AN0447	Benthic Macroinvertebrates	02030105150030-01	pH, Phosphorus	Benthic Macroinvertebrates, 8
09	Matchaponix Brook at Rt 527 in Manalapan	AN0448	Benthic Macroinvertebrates	02030105150040-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Pine Brook at Pension Rd in Manalapan	AN0449	Benthic Macroinvertebrates	02030105150040-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Barclay Brook near Englishtown	01405285	pH	02030105150050-01	pH	
09	Matchaponix Brook at Spotswood	01405302, EWQ0451	Phosphorus, pH, Nitrate	02030105150060-01	Nitrate, pH, Phosphorus	
09	Matchaponix Brook at Texas Rd in Monearoe	AN0451	Benthic Macroinvertebrates	02030105150060-01	Nitrate, pH, Phosphorus	Benthic Macroinvertebrates, 8
09	Deep Run at Rt 9 in Old Bridge	AN0453	Benthic Macroinvertebrates	02030105160020-01	pH	Benthic Macroinvertebrates, 8
09	Deep Run at Rt 516 in Old Bridge	AN0454	Benthic Macroinvertebrates	02030105160040-01	pH	Benthic Macroinvertebrates, 8
09	Tennent Brook at Old Bridge-South Amboy Rd in Old Bridge	AN0455	Benthic Macroinvertebrates	02030105160060-01		Benthic Macroinvertebrates-1B

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09	South River	South River	Arsenic, Cadmium, Chromium. Copper, Lead, Mercury	02030105160100-01	Arsenic, Cadmium, Dioxin, PCB's	Chromium, Copper, Lead, Mercury-1B
09	South River	South River	Arsenic, Cadmium, Chromium. Copper, Lead, Mercury	02030105160070-01	Arsenic, Cadmium, Chromium. Copper, Dioxin, Lead, Mercury, PCB's	
09	Edmunds Creek	Adjacent to Mill Brook at 02030105-059-0.00; Trib to Lower Raritan River	PCB	02030105160080-01	PCB's	
01	Clove Brook at Rt 23 in Montague	AN0002	Benthic Macroinvertebrates	02040104090020-01	Temperature	Benthic Macroinvertebrates, 8
01	Paulins Kill at Balesville	01443440, 1-PAU-1	Arsenic	02040105040040-01		Benthic Macroinvertebrates-1B
01	Paulins Kill Trib at Rt 94 & Old Beaver Run Rd in Lafayette	AN0016A	Benthic Macroinvertebrates			
01	Paulins Kill Trib at Van Sickle Rd in Lafayette	AN0021A	Benthic Macroinvertebrates			
01	Paulins Kill at Rt 663 in Lafayette	AN0015	Benthic Macroinvertebrates	02040105040060-01	DO, Phosphorus	Benthic Macroinvertebrates, 8
01	Paulins Kill at Blairstown	01443500	Temperature	02040105050050-01	Temperature	Benthic Macroinvertebrates, 8
01	Paulins Kill at Rt 46 in Knowlton	AN0032	Benthic Macroinvertebrates			
01	Pequest River at Rt 206 in Andover	AN0035	Benthic Macroinvertebrates	02040105070030-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
01	Pequest River UNK Trib at Brighton Rd in Green	AN0036	Benthic Macroinvertebrates	02040105070040-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
01	Trout Brook at Rt 612 in Allamuchy	AN0038	Benthic Macroinvertebrates	02040105070050-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
01	Bear Creek at Dark Moon Rd in Frelinghuysen	AN0040A	Benthic Macroinvertebrates	02040105080010-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
01	Bear Creek near Alphano in Allamuchy	AN0040	Benthic Macroinvertebrates	02040105080020-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
01	Furnace Brook at Pequest Rd in White	AN0042	Benthic Macroinvertebrates	02040105090050-01	Pollutant Unknown	Benthic Macroinvertebrates, 8

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01	Pequest River at Pequest	01445500, 1-PEQ-2	Phosphorus, pH, Total Suspended Solids	02040105090060-01	Phosphorus, pH, Temperature, Arsenic, TSS	Cadmium, Chromium, Lead, Mercury-1B
01	Pequest River on Water Street at Belvidere	01446400, DRBCNJ0033, 1-PEQ-3	Phosphorus, pH, Temperature, Arsenic, Cadmium, Chromium, Lead, Mercury			
01	Pohatcong Creek at O'Brian Rd in Mansfield	AN0054A	Benthic Macroinvertebrates	02040105140010-01	Temperature	Benthic Macroinvertebrates-1B
01	Pohatcong Creek at Tunnel Hill Rd in Mansfield	AN0055	Benthic Macroinvertebrates			
01	Pohatcong Creek at New Village	01455200	Phosphorus, Fecal Coliform, pH, Temperature	02040105140030-01	Phosphorus, Temperature	pH-1B; pathogens-3; Benthic Macroinvertebrates, 8
01	Pohatcong Creek at Buttermilk Bridge Rd in Washington	AN0057	Benthic Macroinvertebrates			
01	Musconetcong River at Lake Hopatcong	01455500	pH, Temperature	02040105150030-01	pH, Temperature	Benthic Macroinvertebrates, 8
01	Musconetcong River at Rt 206 in Netcong	AN0063A	Benthic Macroinvertebrates			
20	Crosswicks Creek at Rt 537 in Plumsted	AN0121	Benthic Macroinvertebrates			
05	Dorotockys Run on Old Tappan Rd, Old Tappan	5-DOR-1	Arsenic, Mercury	02040105150050-01	Pollutant Unknown	Arsenic, Mercury-1B; Benthic Macroinvertebrates, 8
01	Lubbers Run at Waterloo Rd (N of Rt 604) in Byram	AN0069A	Benthic Macroinvertebrates			
01	Musconetcog River at Lockwood	01455801	Phosphorus, Fecal Coliform, Temperature	02040105150070-01	Phosphorus, Temperature	Pathogens-3
20	Crosswicks Creek near New Egypt	01464420	Phosphorus	02040201050030-01, 02040201040070-01	Phosphorus, Temperature	
20	Crosswicks Creek at Walnford Rd in Upper Freehold	2	Phosphorus	02040201050040-01	Phosphorus, Temperature	
13	Ocean Bathing Beach-13	Ocean Twp (OC) Bay Bathing Beach	Fecal Coliform	02040301120010-01	pH	Pathogens-1B
13	Double Creek Estuary	1672, 1672A, 1673, 1673A	Total Coliform	02040301120030-01		Pathogens-3
15	Great Egg Harbor River at Folsom	01411000, 15-GEH-2	pH, Copper, Lead	02040302030060-01, 02040302030080-01, 02040302030040-01	Phosphorus, Temperature	pH, Copper, Lead-1B

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15	Great Egg Harbor River at Weymouth	01411110, 15-GEH-3	pH, Copper	02040302040090-01, 02040302040110-01, 02040302040080-01, 02040302040130-01	Phosphorus, Temperature	pH, Copper-1B
15	Great Egg Harbor River Upper Estuary	2812B, 2814,2814A, 2816,2816A, 2816B, 2818, 2818A, 2819, 2821,2821A, 2821B, 2821C, 2821D, 2822A, 2823A,2824A, 2824B, 2825, 2826,2826A, 2827,2827A	Total Coliform	02040302050060-01	Arsenic, Cadmium,Lead, Mercury, Nickel, Zinc	Pathogens-3
15	Great Egg Harbor River Upper Estuary	2812B, 2814,2814A, 2816,2816A, 2816B, 2818, 2818A, 2819, 2821,2821A, 2821B, 2821C, 2821D, 2822A, 2823A,2824A, 2824B, 2825, 2826,2826A, 2827,2827A	Total Coliform	02040302050130-01	Arsenic, Cadmium, DO, Lead, Mercury, Nickel, Zinc	Pathogens-3
01	Wills Brook at Erie Lackawanna RR Bridge in Mt Olive	AN0064B	Benthic Macroinvertebrates	02040105150070-01	Temperature	Benthic Macroinvertebrates, 8
01	Wills Brook at Acorn St in Mt Olive	AN0064C	Benthic Macroinvertebrates			
01	Musconetcong River off Rt 604 (blw Lubbers Run) in Lockwood	AN0069B	Benthic Macroinvertebrates			
01	Musconetcong River blw Waterloo Village lower dam in Mt Olive	AN0069C	Benthic Macroinvertebrates			
07	Elizabeth River at Lakeview Rd & Maple Terr in Union	AN0202X	Benthic Macroinvertebrates	02030104020020-01	Mercury, Phosphorus, TSS	Benthic Macroinvertebrates-8
07	Elizabeth River at Ursino Lk at Elizabeth	01393450, 7-ELI-2	Phosphorus, Dissolved Solids	02030104020030-02	Phosphorus, TDS, Dioxin, PCBs	
08	Drakes Brook at Emans Rd in Roxbury	AN0311	Benthic Macroinvertebrates	02030105010010-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Green Brook at Raymond Ave in Plainfield	AN0421	Benthic Macroinvertebrates	02030105120020-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
09	Green Brook at Clinton Ave in North Plainfield	AN0423	Benthic Macroinvertebrates	02030105120040-01	Pollutant Unknown	Benthic Macroinvertebrates, 8

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09	Green Brook at Main St in Bound Brook	AN0426	Benthic Macroinvertebrates	02030105120130-01	PCBs, Phosphorus,TSS	Benthic Macroinvertebrates, 8
01	Dunnfield Creek at Dunnfield	01442760	pH	02040104240020-01	pH	
20	Crosswicks Creek UNK Trib at Iron Bridge Rd in Chesterfield	AN0126A	Benthic Macroinvertebrates	02040201050060-01	Mercury, Pollutant Unknown	Benthic Macroinvertebrates-8
18	Edwards Run at Jessups Mill Rd in Mantua	AN0674	Benthic Macroinvertebrates	02040202130050-01	Pollutant Unknown, Arsenic, Mercury	Benthic Macroinvertebrates, 8
14	Great Swamp Branch Below Rt 206 near Hammonton	0140941070	pH, Nitrate	02040301160120-01, 02040301160130-01	pH, Nitrate,	
16	Great Sound	Gravens Thorofare-1; Long Reach-5; Holmes Cove-6	Total Coliform	02040302080040-01		Pathogens-1B
15	Great Egg Harbor River Middle Estuary	2807A, 2807B, 2810, 2810A, 2812, 2805, 2806, 2808, 2808A	Total Coliform	02040302050130-01, 02040302050090-01	DO, Arsenic, Cadmium, Lead, Mercury, Nickel, Zinc	Pathogens-3
01	Musconetcong River at S of Rt 604 & Rt 80 in Mt Olive	AN0069D	Benthic Macroinvertebrates	02040105150080-01		Benthic Macroinvertebrates-1B
01	Musconetcong River at Rt 604 (abv Saxton Lk) in Mt Olive	AN0069E	Benthic Macroinvertebrates	02040105150080-01		Benthic Macroinvertebrates-1B
07	Elizabeth River at Summer St in Hillside	AN0204X	Benthic Macroinvertebrates	02030104020020-01		
06	Green Pond Brook at Mt Pleasant Tnpk in Wharton	AN0242	Benthic Macroinvertebrates	02030103030060-01		
03	Dam Brook Trib to Pompton River at Ryerson Rd in Lincoln Park	AN0269	Benthic Macroinvertebrates	02030103110010-01		
16	Green Creek at Rt 47 in Middle	AN0770	Benthic Macroinvertebrates	02040206230040-01	DO, PCBS, pH, Phoshorus, TSS	Benthic Macroinvertebrates, 8
15	Cushman Lake-15	Collings Lakes #2 (Jays Lake North), Collings Lakes #3 (Jays Lake South)	Fecal Coliform	Cushman Lake-15	Pathogens	
04	Dundee Lake-04	Dundee Lake	Fish-Mercury	Dundee Lake-04	Mercury	
15	Great Egg Harbor River Estuary	Great Egg Harbor River Estuary	Arsenic, Cadmium, Chromium, Lead, Mercury, Nickel, Zinc	02040302050130-01	DO, Arsenic, Cadmium, Lead, Mercury, Nickel, Zinc	Chromium-1B

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15	Great Egg Harbor River Estuary	Great Egg Harbor River Estuary	Arsenic, Cadmium, Chromium, Lead, Mercury, Nickel, Zinc	02040302060040-01	DO	Arsenic, Cadmium, Chromium, Lead, Mercury, Nickel, Zinc-6
01	Trout Brook at Rt 57 in Hackettstown	AN0068	Benthic Macroinvertebrates	02040105150100-01	Arsenic	Benthic Macroinvertebrates-1B
01	Musconetcong River at Beattystown	01456200, 1-MUS-3	Temperature, Arsenic	02040105160010-01	Temperature, Arsenic	
01	Musconetcong River at New Hampton Rd in Lebanon	AN0072	Benthic Macroinvertebrates	02040105160030-01		Benthic Macroinvertebrates-1B
01	Musconetcong River near Bloomsbury	01457000, EWQ0072, 1-MUS-4	pH	02040105160050-01		pH-1B
01	Musconetcong River at Riegelsville	01457400, DBRCNJ0025, 1-MUS-5	Phosphorus, Temperature, Total Suspended Solids	02040105160070-01	Temperature	Phosphorus, Total Suspended Solids-1B
11	Wickecheoke Creek at Croton	01461220	Fecal Coliform	02040105200040-01	Pollutant Unknown	Fecal Coliform 3; Benthic Macroinvertebrates, 8
11	Wickecheoke Creek at Locktown - Sergeantsville Rd in Delaware	AN0091	Benthic Macroinvertebrates			
11	Plum Brook near Locktown	01461262	Fecal Coliform	02040105200050-01	Pollutant Unknown	Fecal Coliform 3; Benthic Macroinvertebrates, 9
01	Plum Brook at Pine Hill Rd in Delaware	AN0093	Benthic Macroinvertebrates			
11	Wickecheoke Creek at Stockton	01461300, DRBCNJ0012	Phosphorus, Fecal Coliform, Temperature	02040105200060-01	Temperature	Phosphorus, Fecal Coliform-3
01	Jacobs Creek at Bear Tavern Rd in Hopewell	AN0106A	Benthic Macroinvertebrates	02040105210070-01	pH	Benthic Macroinvertebrates, 8
11	Assunpink Creek Trib near Assunpink WMA office in Millstone	AN0109T	Benthic Macroinvertebrates	02040105230010-01		Benthic Macroinvertebrates-1B
06	Dead River at King George Rd in Bernards	AN0227	Benthic Macroinvertebrates			
11	Assunpink Creek at Route 539 in Upper Freehold	4	Phosphorus	02040105230030-01	Phosphorus, Mercury, pH	Benthic Macroinvertebrates, 8
11	New Sharon Brook at Sharon Rd in Washington	AN0109B	Benthic Macroinvertebrates			
11	Assunpink Creek near Edinburg	11-AS-4	Arsenic, Cadmium, Copper, Lead, Mercury	02040105230040-01	Arsenic, Mercury, Pollutant Unknown	Cadmium, Copper, Lead-1B; Benthic Macroinvertebrates, 8
11	Assunpink Creek at Windsor Rd in Washington	AN0109A	Benthic Macroinvertebrates			

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11	Assunpink Creek near Clarksville	01463620, 11-AS-2	Arsenic, Cadmium, Copper, Lead, Mercury	02040105230050-01	Arsenic, Mercury, Pollutant Unknown	Cadmium, Copper, Lead-1B; Benthic Macroinvertebrates, 8
11	Assunpink Creek at Rt 535 in West Windsor	AN0109	Benthic Macroinvertebrates			
01	Shipetaukin Creek at Rt 583 in Lawrence	AN0111	Benthic Macroinvertebrates	02040105230060-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
11	Shabakunk Creek at Rt 206 in Lawrence	AN0114	Benthic Macroinvertebrates	02040105240010-01	Mercury, Pollutant Unknown	Benthic Macroinvertebrates, 8
11	Pond Run at Rt 533 in Hamilton	AN0117	Benthic Macroinvertebrates	02040105240040-01	TSS	Benthic Macroinvertebrates, 8
11	Assunpink Creek at Peace Street at Trenton	01464020, 01464000, DRBCNJ1338, 11-AS-3	Phosphorus, Fecal Coliform, Arsenic, Lead	02040105240050-01	Phosphorus, Mercury, Arsenic, Lead	Fecal Coliform-3; Benthic Macroinvertebrates, 8
11	Assunpink Creek at Peace Street at Trenton	01464020, 01464000, DRBCNJ1338, 11-AS-3	Phosphorus, Fecal Coliform, Arsenic, Lead			
11	Assunpink Creek at Mulberry St in Trenton	AN0116	Benthic Macroinvertebrates			
11	Assunpink Creek at Willow St in Trenton	AN0118	Benthic Macroinvertebrates			
20	Jumping Brook at Bunting Bridge Rd in New Hanover	AN0119	Benthic Macroinvertebrates	02040201040050-01	Mercury, pH, Phosphorus	Benthic Macroinvertebrates, 8
06	Dead River near Millington	01379200	Phosphorus, Nitrate, Total Suspended Solids	02040201040060-01	Phosphorus, TSS	Nitrate -1B; Benthic Macroinvertebrates, 8
20	North Run Trib at Highland Ave in Wrightstown	AN0120A	Benthic Macroinvertebrates			
05	Hackensack River at New Milford	01378500	Phosphorus, Fecal Coliform	02030103170060-01	Arsenic, Mercury, Pathogens, Phosphorus	
				02030103180030-01	Dioxin, Mercury, Pathogens, PCBs, Phosphorus, TSS	
17	Indian Branch near Malaga	01411466	pH	02040206130030-01	pH	
12	Deal Lake-12	1, Deal Lake	Fecal Coliform	Deal Lake-12	Pathogens	
12	Deal Lake-12	1, Deal Lake	Fecal Coliform			
20	North Run at Main St in North Hanover	AN0120	Benthic Macroinvertebrates		Mercury	Benthic

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20	Crosswicks Creek Trib S at Cookstown - New Egypt Rd in Cookstown	AN0121B	Benthic Macroinvertebrates	02040201040070-01	Mercury, Phosphorus, TSS	Benthic Macroinvertebrates, 8
12	Hooks Creek Lake-12	Cheesequake SP Left and Right	Fecal Coliform	Hooks Creek Lake-12	Pathogens	
05	Hudson River - NYC & Battery	HR1, HR2	Fish-PCB, Fish-Dioxin	02030101170010-01	Pollutant Unknown, Dioxin, PCBs	
05	Hudson River at G.W. Bridge	HR4	Fish-PCB, Fish-Dioxin			
05	Hudson River near Yonkers	HR7	Fish-PCB, Fish-Dioxin			
05	Hudson River- NYC Area	Hudson River- NYC Area	Fish-PCB, Fish-Dioxin			
16	James Sound	James Sound-1 thru 11	Total Coliform	02040302080090-01		Pathogens-3
20	Crosswicks Creek	Crosswicks Creek	Fish-Mercury	02040201040070-01, 02040201050030-01, 02040201050040-01, 02040201050050-01, 02040201050060-01, 02040201050070-01, 02040201070020-0	Mercury	
20	Lahaway Creek at Rt 537 in Upper Freehold	AN0122	Benthic Macroinvertebrates	02040201050010-01	Pollutant Unknown	Benthic Macroinvertebrates, 8

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20	Lahaway Creek at New Egypt - Allentown Rd in Upper Freehold	AN0124, MB-117	Benthic Macroinvertebrates	02040201050020-01	Phosphorus	Benthic Macroinvertebrates, 8
20	Lahaway Creek at New Egypt - Allentown Rd in Upper Freehold	AN0124, MB-117	Benthic Macroinvertebrates			
05	Hackensack River at Old Tappan	01376970, 5-HAC-2	Arsenic	02030103170030-01	Arsenic, Mercury, Phosphorus	
20	Moorhouse Brook Trib S at Moorhouse Rd in New Egypt	AN0121A	Benthic Macroinvertebrates		Mercury, Phosphorus	Benthic Macroinvertebrates, 8
20	Crosswicks Creek at Rt 528 (blw Oakford Lk) in New Egypt	AN0121D	Benthic Macroinvertebrates	02040201050030-01		
20	Doctors Creek at Spring Rd in Millstone	AN0127A	Benthic Macroinvertebrates	02040201060010-01		Benthic Macroinvertebrates-1B
12	Hop Brook at Roberts Rd in Holmdel	AN0465	Benthic Macroinvertebrates	02030104070010-01	Phosphorus, Temperature, TSS	Benthic Macroinvertebrates, 8
12	Debois Creek at Strickland Rd in Freehold	AN0487	Benthic Macroinvertebrates	02030104100020-01	TSS	Benthic Macroinvertebrates, 8
06	Indian Lake-06	Indian Clubhouse, Indian Franklin, Indian Main	Fecal Coliform	Indian Lake-06	Pathogens	
16	Jenkins Sound	Jenkins Sound-1 thru 10	Total Coliform	02040302080060-01		Pathogen-3
14	Indian Mills Brook at Indian Mills	01409449	pH	02040301150030-01	pH	
20	Miry Run at Meirs Rd in Cream Ridge	AN0125A	Benthic Macroinvertebrates	02040201050040-01	Mercury, Phosphorus, Arsenic, pH, TSS, Turbidity	Benthic Macroinvertebrates, 8
13	Jesse Creek/Thompson Creek Estuary	1807D	Total Coliform	02040301140040-01, 02040301140060-01		Pathogen-3
05	Hackensack River at Old Tappan Rd in Old Tappan	AN0205	Benthic Macroinvertebrates	02030103170030-01	Arsenic, Mercury, Phosphorus	Benthic Macroinvertebrates, 8
12	Hop Brook at Willow Brook Rd in Holmdel	AN0466	Benthic Macroinvertebrates	02030104070010-01	Phosphorus, Temperature, TSS	Benthic Macroinvertebrates, 8

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20	Crosswicks Creek at Extonville	01464500, 20-CRO-1	Phosphorus, Fecal Coliform	02040201050050-01	Mercury, Phosphorus, Arsenic, pH, TSS	Pathogens-3; Benthic Macroinvertebrates, 8
20	Pleasant Run at Extonville Rd in Hamilton	AN0126B	Benthic Macroinvertebrates			
20	Crosswicks Creek at Groveville Rd at Groveville	01464504, 20-CRO-2	Phosphorus	02040201050070-01	Mercury, PCBs, Phosphorus, Arsenic, Dioxin, TSS, Turbidity	Benthic Macroinvertebrates, 8
20	Crosswicks Creek at Main St in Hamilton	AN0126	Benthic Macroinvertebrates			
05	Hackensack River at Rivervale	01377000, 5-HAC-3	Arsenic, Chromium, Copper, Lead, Mercury	02030103170030-01	Arsenic, Mercury, Phosphorus	Chromium, Copper, Lead-1B
15	Hospitality Branch at Blue Bell Rd near Cecil	01411035	pH	02040302040010-01	pH	
16	Jones/Stites/Carino/Taylor Creek Estuary	3603B	Total Coliform	02040302080080-01		Pathogens-3
19	Indian Run at Birmingham Rd in Pemberton	AN0151A	Benthic Macroinvertebrates	02040202040030-01	Arsenic, Copper, Lead, pH, Phosphorus, TSS	Benthic Macroinvertebrates, 8
20	Doctors Creek at Route 539 in Upper Freehold	3	Phosphorus	02040201060020-01	Phosphorus, pH	
20	Doctors Creek at Allentown	01464515	Phosphorus	02040201060030-01	Phosphorus	Benthic Macroinvertebrates, 8
20	Doctors Creek at Breza Rd in Upper Freehold	AN0129, MB-123	Benthic Macroinvertebrates			
20	Doctors Creek at Rt 130 in Hamilton	AN0130	Benthic Macroinvertebrates			
20	Back Creek at Yardville-Hamilton Sq Rd in Hamilton	AN0131A	Benthic Macroinvertebrates	02040201070010-01	Phosphorus	Benthic Macroinvertebrates, 8
20	Bacons Creek near Mansfield Square	01464529	pH	02040201080020-01	pH	Benthic Macroinvertebrates, 8
20	Blacks Creek at Chesterfield - Georgetown Rd in Chesterfield	AN0132	Benthic Macroinvertebrates			
20	Bacon Run at Georgetown - Bordentown Rd in Georgetown	AN0133A	Benthic Macroinvertebrates			
20	Crafts Creek at Island Rd in Mansfield	AN0136	Benthic Macroinvertebrates	02040201090010-01	Phosphorus, pH	Benthic Macroinvertebrates, 8
20	Annaricken Brook near Jobstown	01464578	Phosphorus	02040201100010-01	Phosphorus, pH	
20	Barkers Brook N Br near Jobstown	01464583	Phosphorus, pH	02040201100020-01	Phosphorus, pH	Benthic Macroinvertebrates, 8
20	Barkers Brook at Jacksonville-Smithville Rd in Springfield	AN0141O	Benthic Macroinvertebrates			

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20	Assiscunk Creek at Cedar Lane at Springfield	20-AS-1	Arsenic, Cadmium, Chromium, Lead, Mercury	02040201100050-01	Arsenic, Dioxin, PCB's, pH, Mercury	Cadmium, Chromium, Lead-1B
20	Assiscunk Creek at Hedding Rd (near Jacksonville) in Mansfield	AN0141	Benthic Macroinvertebrates	02040201100050-01	Arsenic, Dioxin, PCB's, pH, Mercury	Benthic Macroinvertebrates, 8
19	Rancocas Creek N Br at Hanover Furnace	01465950, 19-RA-1N	Copper, Mercury, Lead	02040202020030-01	Copper, Mercury, Lead, Pathogens, pH, Phosphorus	
19	Rancocas Creek N Br at Browns Mills	01465970	Phosphorus, Fecal Coliform, pH, Mercury	02040202020040-01	Phosphorus pH, Mercury, Pathogens	, Fecal Coliform,
19	Rancocas Creek N Br at Pemberton	01467000, 19-RA-3N	Copper, Lead	02040202040010-01	Copper, Lead, Mercury, Phosphorus, pH	
19	Rancocas Creek N Br at Iron Works Park at Mt Holly	01467005, 01467006, 01467003, 19-RA-4N	Phosphorus, pH, Arsenic, Copper, Lead	02040202040050-01	Phosphorus, pH, Arsenic, Dioxin, PCB's	Copper, Lead-1B;Benthic Macroinvertebrates, 8
19	Rancocas Creek N Br at Iron Works Park at Mt Holly	01467005, 01467006, 01467003, 19-RA-4N	Phosphorus, pH, Arsenic, Copper, Lead	02040202040050-01	Phosphorus, pH, Arsenic, Dioxin, PCB's	Copper, Lead-1B;Benthic Macroinvertebrates, 8
19	Rancocas Creek N Br at Pine St Pk in Mount Holly	AN0151	Benthic Macroinvertebrates	02040202040050-01	Phosphorus, pH, Arsenic, Dioxin, PCB's	Copper, Lead-1B;Benthic Macroinvertebrates, 8
19	Rancocas Creek S Br at Vincentown	01465850, 19-RA-3S	Phosphorus, pH, Lead	02040202050090-01	Phosphorus, pH, Arsenic, Dioxin, Lead, Pathogens, PCB's	
19	Little Creek at Chairville	01465893	pH, Fecal Coliform	02040202060070-01	pH, Pathogens	
19	Little Creek at Eayrestown Rd in Lumberton	AN0160	Benthic Macroinvertebrates	02040202060090-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
19	Sharps Run at Rt 541 at Medford	01465884	Phosphorus	02040202060100-01	Phosphorus, Arsenic, Dioxin, PCB's,	Pathogens-3
19	Camp Darkwaters (Lake Cotoxen)	Camp Darkwaters	Fecal Coliform	02040202060100-01	Phosphorus, Arsenic, Dioxin, PCB's,	Pathogens-3
19	Rancocas Creek S Br at Hainesport	Rancocas, EWQ0176S, 19-RA-1S	Phosphorus, Fecal Coliform, Arsenic	02040202070020-01	Phosphorus, , Arsenic, Pathogens, PCB's	
19	Rancocas Creek S Br at Hainesport	Rancocas, EWQ0176S, 19-RA-1S	Phosphorus, Fecal Coliform, Arsenic	02040202070020-01	Phosphorus, , Arsenic, Pathogens, PCB's	
19	Masons Creek at Rt 38 in Hainesport	AN0173	Benthic Macroinvertebrates	02040202070030-01	Phosphorus, , Arsenic, Pathogens, PCB's	Benthic Macroinvertebrates, 8

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19	Parkers Creek at Rt 603 in Mt Laurel	AN0174A	Benthic Macroinvertebrates	02040202080010-01	Phosphorus	Benthic Macroinvertebrates, 8
19	Mill Creek at Levitt Pkwy in Willingboro	AN0175	Benthic Macroinvertebrates	02040202080030-01	Phosphorus, PCB's, Dioxin	Benthic Macroinvertebrates, 8
11	Miry Run at Route 533 in Mercerville	01463850	Phosphorus, Dissolved Oxygen, pH	02040105240030-01	Phosphorus, Dissolved Oxygen, pH	
18	Swedes Run at Rt 130 in Delran	AN0176	Benthic Macroinvertebrates	02040202090010-01	PCB's, Dioxin, Pollutant Unknown	Benthic Macroinvertebrates, 8
19	Swedes Run at Garwood Rd in Moorestown	AN0176A	Benthic Macroinvertebrates			
13	Mill Creek at Rt 72 in Stafford	AN0555	Benthic Macroinvertebrates	02040301130030-01	pH	Benthic Macroinvertebrates, 8
15	Maple Run (Asbury Run) at Mill Rd in Egg Harbor	AN0619	Benthic Macroinvertebrates	02040302060020-01	pH	Benthic Macroinvertebrates, 8
12	Marsh Bog Brook at Squankum	01407997, 24	pH	02030104100040-01	pH	
11	Miry Run at Rt 533 in Hamilton	AN0115	Benthic Macroinvertebrates	02040105240030-01	pH. DO, Phosphorus	Benthic Macroinvertebrates, 8
19	Pompeston Creek at New Albany Rd in Moorestown	AN0177A	Benthic Macroinvertebrates	02040202090020-01		Benthic Macroinvertebrates-1B
10	Millstone River above Raritan River conf in Franklin	AN0414	Benthic Macroinvertebrates	02030105110170-01	Arsenic, pH, Mercuy, Phosphorus	Benthic Macroinvertebrates, 8
18	Pompeston Creek at Rt 130 in Cinnaminson	AN0177	Benthic Macroinvertebrates	02040202090030-01	PCB's, Dioxin, Pollutant Unknown	Benthic Macroinvertebrates, 8
18	Pennsauken Creek N Br near Morrestown	01467069, 18-PE-1, 18-PE-2	Phosphorus, Arsenic	02040202100020-01	Phosphorus, Arsenic	Benthic Macroinvertebrates, 8
18	Pennsauken Creek N Br at Fellowship Rd in Mount Laurel	AN0179	Benthic Macroinvertebrates			
18	Pennsauken Creek	Pennsauken Creek, Mainstem	Arsenic, Cadmium, Chromium, Copper, Lead, Mercury	02040202100030-01	Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Phosphorus	

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18	Pennsauken Creek	Pennsauken Creek, Mainstem	Arsenic, Cadmium, Chromium, Copper, Lead, Mercury	02040202100060-01	Arsenic, Cadmium, Chlordane, Chromium, Copper, DDX, Lead, Mercury, PCB's, Phosphorus	
18	Pennsauken Creek at Forked Landing	Pennsauken Creek at Forked Landing	Fish-PCB, Fish-Dioxin			
18	Pennsauken Creek S Br at Greentree Rd in Evesham	AN0182	Benthic Macroinvertebrates	02040202100040-01	Phosphorus, TSS, Arsenic	Benthic Macroinvertebrates, 8
18	Pennsauken Creek S Br at Cherry Hill	01467081, 18-PE-3	Phosphorus, Total Suspended Solids, Arsenic	02040202100050-01	Phosphorus, Total Suspended Solids, Arsenic	Benthic Macroinvertebrates, 8
18	Pennsauken Creek S Br at Rt 41 in Cherry Hill	AN0183	Benthic Macroinvertebrates			
18	Cooper River N Br at Kresson	01467155, 18-CO-2	Phosphorus, Dissolved Oxygen, pH, Arsenic	02040202110010-01	pH, Arsenic, DDX, PCB's	Phosphorus, Dissolved Oxyge1B
18	Cooper River N Br at Springdale Rd in Cherry Hill	AN0187	Benthic Macroinvertebrates	02040202110020-01	pH, Arsenic, DDX, PCB's	Benthic Macroinvertebrates, 8
18	Cooper River N Br at River Dr in Cherry Hill	AN0188	Benthic Macroinvertebrates			
18	Cooper River at Lindenwold	01467120	Phosphorus	02040202110030-01	Arsenic, DDX, PCB's, Lead, PCE/TCE, Turbidity	Benthic Macroinvertebrates, 8; Phosphorus-3
18	Cooper River S Br at Gibbsboro Rd in Gibbsboro	AN0189	Benthic Macroinvertebrates			
18	Cooper River at Haddonfield	01467150, 01467140, 18-CO-4	Phosphorus, Arsenic, Lead, Tetrachloroethylene	02040202110040-01	Arsenic, DDX, PCB's, Lead, PCE/TCE, Turbidity	Benthic Macroinvertebrates, 8
18	Cooper River at Haddonfield	01467150, 01467140, 18-CO-4	Phosphorus, Arsenic, Lead, Tetrachloroethylene			
18	Cooper River S Br at Evesham Rd in Cherry Hill	AN0190	Benthic Macroinvertebrates			
18	Cooper River at Rt 130 at Camden	18-CO-1	Arsenic, Lead, Mercury, Tetrachloroethylene	02040202110060-01	Arsenic, DDX, PCB's, Lead, Mercury, PCE/TCE	
18	Big Timber Creek N Br at Park Ave in Lindenwold	AN0661	Benthic Macroinvertebrates	02040202120010-01	Mercury, Phosphorus	Benthic Macroinvertebrates, 8
18	Big Timber Creek N Br at Glendora	01467359	Phosphorus	02040202120020-01	Mercury, Phosphorus	Benthic Macroinvertebrates, 8
18	Big Timber Creek N Br at Rt 168 In Gloucester	AN0663	Benthic Macroinvertebrates			

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18	Big Timber Creek	Big Timber Creek	Fish-Mercury	02040202120020-1, 02040202120050-1, 02040202120010-1, 02040202120040-1, 02040202120080-1, 02040202120030-1	Mercury	
18	Stone Bridge Branch trib at Waddell Farm in Gloucester	AN0655	Benthic Macroinvertebrates	02040202120030-01	Pollutant Unknown, Mercury	Benthic Macroinvertebrates, 8
18	Stone Bridge Branch above Waddell's Bridge in Gloucester	AN0655A	Benthic Macroinvertebrates			
18	Stone Bridge Branch below Waddell's Bridge in Gloucester	AN0655B	Benthic Macroinvertebrates			
18	Big Timber Creek S Br at Turnersville - Sicklerville Rd in Washington	AN0658	Benthic Macroinvertebrates			
18	Toms Dam Branch at Peter Cheeseman Rd in Gloucester	AN0658A	Benthic Macroinvertebrates			
18	Big Timber Creek S Br at Blackwood Terrace	01467329, 18-BIG-1	Phosphorus	02040202120040-01	Mercury, Arsenic	Phosphorus-3
18	Newton Creek	Newton Creek	Copper, Zinc	02040202120090-01	Copper, Zinc, Mercury, pH, Phosphorus, Temperature	
18	Plank Run at Rt 322 in Harrison	AN0670A	Benthic Macroinvertebrates	02040202130030-01		Benthic Macroinvertebrates-1B
18	Chestnut Branch at Mantua Blvd in Mantua	AN0671	Benthic Macroinvertebrates	02040202130040-01	Dioxin, PCB's, Phosphorus	Benthic Macroinvertebrates, 8
18	Mantua Creek at Mantua Ave in Wenonah	AN0672	Benthic Macroinvertebrates			
18	Still Run at Union Rd in E Greenwich	AN0675A	Benthic Macroinvertebrates	02040202140020-01		Benthic Macroinvertebrates-1B
18	Raccoon Creek at Ellis Mill Rd in Elk	AN0679	Benthic Macroinvertebrates	02040202150010-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
18	Raccoon Creek S Br at High St in Harrison	AN0682	Benthic Macroinvertebrates	02040202150030-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
18	Raccoon Creek near Swedesboro	01477120, 18-RAC-1	Phosphorus, Silver		Silver, Arsenic,	Benthic

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18	Raccoon Creek at Tomlin Sta Rd in Harrison	AN0683	Benthic Macroinvertebrates	02040202150040-01	Chlordane, DDX, Mercury, PCB's,	Benthic Macroinvertebrates, 8
18	Oldmans Creek at Porches Mill	01477510	Phosphorus	02040202160030-01		Phosphorus-3
17	Maurice River and Cove	3847,3847A,3847B,3847C,3847D,3848,3848A,3848B,3848C,3900A,3900D,3900G,3900H,3900J,3900L,3900M	Fecal Coliform	02040204910020-01	DDX, DO, Mercury, PCBs	Pathogens-3
17	Delaware Bay	Delaware Bay-all	Fish-PCB	02040204910030-01, 02040204910030-02	PCBs, DO	
				02040204910020-01, 02040204910020-02, 02040204910010-01, 02040204910010-02	DDX, Do, Mercury, PCBs	
				02040204910040-01	Chlordane, DDX, Dieldrin, DO, Mercury, PCBs	
17	Delaware Bay	Cherry Tree Ck to Artificial Island-2,4; Cohansey Cove-6; Back Ck-7; Dyer Cove-8; Delaware Bay Inshore-10; Lower Maurice R-11; Dennis Ck-12; Delaware Bay East-14,15	Total Coliform	02040204910040-01, 02040204910030-01, 02040204910020-01, 02040204910010-01, Delaware River 20		Pathogens-3
17	Salem River at Commissioners Rd (Rt 581) in Upper Pittsgrove	AN0690	Benthic Macroinvertebrates	02040206030010-01	pH, Phosphorus	Benthic Macroinvertebrates, 8
17	Salem River at Newkirk Sta Rd in U Pittsgrove	AN0690A	Benthic Macroinvertebrates			
17	Salem River at Woodstown	01482500	Phosphorus	02040206030030-01	pH, Phosphorus	

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17	Salem River at Kings Hwy in Pilesgrove	AN0693	Benthic Macroinvertebrates	02040206030040-01	TSS, Phosphorus, Temperature	Benthic Macroinvertebrates, 8
17	Major Run at Pointers - Sharptown Rd in Pilesgrove	AN0694	Benthic Macroinvertebrates			
17	Two Penny Run near Danceys Corner	01482560	Phosphorus	02040206030050-01	Phosphorus	
17	Alloway Creek at Yorktown - Friesburg Rd in Alloway	AN0699	Benthic Macroinvertebrates	02040206060020-01	Phosphorus	Benthic Macroinvertebrates, 8
17	Alloway Creek Estuary	Alloway Creek Estuary	Total Coliform	0204020606090-01	PCB's, Dioxin	Pathogens-3
17	Canton Drain at Maskell Mill	01413065	pH	02040206070030-01	pH	
17	Raccoon Ditch at Davis Mill Rd in Greenwich	AN0708	Benthic Macroinvertebrates	02040206070070-01	PCB's, Dioxin, DO	Benthic Macroinvertebrates, 8
17	Cohansey River at Rt 540 in Upper Deerfield	AN0710	Benthic Macroinvertebrates	02040206080020-01	pH	Benthic Macroinvertebrates, 8
17	Parsonage Run at Finley Rd in Upper Deerfield	AN0711	Benthic Macroinvertebrates	02040206080030-01		Benthic Macroinvertebrates-1B
17	Cohansey River at Seeley	01412800, 17-COH-1	Phosphorus, pH, Lead	02040206080040-01	pH	Phosphorus-3; Lead-1B
17	Cohansey River at Silver Lk Rd in Upper Deerfield	AN0712	Benthic Macroinvertebrates	02040206080040-01	pH	Benthic Macroinvertebrates, 8
17	Barrett Run at W Ave in Bridgeton	AN0714	Benthic Macroinvertebrates	02040206090010-01		Benthic Macroinvertebrates-1B
17	Town Swamp Brook at Buckshutem Rd in Fairfield	AN0716A	Benthic Macroinvertebrates	02040206090040-01		Benthic Macroinvertebrates-1B
17	Mill Creek at Rt 650 in Greenwich	AN0716B	Benthic Macroinvertebrates	02040206090080-01	Chlordane, DDX, Mercury, PCB's	Benthic Macroinvertebrates-1B
17	Cohansey River Estuary	Cohansey River Estuary	Total Coliform			Pathogens-3
17	Cedar Creek Estuary	3805C, 3805J, 3805L, 3805M	Total Coliform	02040206100050-01	PCB's	Pathogens-3
17	Pages Run at Newport	01412200	pH	02040206100060-01	pH, PCB's	Pathogens-3
17	Nantuxent Creek Estuary	3804L, 3408P	Total Coliform			
17	Oranoaken Creek Estuary	3867F, 3867J	Total Coliform	02040206110020-01	PCB's	Pathogens-3
17	Straight Creek Estuary	3869A	Total Coliform			
17	Dividing Creek Estuary	3840B, 3840C, 3840D, 3840E, 3840F, R44	Dissolved Oxygen, Total Coliform	02040206110060-01	Dissolved Oxygen,	Pathogens-3
17	The Glades	3840K	Total Coliform			

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17	Fortescue Creek Estuary	3840L, 3862E, 3862G, 3862H, 3841K, 3841L, 3841M	Total Coliform		PCB's	
17	Little Ease Run at Porchtown	01411458	pH	02040206120020-01	pH	Benthic Macroinvertebrates, 8
17	Little Ease Run at Grant Ave in Franklin	AN0727	Benthic Macroinvertebrates			
17	Little Ease Run at Leonard Cake Rd in Franklin	AN0728	Benthic Macroinvertebrates			
17	Still Run near Malaga	01411453	pH	02040206120050-01	pH	Benthic Macroinvertebrates, 8
17	Still Run at Ltl Mill Rd in Franklin	AN0730	Benthic Macroinvertebrates			
17	Indian Branch at Rt 47 in Franklin	AN0724	Benthic Macroinvertebrates	02040206130030-01	pH	Benthic Macroinvertebrates, 8
17	Indian Branch at Sta Rd in Janvier (Franklin.)	AN0724A	Benthic Macroinvertebrates			
17	Burnt Mill Branch at Forest Grove Rd in Newfield	AN0734A	Benthic Macroinvertebrates	02040206140020-01	Arsenic	Benthic Macroinvertebrates-1B
17	Blackwater Branch at Main Rd in Franklin	AN0738	Benthic Macroinvertebrates	02040206140040-01	pH	Benthic Macroinvertebrates, 8
17	Blackwater Branch at Maurice River Pkwy in Vineland	AN0739	Benthic Macroinvertebrates	02040206140050-01	pH	Benthic Macroinvertebrates, 8
17	Maurice River at Norma	01411500	pH, Arsenic	02040206140060-01	pH, Arsenic	
17	Parvin Branch at Rt 55 in Vineland	AN0750	Benthic Macroinvertebrates	02040206140070-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
17	Indian Run at Husted Sta Rd in Pittsgrove	AN0747	Benthic Macroinvertebrates	02040206150040-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
17	Maurice River near Millville	01411800, 17-MAU-1	Arsenic	02040206160030-01	Arsenic, pH	Benthic Macroinvertebrates, 8
17	Maurice River at Sherman Ave in Vineland	AN0751	Benthic Macroinvertebrates			
17	White Marsh Run at Rt 555 in Millville	AN0755	Benthic Macroinvertebrates	02040206170030-01	PCB's	Benthic Macroinvertebrates-1B
17	Buckshutem Creek near Laurel Lake	01411950	Fecal Coliform	02040206170040-01	Pathogens	
17	Cedar Branch at Italia Ave in Vineland	AN0757	Benthic Macroinvertebrates	02040206180020-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
17	Manantico Creek at Hance Bridge Rd in Vineland	AN0759	Benthic Macroinvertebrates	02040206180030-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
17	Manumuskin River at Main Ave in Milmay	AN0762A	Benthic Macroinvertebrates	02040206190010-01		Benthic Macroinvertebrates1B

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17	Maurice River Estuary	3900J, 3900l, 3900M	Total Coliform	02040206200050-01	PCB's, DO	Pathogens-3
16	Dennis Creek Trib 2 at Dennisville	01411428	pH	02040206220030-01	PCB's, DO, pH	
16	Old Robins Branch at Beaver Causeway in Dennis	AN0769	Benthic Macroinvertebrates	02040206220040-01	PCB's, DO, pH	Benthic Macroinvertebrates, 8
16	Fishing Creek at Rt 47 in Middle	AN0771	Benthic Macroinvertebrates	02040206230050-01	PCB's, pH	Benthic Macroinvertebrates, 8
13	Metedeconk River N Br at Jackson Mills Rd in Freehold	6	Phosphorus	02040301020010-01	DO, pH	Phosphorus- 3 ; Benthic Macroinvertebrates -8
13	Metedeconk River N Br at Jackson Mills Rd in Freehold	AN0500, AN0499, MB-146, MB-148	Benthic Macroinvertebrates			
13	Metedeconk River N Br at Jackson Mills Rd in Freehold	AN0500, AN0499, MB-146, MB-148	Benthic Macroinvertebrates			
13	Metedeconk River N Br at Lakewood	01408100	Temperature, pH	02040301020020-01	Temperature, pH,Phosphorus, DO	
13	Metedeconk River S Br at Chambers Bridge Rd in Brick	AN0512	Benthic Macroinvertebrates	02040301030050-01	pH	Benthic Macroinvertebrates, 8
13	Beaverdam Creek Estuary	1401C, 1401D, 1600, 1600A, 1600B	Total Coliform	02040301040010-01		Pathogens-3

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13	Beaverdam Creek Estuary	1401C, 1401D, 1600, 1600A, 1600B	Total Coliform	02040301040030-01	DO, pH	Pathogens-4
13	Cedar Bridge Branch at Moore Rd in Brick	AN0514	Benthic Macroinvertebrates	02040301040020-01	pH	Benthic Macroinvertebrates, 8; Pathogens-3
13	Metedeconk River Estuary	Upper Medeteconk River Estuary-1	Total Coliform			
13	Barnegat Bay	Barnegat Bay-1 thru 5, 7 thru 31, 33 thru 41	Total Coliform	02040301040030-01, 02040301050050-01, 02040301050020-01, 02040301100030-01, 02040301110030-01, 02040301110050-01, 02040301120030-01		Pathogens-3
13	Kettle Creek at Moore Rd in Brick	AN0516	Benthic Macroinvertebrates	02040301050020-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
13	Toms River at Route 537 in Millstone	7	Phosphorus	02040301060010-01	Dioxin, PCB's, pH, Phosphorus	Benthic Macroinvertebrates, 8
13	Toms River at Anderson Rd in Jackson	AN0519A	Benthic Macroinvertebrates			
13	Shannoc Brook Trib at Colliers Mills	01408480	pH	02040301070010-01	pH	
13	Ridgeway Branch at Rt 70 in Manchester	AN0528	Benthic Macroinvertebrates	02040301070040-01	Mercury, pH	Benthic Macroinvertebrates, 8
13	Union Branch at Colonial Dr in Manchester	AN0533	Benthic Macroinvertebrates	02040301070090-01	Mercury, pH	Benthic Macroinvertebrates, 8
13	Wrangel Brook at Mule Rd in Berkeley	AN0537	Benthic Macroinvertebrates	02040301080050-01	pH	Benthic Macroinvertebrates, 8
13	Toms River near Toms River	01408500, 01408300, 13-TOM-1	pH, Lead	02040301080060-01	Arsenic,Chlordane, Cromium, Copper, DDX, Lead, Mercury, Nickel, PCB's, pH, Zinc	
13	Toms River Trib at Rt 37 in Dover	AN0544	Benthic Macroinvertebrates	02040301080080-01	Pollutant Unknown	Benthic Macroinvertebrates, 8

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17	Salem River at Courses Landing	Salem River at Courses Landing	Phosphorus, Temperature, Dissolved Oxygen			
13	Toms River - Tidal	Toms River - Tidal	Arsenic, Copper, Lead, Nickel, Zinc	02040301080090-01	Arsenic, Cromium, Copper, Lead, Nickel, Zinc	Chromium-1B; Pathogens-3
13	Toms River Estuary	Toms River Estuary-1; Toms River/Barnegat Bay-2	Total Coliform, Arsenic, Copper, Lead, Nickel, Zinc			
13	Cedar Run at Rt 9 in Stafford	AN0556	Benthic Macroinvertebrates	02040301130040-01	pH	Benthic Macroinvertebrates, 8
14	Hammonton Creek at Rt. 542 in Hammonton	AN0577A	Benthic Macroinvertebrates	02040301130050-01		Benthic Macroinvertebrates-2A
13	Westecunk Creek Estuary	1712, 1713C, 1714, 1714A	Total Coliform	02040301130060-01		Pathogens-3
13	Dinner Point Creek Estuary	1713, 1713A, 1713B	Total Coliform	02040301130070-01		Pathogens-3
13	Manahawkin Bay	Manahawkin Bay-2 thru 10	Total Coliform	02040301130080-01		Pathogens-3
13	Parker Run-Estuary	1801, 1801A, 1801C, 1801D, 1801F	Total Coliform	02040301140040-01	DO	Pathogens-3
13	Little Egg Harbor	Little Egg Harbor-2 thru 4	Total Coliform	02040301140040-01, 02040301140050-01, 02040301140060-01		Pathogens-3
13	Big Creek Estuary	1924A, 1924B	Total Coliform	02040301140050-01		Pathogens-3
13	Mystic	1925, 1926, 1926A	Total Coliform			
13	Willis Creek Estuary	1928, 1928B	Total Coliform			
14	Springers Brook near Hampton Furnace	01409455	pH	02040301150040-01	Copper, pH	
14	Batsto River at Hampton Furnace	01409432	pH	02040301150050-01	pH	
14	Batsto River at Quaker Bridge	01409470	pH	02040301150080-01	Copper, pH	
14	Mullica River near Atco	01409375	pH	02040301160020-01	DDX, DO, Mercury, PCB's, pH,	
14	Mullica River at Indian Mills	01409383	Dissolved Oxygen			

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14	Mullica River	Mullica River	Fish-Mercury, Fish-PCB, Fish-Dioxin	02040301160020-01, 02040301160030-01, 02040301160140-01, 02040301160150-01, 02040301170040-01, 02040301170060-01, 02040301170080-01, 02040301170130-01, 02040301200080-02, 02040301210010-02	DDX, Mercury, PCB's	
14	Mullica River at Outlet of Atsion Lake	01409387, 14-MUL-2	Copper, Lead, Zinc	02040301160030-01	DDX, DO, Mercury, PCB's, Lead	Copper,Zinc-1B
14	Hays Mill Creek at Atco	01409401	pH	02040301160050-01	pH	
14	Hays Mill Creek near Chesilhurst	01409402	pH	02040301160060-01	pH	
14	Sleeper Branch near Atsion	0140940370	pH			
14	Pump Branch near Waterford Works	01409408	pH	02040301160080-01	pH	
14	Blue Anchor Brook at Elm	0140940950	pH	02040301160100-01	pH, Temperature	
14	Albertson Branch near Elm	0140940970	pH	02040301160110-01	pH	
14	Mullica River near Batsto	0140940050	pH	02040301160150-01	DDX, Mercury, PCB's, pH	
14	Nescochague Creek at Pleasant Mills	01409411	pH			
14	Hammonton Creek at Westcoatville	01409416, 14-HAM-2, 14-HAM-1	Phosphorus, pH, Nitrate, Arsenic, Mercury	02040301170010-01	Phosphorus, pH, Nitrate, Arsenic, Mercury, Zinc	
14	Batsto River at Batsto	01409500, 14-BAT-1	pH, Copper	02040301170040-01	pH, Copper, DDX, Mercury, PCB's	

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14	Mullica River at Green Bank	Mullica River at Green Bank	Phosphorus, Fecal Coliform, pH, Temperature	02040301170080-01	Mercury, PCBs, pH, Phosphorus, Temperature	Pathogens-3
14	Oswego River at Harrisville	01410000, 14-OSW-1	Copper	02040301180070-01	Zinc	Copper-1B
14	Wading River	Wading River	Fish-Mercury	02040301200030-02, 02040301200020-01, 02040301190050-01, 02040301190070-01	Mercury	
14	Bass River E Br near New Gretna	01410150, 14-EBR-1	Copper, Lead, Zinc	02040301200050-02	Copper, Lead,	Zinc-1B
14	Bass River Estuary	2007B, 2007C, 2007D, 2007E	Total Coliform	02040301200060-02		Pathogens-3
14	Bass River Estuary	2007B, 2007C, 2007D, 2007E	Total Coliform	02040301210010-02	DO, Mercury, PCB's	Pathogens-3
14	Ballanger Creek Estuary	2003D, 2003H	Total Coliform	02040301200070-02		Pathogens-3
14	Nacote & Mott Rivers Estuary	2005C, 2005E	Total Coliform	02040301200120-02	DO	Pathogens-3
14	Mullica River Middle Estuary	2004, 2004A, 2004B, 2005, 2005A, 2005B, 2005D, 2006, 2006A, 2006B	Total Coliform	02040301210010-02	DO, Mercury	Pathogens-3
14	Mullica River Upper Estuary	2007, 2007A, 2007B, 2007C, 2007D, 2007E, 2008, 2008A, 2008B, 2009, 2009A, 2009B, 2010, 2010A, 2010B, 2010C, 2011, 2011A, 2012, 2012A, 2012B, 2012C, 2013, 2013A, 2013B, 2014, 2015, 2015A, 2015B, 2015C, 2017, 2017A, 2018,	Total Coliform	02040301210010-02, 02040301200080-02, 02040301200080-02, 02040301170130-01		Pathogens-3
14	Great Bay	Great Bay-1,2,3: Great Bay	Total Coliform	02040301210040-02		Pathogens-3
12	Manasquan River Estuary	Manasquan River Estuary-1 thru 3	Total Coliform	02040301910010-01		Pathogens-3

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12	Manasquan River Estuary	Manasquan River Estuary-3	Dissolved Oxygen	02040301910010-01	Dissolved Oxygen, DDX, PCB's, Mercury, PCB's	
15	Absecon Bay	Absecon Bay-1 thru 15	Total Coliform	02040302010010-01		Pathogens-3
15	Reeds Bay	Unnamed Creek-1; Somers Cove-2; Somers Marsh-3; Reeds Bay-5,6,8	Total Coliform			
14	Little Bay	Little Bay-2	Total Coliform	02040302010010-01		Pathogens-3
				02040301210030-02		Pathogens-3
15	Absecon Creek Estuary	2401	Total Coliform	02040302020040-01	DO	Pathogens-3
15	Great Egg Harbor River near Sicklerville	01410784, 15-GEH-1	pH, Mercury	02040302030010-01	pH,	Mercury-1B; Benthic Macroinvertebrates, 8
15	Great Egg Harbor River at Camden Co. Park in Berlin	AN0620A	Benthic Macroinvertebrates			
15	Hospitality Branch near Cecil	01411050	pH	02040302040020-01	pH	
15	Great Egg Harbor River Trib at 2nd Ave in Hammonton	AN0635H	Benthic Macroinvertebrates	02040302040080-01	Copper, Mercury, pH	Benthic Macroinvertebrates, 8
15	Babcock Creek near Mays Landing	01411196	pH	02040302050020-01	pH	
15	South River near Belcoville	01411220	pH	02040302050040-01	pH	
15	Middle River Estuary	2900A, 2900B, 2900C, 2900D, 2900E	Dissolved Oxygen, Total Coliform	02040302050120-01	Dissolved Oxygen,	Pathogens-3
15	Middle River Estuary	2900A, 2900B, 2900C, 2900D, 2900E	Dissolved Oxygen, Total Coliform	02040302050120-01	Dissolved Oxygen,	Pathogens-3
15	Patcong River Estuary	2801A, 2862, 2863A, 2863B, 2863C, 2863D, 2863E, 2863G, 2863H, 2863L, 2863M	Dissolved Oxygen, Total Coliform	02040302050130-01	Arsenic, Cammium, DO, Lead, Mercury, Nickel, Zinc	Pathogens-3
15	Great Egg Harbor	Great Egg Harbor-1, 4 thru 11, and 13 thru 14	Total Coliform	02040302050130-01, 02040302060040-01		Pathogens-3
15	Lakes Bay	Beach Thorofare-5	Dissolved Oxygen	02040302060040-01	Dissolved Oxygen	
15	Skulls Bay	Skulls Bay-2,3	Total Coliform	02040302060040-01	Dissolved Oxygen	Pathogens-3

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
15	Tuckahoe River Estuary	2901A, 2901B, 2902, 2902A	Total Coliform	02040302070110-01	Dissolved Oxygen	Pathogens-3
16	Corson Sound	Crook Horn Creek-1,2; Corson Sound-6,9; Whale Creek-10,11; Ludlam Bay-7; Unnamed Creek-13	Total Coliform	02040302080020-01		Pathogens-3
16	Townsend Sound	Clam Thorofare-1; Lower Ludlam Thorofare-2; Townsend Channel-4,5	Total Coliform	02040302080030-01, 02040302080040-01		Pathogens-3
16	Creesse Creek Estuary	3413A, 3500B, 3500C	Total Coliform	02040302080060-01		Pathogens-3
16	Richardson Sound	Old Turtle Thorofare-1; Unnamed Creek-2,7; Old Turtle Thorofare-3; Taugh Creek-4; Slaughter Gut-6; Stingeree Creek-8; Grassy Sound-12	Total Coliform	02040302080070-01		Pathogens-3
Atlantic Ocean	Atlantic Ocean	Asbury Park Offshore-93,95,97,98,100,102,104; Atlantic Ocean-6,12; Atlantic Ocean Sea Isle-16; NJ Atlantic Ocean-53, 59; Cape May Channel-7	Total Coliform	02040302940050-01, 02030902940030-01, 02030902940020-01, 02040302930010-01, 02030104920020-01, 02030104920020-02, 02030104920010-01, 02030104920010-02,		Pathogens-3

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
Atlantic Ocean	Atlantic Ocean	All (Long Branch to Cape May)	Dissolved Oxygen	2030104920010-01 02030104920010-02 02030104920020-01 02030104920020-02 02030104930010-01 02030104930010-02 02030104930020-01 02030104930020-02 02040301910010-01 02040301910010-02 02040301910020-01 02040301910020-02 02040301910030-02 02040301910030-01 02040301920010-02 02040301920010-01 02040301920020-02 02040301920020-01 02040301920030-02 02040301920030-01 02040302910010-02, 02040302910010-01 02040302920010-02 02040302920010-01 02040302920020-02 02040302920020-01 02040302930010-02 02040302930010-01 02040302940010-02 02040302940010-01 02030902940020-02	DO,DDX, Mercury, PCBs,	
18	Alcyon Lake-18	Alcyon Lake	Phosphorus, Fish-Mercury	Alcyon Lake-18	Mercury	Phosphorus-4B;
20	Allentown Lake-20	Allentown Lake	Phosphorus	Allentown Lake-20		Phosphorus-4B;
11	Assunpink Lake-11	Assunpink Lake	Fish-Mercury	Assunpink Lake-11	Mercury	
15	Atlantic City Reservoir-15	Atlantic City Reservoir	Fish-Mercury	Atlantic City Reservoir	Mercury	
13	Bamber Lake-13	Bamber Lake - East Lake and West Lake	Fecal Coliform	Bamber Lake-13	Pathogens	

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
14	Batsto Lake-14	Batsto Lake	Fish-Mercury	Batsto Lake-14	Mercury	
12	Birch Swamp Brook	Adjacent to Matawan Creek Reach 02030104-328-0.42	Arsenic, Lead, Copper, PCB			
15	Braddock Lake-15	Collings Lakes #1 (Braddock)	Fecal Coliform	Braddock Lake-15	Pathogens	
12	Branchport Creek-Tidal	45, R05	Fecal Coliform	Branchport Creek-Tidal		
03	Bubbling Springs-03	Bubbling Springs	Fecal Coliform	Bubbling Springs-03	Pathogens	
08	Budd Lake-08	Mt. Olive Municipal Beach, Budd Lake	Fecal Coliform, Fish-Mercury	Budd Lake-08	Pathogens, Mercury	
06	Camp Lewis-06	Camp Lewis	Fecal Coliform	Camp Lewis	Pathogens	
03	Cannistear Reservoir-03	Cannistear Reservoir	Fish-Mercury	Cannistear Reservoir-03	Mercury	
13	Carasaljo Lake-13	Lake Carasalijo North Beach and South Beach	Fecal Coliform	Carasaljo Lake-13	Pathogens, Mercury	
10	Carnegie Lake-10	Carnegie Lake	Fish-Mercury	Carnegie Lake-10	Mercury	
17	Cedar Lake-17	Cedar Lake	Fecal Coliform	Cedar Lake-17	Pathogens	
02	Clove Lake-02	Clove Lake	Phosphorus	Clove Lake-02	Phosphorus	
12	Como Lake-12	Como Lake	Phosphorus	Como Lake	Phosphorus	
06	Conference Center Left and Right	Conference Center Left and Right	Fecal Coliform	Conference Center Left and Right		Pathogens-1A
18	Cooper River Lake-18	Cooper River Lake	Fish-PCB, Fish-Dioxin	Cooper River Lake-18	PCBs, Dioxin, DDX, Chlordane,	
06	Cozy Lake-06	Cozy Lake-06	Fecal Coliform	Cozy Lake-06	Pathogens	
01	Cranberry Lake-01	Cranberry Lake-01	Fish-Mercury	Cranberry Lake-01	Mercury	
15	Cranes Lake-15	Hospitality Creek Campground	Fecal Coliform	Cranes Lake-15	N/A	Pathogens-9
20	Crystal Lake	Crystal Lake	Fish-Mercury	Crystal Lake-20	Mercury	
09	Davidsons Mill Pond-09	Davidsons Mill Pond	Fish Community	Davidsons Mill Pond-09		Phosphorus-4A
02	Deer Trail Lake-02	Deer Trail Lake	Fecal Coliform	Deer Trail Lake-02	Pathogens	
01				Delaware River 1C2, 1C3, 1C4	Arsenic, Chlordane, Chromium. Copper, DDX, Lead, Mercury, PCB's	

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
01	Delaware River Zone 1	Delaware River Zone 1	Fish-Mercury	Delaware River1E1,1E2, 1E3, 1E4, 1E5	Arsenic, Cadmium, Chlordane, Chromium. Copper, DDX, Lead, Mercury, PCB's	
01				Delaware River 1D1	Arsenic, Chlordane, Chromium, Copper, DDX, Lead, Mercury, PCBs	
01				Delaware River 1D2, 1D4, 1D5	Arsenic, Chlordane, Chromium, Copper, DDX, Lead, Mercury, PCBs, TSS	
01				Delaware River 1D3, 1D6	Arsenic, Chlordane, Chromium, Copper, DDX, Lead, Mercury, Pathogens, PCBs	

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
01	Delaware River Zone 1	Delaware River at Easton PA	Arsenic, Cadmium, Chromium. Copper, Lead, Mercury	Delaware River 1C2, 1C3, 1C4	Arsenic, Chlordane, Chromium. Copper, DDX, Lead, Mercury, PCB's	
				Delaware River1E1,1E2, 1E3, 1E4, 1E5	Arsenic, Cadmium, Chlordane, Chromium. Copper, DDX, Lead, Mercury, PCB's	
				Delaware River 1D1	Arsenic, Chlordane, Chromium, Copper, DDX, Lead, Mercury, PCBs	
				Delaware River 1D2, 1D4, 1D5	Arsenic, Chlordane, Chromium, Copper, DDX, Lead, Mercury, PCBs, TSS	
				Delaware River 1D3, 1D6	Arsenic, Chlordane, Chromium, Copper, DDX, Lead, Mercury, Pathogens, PCBs	
20	Delaware River Zone 2	Delaware River Zone 2, Reach 02040201-004	Cadmium, Mercury	Delaware River 2	Cadmium, Chlordane, DDX, Mercury, Pathogens	

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
18	Delaware River Zone 3	Delaware River Zone 3, Reach 02040202-030	Cadmium	Delaware River 3	Arsenic, Cadmium, Chlordane, DDX, Dieldrin, Dioxin, Mercury, Pesticides	
20	Delaware River Zone 3	Delaware River Zone 3, Reach 02040202-035	Arsenic, Cadmium, Mercury	Delaware River 3	Arsenic, Cadmium, Chlordane, DDX, Dieldrin, Dioxin, Mercury, Pesticides	
20	Delaware River/Estuary	Delaware River/Estuary (Trenton to Delaware Bay)	DDT, DDE, DDD, Dieldrin; Fish-Mercury, Fish-DDT, Fish-DDE, Fish-DDD, Shellfish-Zinc	Delaware River 15	Cadmium, Chlordane, DDX, Dieldrin, Dioxin, Mercury, Pathogens	Zinc-1A
20				Delaware River 16	Arsenic, Cadmium, Chlordane, DDX, Dieldrin, Dioxin, Mercury, Pesticides	Zinc-1A
20				Delaware River 17, 18, 19	Chlordane, Copper, DDX, Dieldrin, Mercury, Pesticides	Zinc-1A
20				Delaware River 20	Chlordane,DDX, Dieldrin, DO, Mercury, Pesticides	Zinc-1A
09	Devoe Lake-09	Devoe Lake	Fish-Mercury	Devoe Lake-09	Mercury	
16	East Creek Lake-16	East Creek Lake	Fish-Mercury	East Creek Lake-16	Mercury	
17	Eastern Gate Lake-17	Eastern Gate Lake	Fecal Coliform	Eastern Gate Lake-17	Pathogens	

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
03	Erskine Lake-03	Erskine Little Beach, Main Beach, and Upper Beach	Fecal Coliform	Erskine Lake-03	Pathogens	
10	Etra Lake-10	Etra Lake	Phosphorus	Etra Lake-10		Phosphorus-4
03	Forest Hill Lake-03	Forest Hill Park Beach, Forest Hill Park Inlet	Fecal Coliform	Forest Hill Lake-03	Pathogens	
17	4 Seasons Campground Pond-17	Four Seasons	Fecal Coliform	4 Seasons Campground Pond-17	Pathogens	
01	Fox Hollow Lake-01	Fox Hollow Lake	Fecal Coliform	Fox Hollow Lake-01	Pathogens	
06	Foxs Pond-06	Park Lake Beach, Inlet, and Swim Lanes	Fecal Coliform	Foxs Pond-06	Pathogens	
17	Franklinville Lake-17	Franklinville Lake	Fecal Coliform	Franklinville Lake-17	Pathogens	
01	Furnace Lake-01	Furnace Lake Beach	Fecal Coliform	Furnace Lake-01	Pathogens	
17	Gandy's Beach	Gandy's Beach	Fecal Coliform	Gandy's Beach	Pathogens	
01	Green Valley Beach Campground	Green Valley Beach Campground	Fecal Coliform	Green Valley Beach Campground	Pathogens	
03	Greenwood Lake-03	Greenwood Lake	Phosphorus, Sedimentation, Dissolved Oxygen	Greenwood Lake-03	Dissolved Oxygen, Mercury, TSS	Phosphorus, Sedimentation-3
18	Grenloch Lake-18	Grenloch Lake	Phosphorus	Grenloch Lake-18	Phosphorus	
14	Hammonton Lake-14	Hammonton Lake, Hammonton Bathing Beach (Center), (Left), and (Right), LHAMLAKE	Fecal Coliform, Pineland Biological Community	Hammonton Lake-14	Pathogens, Pollutant Unknown	Pineland Biological Community-8
14	Harrisville Lake-14	Harrisville Lake	Fish-Mercury	Harrisville Lake-14	Mercury	
13	Holiday Lake-13	Ocean Acres Beach	Fecal Coliform	Holiday Lake-13	Pathogens	
13	Haystack Brook at Maxim-Southard Rd (upstream) in Howell	MB-153, MB-154, AN0503	Benthic Macroinvertebrates	Holly Green Campground Pond-17	Pathogens	Benthic Macroinvertebrates, 8
06	Intervale Lake-06	Lake Intervale	Fecal Coliform	Intervale Lake-06	Pathogens	
17	Iona Lake-17	Iona Lake	Fecal Coliform	Iona Lake-17	Pathogens	
03	Kitchell Lake-03	Kitchell Lake Assoc.	Fecal Coliform	Kitchell Lake-03	Pathogens	
01	Lackawanna Lake-01	Lake Lackawanna: Speers Beach	Fecal Coliform	Lackawanna Lake-01	Pathogens	

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
13	Lake Barnegat-13	Lake Barnegat- Middle Beach	Fecal Coliform	Lake Barnegat-13	Pathogens	
13	Lake Carasaljo-13	Lake Carasaljo	Fish-Mercury	Lake Carasaljo-13	Mercury, Pathogens	
01	Lake Hopatcong-01	Lake Hopatcong, Byram Bay Comm Club, Davis Cove, Beck Lane Prop, Crescent Cove, Dox Incorp, E Shores POA, Elba Pt Homeowners, Homestead Beach, Hopatcong Shores Property, Hoptacong Gardens Comm. Club, Ingram Cove Comm, Jewish Center, Colony Club	Fecal Coliform, Fish Community, Fish-Mercury	Lake Hopatcong-01	Pathogens, Mercury, Pollutant Unknown	Fish Community-8
01	Community Assoc. of Prospect Point	Community Assoc. of Prospect Point	Fecal Coliform			
03	Lake Ioscoe-03	Lake Iosco	Fecal Coliform	Lake Ioscoe-03	Pathogens	
19	Lake James-19	Kings Grant	Fecal Coliform	Lake James-19	Pathogens	
16	Lake Laurie-16	Lake Laurie Campground	Fecal Coliform	Lake Laurie-16	Pathogens	
02	Lake Mohawk-02	Lake Mohawk: Sleepy Lagoon, Alpine Beach, Beach 1, Beach 2, Beach 3, Beach 4, Beach 5, Beach 6, Happly Valley Beach, Manitou Beach, Tamarack Beach	Fecal Coliform	Lake Mohawk-02	Pathogens	
16	Lake Nummy-16	Lake Nummy, Belleplain SF, Lake Nummy-Center, Left, and Right	Fish-Mercury	Lake Nummy-16	Mercury	

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
14	Lake Mo-Li-Th-Ma-14	Camp Haluwasa, NPUHALUW	Pineland Biological Community	Lake Mo-Li-Th-Ma-14	Pollutant Unknown	Pineland Biological Community-8
18	Lake Silvestro	Lake Silvestro	Fecal Coliform	Lake Silvestro	Pathogens	
06	Lake Swannanoa-06	Lake Swannanoa Country Club	Fecal Coliform	Lake Swannanoa-06	Pathogens	
06	Telemark Lake-06	Lake Telemark	Fecal Coliform	Telemark Lake-06	Pathogens	
15	Lenape Lake -15	Lenape Lake	Fish-Mercury	Lenape Lake -15	Mercury	
				Lake Takanassee-12	Pathogens, Mercury	
03	Lionhead Lake-03	Lions Head Lake	Fecal Coliform	Lionhead Lake-03	Pathogens	
16	Ludlams Pond-16	Holly Lake Campground	Fecal Coliform	Ludlams Pond-16	Pathogens	
17	Malaga Lake-17	Malaga Lake	Fecal Coliform, Fish-Mercury	Malaga Lake-17	Pathogens, Mercury	
13	Manahawkin Lake-13	A. Pauling Park Beach	Fecal Coliform	Manahawkin Lake-13	Pathogens	
12	Manasquan Reservoir-12	Manasquan Reservoir	Fish-Mercury	Manasquan Reservoir-12	Mercury	
17	Maskells Mill Pond-17	Maskells Mill Pond	Fish-Mercury	Maskells Mill Pond-17	Mercury	
17	Memorial Lake-17	Memorial Lake	Fish-Mercury	Memorial Lake-17	Mercury	
01	Merrill Cr Reservoir-01	Merrill Creek Reservoir	Fish-Mercury	Merrill Cr Reservoir-01	Mercury	
19	Mirror Lake-19	Mirror Lake	Fecal Coliform, Fish-Mercury	Mirror Lake	Mercury, Pathogens	
03	Monksville Reservoir-03	Monksville Reservoir	Fish-Mercury	Monksville Reservoir-03	Mercury	
06	Morris County Park Lake, Beach, Inlet, Outlet,	Morris County Park Lake, Beach, Inlet, Outlet,	Fecal Coliform	Morris County Park Lake (Sunrise Lake)	Pathogens	
06	Mountain Lake-06	Mountain Lake	Fecal Coliform, Fish-Mercury	Mountain Lake-06	Pathogens, Mercury	
15	New Brooklyn Lake-15	New Brooklyn Lake	Fish-Mercury	New Brooklyn Lake-15	Mercury	
09	New Market Pond-09	New Market Pond	Fish Community, Fish-PCB, Fish-Dioxin	New Market Pond-09	Pollutant Unknown, PCB's, Dioxin	Fish Community-8
18	Newton Lake-18	Newton Lake	Fish-PCB, Fish-Dioxin	Newton Lake-18	PCBs, Dioxin, DDX, Chlordane,	
20	North Community Lake	North Community Lake	Fish Community	North Community Lake		Fish Community-2C

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
05	North Hudson Park Lake-05	North Hudson Park Lake	Phosphorus	North Hudson Park Lake		Phosphorus-4
13	Ocean County Park Lake-13	Ocean County Park Beach	Fecal Coliform	Ocean County Park Lake-13	Pathogens	
06	Parsippany Lake-06	Lake Parsippany: Hoffman Beach and Johnson Beach, and Drewes Beach	Fecal Coliform	Parsippany Lake-06	Pathogens	
17	Parvin Lake-17	Parvin SP, Parvin Lake, Center, Left, and Right	Fecal Coliform	Parvin Lake-17	Pathogens	
13	Pine Lake-13	Pine Lake Bathing Beach	Fecal Coliform	Pine Lake-13	Pathogens	
03	Pompton Lake-03	Pompton Lake	Fish-Mercury	Pompton Lake-03	Chlordane, DDX, Dioxin, Mercury, PCB's	
06	Powder Mill Pond-06	Tabor Lake Corporation	Fecal Coliform	Powder Mill Pond-06	Pathogens	
06	Rainbow Lakes-06	Rainbow Lakes Comm. Club	Fecal Coliform	Rainbow Lakes-06	Pathogens	
08	Randolph Park Lake-08	Randolph Park Lake Left Beach, Right Beach, and Swim Lanes	Fecal Coliform	Randolph Park Lake-08	Pathogens	
08	Ravine Lake-08	Ravine Lake (Somerset Lake)	Fecal Coliform	Ravine Lake (Somerset Lake)	Pathogens	
08	Round Valley Reservoir-08	Round Valley Reservoir	Fish-Mercury	Round Valley Reservoir	Mercury	
12	Shadow Lake-12	Shadow Lake	Fish-Mercury	Shadow Lake	Mercury	
03	Skyline Lakes-03	Skyline Lake Main/Lower Beach and Upper Beach	Fecal Coliform	Skyline Lakes-03	Pathogens	
12	Spring Lake-12	Spring Lake	Phosphorus, Fish-Mercury	Spring Lake-12	Mercury, Phosphorus	
08	Spruce Run Reservoir-08	Spruce Run Reservoir	Fish Community, Fish-Mercury	Spruce Run Reservoir-08	Mercury	Fish Community-4C
14	Stafford Forge Lake-13	Stafford Forge Lake	Fish-Mercury	Stafford Forge Lake-13	Mercury	

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
18	Stewart Lake-18	Stewart Lake	Fish-PCB, Fish-Dioxin	Stewart Lake-18	Chlordane, DDX, Dioxin, Mercury, PCB's	
18	Strawbridge Lake-18	Strawbridge Lake	Fish-PCB, Fish-Dioxin	Strawbridge Lake-18	Chlordane, DDX, Dioxin, Pathogens, PCB's	
19	Sturbridge Lake-19	Chatham Lake, Foxview Beach	Fecal Coliform	Sturbridge Lake-19	Pathogens	Pathogens-1A
06	Sunrise Lake-06	Sunrise Lake	Fecal Coliform	Sunrise Lake-06 (same as Morris County Park Lake)		
08	Sunset Lake-08	Sunset Lake	Fecal Coliform	Sunset Lake-08	Pathogens	
17	Sunset Lake-17	Sunset Lake, Sunset Lake Bathing Beach	Fecal Coliform, Fish-Mercury	Sunset Lake-17	Pathogens, Mercury	
01	Swartswood Lake-01	Swartswood Lake	Phosphorus, Fish Community, Fish-Mercury	Swartswood Lake-01	Mercury	Fish Community-1A
02	Tall Timbers POA	Tall Timbers POA	Fecal Coliform	Sleep Valley Lake	Pathogens	
15	Lakes Bay	Lakes Bay-1 thu 10 and 12 thru 14	Total Coliform	Telemark Lake-06	Pathogens	
19	Timber Lake-19	Timber Lake	Fecal Coliform	Timber Lake-19	Pathogens, Pollutant Unknown	
17	Union Lake-17	Union Lake	Fish-Mercury	Union Lake-17	Mercury	
20	Upper Sylvan Lake-20	Sylvan Lake	Phosphorus, Fecal Coliform	Upper Sylvan Lake-20	Pathogens	Phosphorus-3
03	Wanaque Reservoir-03	Wanaque Reservoir	Fish-Mercury	Wanaque Reservoir-03	Mercury	
09	Weamaconk Lake-09	Weamaconk Lake	Phosphorus	Weamaconk Lake-09	Phosphorus	
07	Weequahic Lake-07	Weequahic Lake	Phosphorus	Weequahic Lake-07	Chlordane, DDX, Dioxin, PCB's, Phosphorus	
06	West Lake-06	Sabeys Beach, West Fayson Lake Main Beach	Fecal Coliform	West Lake-06	Pathogens	

WMA	2004 Station Name/Waterbody	2004 Site ID #	Listed on 2004 Sublist 5	2006 AU	Listed on 2006 Sublist 5	Delisted / Rational
06	White Meadow Lake-06	White Meadow Lake 1, 2, and 3	Fecal Coliform	White Meadow Lake-06	Pathogens	
17	Wilson Lake-17	Wilson Lake	Fecal Coliform, Fish-Mercury	Wilson Lake-17	Mercury, Pathogens	
12	Wreck Pond-12	Wreck Pond	Phosphorus	Wreck Pond-12	Phosphorus	
17	Hudson Branch at Vineland	17-HUD-1	Arsenic, Chromium	02040206140020-01	Arsenic, Chromium	
14	Roundabout Creek Estuary	2001F	Total Coliform	02040301210010-02	DO, Mercury, PCBs	Pathogens-3
14	Winter Creek Estuary	2003I	Total Coliform	02040301200070-02		Pathogens-3
14	Wading River Estuary	2011B, 2011C	Total Coliform	02040301200030-02	Mercury, DO	Pathogens-1B
19	Rancocas Creek S Br at Mt Holly - Eayrestown Rd in Lumberton	AN0161	Benthic Macroinvertebrates	02040202050090-01	Pollutant Unknown	Benthic Macroinvertebrates, 8
17	Holly Green Campground Pond-17	Holly Green Campground	Fecal Coliform	Holly Green Campground Pond-17	Pathogens	
07	Kings Creek	Kings Creek	Toxic Discharge	02030104050100-01	Dioxin, PCBs	Toxic Discharge-8
13	Ground Hog Brook at Locust Ave in Howell	MB-139	Benthic Macroinvertebrates	02040301020030-01	pH, Phosphorus	Benthic Macroinvertebrates, 8
20	Doctors Creek at Sharon Station Rd in Upper Freehold	MB-PARK1	Benthic Macroinvertebrates	02040201060020-01	pH, Phosphorus	Benthic Macroinvertebrates, 8

Appendix D Two-Year TMDL Schedule

WMA	Assessment Unit ID	Assessment Unit Name	Parameter
02	02020007020060-01	Clove Brook (Papakating Ck)	Pathogens
06	02030103010060-01	Black Brook (Great Swamp NWR)	Phosphorus
06	02030103010080-01	Dead River (above Harrisons Brook)	Phosphorus
06	02030103010100-01	Dead River (below Harrisons Brook)	Phosphorus
06	02030103010110-01	Passaic R Upr (Plainfield Rd to Dead R)	Phosphorus
06	02030103010120-01	Passaic R Upr (Snyder to Plainfield Rd)	Phosphorus
06	02030103010130-01	Passaic R Upr (40d 45m to Snyder Ave)	Phosphorus
06	02030103010150-01	Passaic R Upr (Columbia Rd to 40d 45m)	Phosphorus
06	02030103010160-01	Passaic R Upr (HanoverRR to ColumbiaRd)	Phosphorus
06	02030103010170-01	Passaic R Upr (Rockaway to Hanover RR)	Phosphorus
06	02030103010180-01	Passaic R Upr (Pine Bk br to Rockaway)	Phosphorus
06	02030103020040-01	Whippany R(Lk Pocahontas to Wash Val Rd)	Phosphorus
06	02030103020050-01	Whippany R (Malapardis to Lk Pocahontas)	Phosphorus
06	02030103020100-01	Whippany R (Rockaway R to Malapardis Bk)	Phosphorus
06	02030103030170-01	Rockaway R (Passaic R to Boonton dam)	Phosphorus
06	02030103040010-01	Passaic R Upr (Pompton R to Pine Bk)	Phosphorus
03	02030103070050-01	Wanaque Reservior (below Monks gage)	Pathogens
03	02030103070050-01	Wanaque Reservior (below Monks gage)	Phosphorus
03	02030103070070-01	Wanaque R/Posts Bk (below reservior)	Phosphorus
03	02030103110010-01	Lincoln Park tribs (Pompton River)	Phosphorus
03	02030103110020-01	Pompton River	Phosphorus
04	02030103120070-01	Passaic R Lwr (Fair Lawn Ave to Goffle)	Phosphorus
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	Pathogens
04	02030103120080-01	Passaic R Lwr (Dundee Dam to F.L. Ave)	Phosphorus
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	Pathogens
04	02030103120090-01	Passaic R Lwr (Saddle R to Dundee Dam)	Phosphorus
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Pathogens
04	02030103120100-01	Passaic R Lwr (Goffle Bk to Pompton R)	Phosphorus
04	02030103150020-01	Second River	Pathogens
04	02030103150030-01	Passaic R Lwr (Second R to Saddle R)	Pathogens
04	02030103150050-01	Passaic R Lwr (Nwk Bay to 4th St brdg)	Pathogens
05	02030103180040-01	Overpeck Creek	Pathogens
12	02030104060030-01	Matawan Creek (below Ravine Drive)	Pathogens
12	02030104060040-01	Chingarora Creek to Thorns Creek	Pathogens
12	02030104070020-01	Willow Brook	Pathogens
12	02030104070070-01	Swimming River Reservior / Slope Bk	Pathogens
12	02030104100020-01	Manasquan R (Rt 9 to 74d17m50s road)	Total suspended solids
12	02030104100030-01	Manasquan R (West Farms Rd to Rt 9)	pH
12	02030104100030-01	Manasquan R (West Farms Rd to Rt 9)	Total suspended solids
12	02030104100050-01	Manasquan R (gage to West Farms Rd)	pH
12	02030104100050-01	Manasquan R (gage to West Farms Rd)	Total suspended solids
12	02030104100080-01	Manasquan R (74d07m30s to Squankum gage)	pH
08	02030105010050-01	Raritan R SB(LongValley br to 74d44m15s)	Phosphorus
08	02030105010050-01	Raritan R SB(LongValley br to 74d44m15s)	Temperature
08	02030105010060-01	Raritan R SB(Califon br to Long Valley)	Phosphorus
08	02030105010060-01	Raritan R SB(Califon br to Long Valley)	Temperature
08	02030105010070-01	Raritan R SB(StoneMill gage to Califon)	Phosphorus
08	02030105010070-01	Raritan R SB(StoneMill gage to Califon)	Temperature
08	02030105010080-01	Raritan R SB(Spruce Run-StoneMill gage)	Temperature
08	02030105020010-01	Spruce Run (above Glen Gardner)	Temperature
08	02030105020040-01	Spruce Run Reservior / Willoughby Brook	pH
08	02030105020040-01	Spruce Run Reservior / Willoughby Brook	Temperature

WMA	Assessment Unit ID	Assessment Unit Name	Parameter
08	02030105020050-01	Beaver Brook (Clinton)	Phosphorus
08	02030105020060-01	Cakepoulin Creek	Phosphorus
08	02030105020080-01	Raritan R SB(Prescott Bk to River Rd)	pH
08	02030105020080-01	Raritan R SB(Prescott Bk to River Rd)	Temperature
08	02030105020100-01	Raritan R SB(Three Bridges-Prescott Bk)	pH
08	02030105020100-01	Raritan R SB(Three Bridges-Prescott Bk)	Temperature
08	02030105030030-01	Headquarters trib (Third Neshanic River)	Dissolved Oxygen
08	02030105030040-01	Third Neshanic River	Dissolved Oxygen
08	02030105030060-01	Neshanic River (below FNR / SNR confl)	Phosphorus
08	02030105040010-01	Raritan R SB(Pleasant Run-Three Bridges)	Phosphorus
08	02030105040020-01	Pleasant Run	Pathogens
08	02030105040040-01	Raritan R SB(NB to Pleasant Run)	Phosphorus
08	02030105050030-01	Lamington R (Furnace Rd to Hillside Rd)	Temperature
08	02030105050040-01	Lamington R(Pottersville gage-FurnaceRd)	Phosphorus
08	02030105050040-01	Lamington R(Pottersville gage-FurnaceRd)	Temperature
08	02030105050070-01	Lamington R(HallsBrRd-Pottersville gage)	Phosphorus
08	02030105050070-01	Lamington R(HallsBrRd-Pottersville gage)	Temperature
08	02030105050100-01	Rockaway Ck SB	Phosphorus
08	02030105050100-01	Rockaway Ck SB	Temperature
08	02030105050110-01	Lamington R (below Halls Bridge Rd)	pH
08	02030105050110-01	Lamington R (below Halls Bridge Rd)	Phosphorus
08	02030105070010-01	Raritan R NB (Rt 28 to Lamington R)	Phosphorus
08	02030105070030-01	Raritan R NB (below Rt 28)	Phosphorus
10	02030105090050-01	Stony Bk(Province Line Rd to 74d46m dam)	Phosphorus
10	02030105090050-01	Stony Bk(Province Line Rd to 74d46m dam)	Total suspended solids
10	02030105090060-01	Stony Bk (Rt 206 to Province Line Rd)	Phosphorus
10	02030105090060-01	Stony Bk (Rt 206 to Province Line Rd)	Total suspended solids
10	02030105090070-01	Stony Bk (Harrison St to Rt 206)	Phosphorus
10	02030105090070-01	Stony Bk (Harrison St to Rt 206)	Total suspended solids
10	02030105100010-01	Millstone River (above Rt 33)	pH
10	02030105100010-01	Millstone River (above Rt 33)	Phosphorus
10	02030105100010-01	Millstone River (above Rt 33)	Total suspended solids
10	02030105100020-01	Millstone R (Applegarth road to Rt 33)	pH
10	02030105100020-01	Millstone R (Applegarth road to Rt 33)	Phosphorus
10	02030105100020-01	Millstone R (Applegarth road to Rt 33)	Total suspended solids
10	02030105100050-01	Rocky Brook (below Monmouth Co line)	pH
10	02030105100050-01	Rocky Brook (below Monmouth Co line)	Phosphorus
10	02030105100060-01	Millstone R (Cranbury Bk to Rocky Bk)	pH
10	02030105100060-01	Millstone R (Cranbury Bk to Rocky Bk)	Phosphorus
10	02030105100070-01	Cranbury Brook (above NJ Turnpike)	pH
10	02030105100090-01	Cranbury Brook (below NJ Turnpike)	pH
10	02030105110030-01	Millstone R (Beden Bk to Heathcote Bk)	Pathogens
10	02030105110030-01	Millstone R (Beden Bk to Heathcote Bk)	pH
10	02030105110030-01	Millstone R (Beden Bk to Heathcote Bk)	Phosphorus
10	02030105110030-01	Millstone R (Beden Bk to Heathcote Bk)	Temperature
10	02030105110050-01	Beden Brook (below Province Line Rd)	Phosphorus
10	02030105110060-01	Rock Brook (above Camp Meeting Ave)	Pathogens
10	02030105110110-01	Millstone R (BlackwellsMills to BedenBk)	Phosphorus
10	02030105110120-01	Sixmile Run (above Middlebush Rd)	Phosphorus
10	02030105110140-01	Millstone R(AmwellRd to BlackwellsMills)	Phosphorus
10	02030105110170-01	Millstone River (below Amwell Rd)	pH
10	02030105110170-01	Millstone River (below Amwell Rd)	Phosphorus

WMA	Assessment Unit ID	Assessment Unit Name	Parameter
09	02030105120080-01	South Fork of Bound Brook	Phosphorus
09	02030105120090-01	Spring Lake Fork of Bound Brook	Phosphorus
09	02030105120100-01	Bound Brook (below fork at 74d 25m 15s)	Phosphorus
09	02030105120130-01	Green Brook (below Bound Brook)	Phosphorus
09	02030105120130-01	Green Brook (below Bound Brook)	Total suspended solids
09	02030105120140-01	Raritan R Lwr(I-287 Piscatway-Millstone)	Phosphorus
09	02030105120140-01	Raritan R Lwr(I-287 Piscatway-Millstone)	Total suspended solids
09	02030105120160-01	Raritan R Lwr (MileRun to I-287 Pisctwy)	Phosphorus
09	02030105120160-01	Raritan R Lwr (MileRun to I-287 Pisctwy)	Total suspended solids
09	02030105120170-01	Raritan R Lwr (Lawrence Bk to Mile Run)	Phosphorus
09	02030105120170-01	Raritan R Lwr (Lawrence Bk to Mile Run)	Total suspended solids
09	02030105130040-01	Ireland Brook	Pathogens
09	02030105130040-01	Ireland Brook	pH
09	02030105140010-01	Manalapan Brook (above 40d 16m 15s)	pH
09	02030105140010-01	Manalapan Brook (above 40d 16m 15s)	Phosphorus
09	02030105140020-01	Manalapan Bk(incl LkManlpn to 40d16m15s)	pH
09	02030105140020-01	Manalapan Bk(incl LkManlpn to 40d16m15s)	Phosphorus
09	02030105140030-01	Manalapan Brook (below Lake Manalapan)	pH
09	02030105150010-01	Weamaconk Creek	pH
09	02030105150010-01	Weamaconk Creek	Phosphorus
09	02030105150010-01	Weamaconk Creek	Total suspended solids
09	02030105150020-01	McGellairds Brook (above Taylors Mills)	pH
09	02030105150020-01	McGellairds Brook (above Taylors Mills)	Phosphorus
09	02030105150030-01	McGellairds Brook (below Taylors Mills)	pH
09	02030105150030-01	McGellairds Brook (below Taylors Mills)	Phosphorus
09	02030105150050-01	Barclay Brook	pH
09	02030105150060-01	Matchaponix Brook (below Pine Brook)	pH
09	02030105150060-01	Matchaponix Brook (below Pine Brook)	Phosphorus
09	02030105160010-01	Deep Run (above Monmouth Co line)	pH
09	02030105160020-01	Deep Run (Rt 9 to Monmouth Co line)	pH
09	02030105160040-01	Deep Run (below Rt 9)	pH
01	02040105090020-01	Pequest R (Cemetary Road to Drag Strip)	Phosphorus
01	02040105090030-01	Pequest R (Furnace Bk to Cemetary Road)	Phosphorus
01	02040105090060-01	Pequest R (below Furnace Brook)	pH
01	02040105090060-01	Pequest R (below Furnace Brook)	Phosphorus
11	02040105240030-01	Miry Run (Assunpink Cr)	Phosphorus
20	02040201040030-01	South Run (Jumping Brook to 74d35m)	Pathogens
20	02040201060020-01	Doctors Creek (Allentown to 74d28m40s)	Phosphorus
20	02040201060030-01	Doctors Creek (below Allentown)	Phosphorus
20	02040201100020-01	Barkers Brook (above 40d02m30s)	Phosphorus
19	02040202020030-01	Rancocas Ck NB (incl Mirror Lk-GauntsBk)	Pathogens
19	02040202020030-01	Rancocas Ck NB (incl Mirror Lk-GauntsBk)	Phosphorus
19	02040202020040-01	Rancocas Ck NB (NL dam to Mirror Lk)	Pathogens
19	02040202020040-01	Rancocas Ck NB (NL dam to Mirror Lk)	Phosphorus
19	02040202030020-01	Mount Misery Bk NB (above 74d27m30s dam)	Pathogens
19	02040202030030-01	Mount Misery Bk MB/NB (below 74d27m30s)	Pathogens
19	02040202030040-01	Mount Misery Brook SB	Pathogens
19	02040202030090-01	Greenwood Br(below CountryLk & MM confl)	Pathogens
19	02040202040010-01	Rancocas Ck NB (Pemberton br to NL dam)	Phosphorus
19	02040202040030-01	Rancocas Ck NB (Rt 206 to Pemberton br)	Phosphorus
19	02040202040040-01	Rancocas Creek NB (Smithville to Rt 206)	Phosphorus
19	02040202040050-01	Rancocas Creek NB (below Smithville)	Phosphorus

WMA	Assessment Unit ID	Assessment Unit Name	Parameter
19	02040202050050-01	Friendship Ck (below/incl Burrs Mill Bk)	Phosphorus
19	02040202050070-01	Jade Run	Phosphorus
19	02040202050080-01	Rancocas Ck SB (Vincentown-FriendshipCk)	Phosphorus
19	02040202050090-01	Rancocas Ck SB (BobbysRun to Vincentown)	Pathogens
19	02040202050090-01	Rancocas Ck SB (BobbysRun to Vincentown)	Phosphorus
19	02040202060070-01	Little Creek (above Bear Swamp River)	Pathogens
19	02040202060080-01	Rancocas Ck SW Branch (above Medford br)	Pathogens
19	02040202060080-01	Rancocas Ck SW Branch (above Medford br)	Phosphorus
19	02040202060100-01	Rancocas Ck SW Branch (below Medford br)	Phosphorus
19	02040202070020-01	Rancocas Creek SB (Rt 38 to Bobbys Run)	Pathogens
19	02040202070020-01	Rancocas Creek SB (Rt 38 to Bobbys Run)	Phosphorus
19	02040202070030-01	Rancocas Creek SB (below Rt 38)	Pathogens
19	02040202070030-01	Rancocas Creek SB (below Rt 38)	Phosphorus
19	02040202080010-01	Parkers Creek (above Marne Highway)	Phosphorus
19	02040202080020-01	Rancocas Creek (Martins Beach to NB/SB)	Phosphorus
19	02040202080030-01	Mill Creek (Willingboro)	Phosphorus
18	02040202100020-01	Pennsauken Ck NB (incl StrwbrdgLk-NJTPK)	Phosphorus
18	02040202100030-01	Pennsauken Ck NB (below Strawbridge Lk)	Phosphorus
18	02040202100040-01	Pennsauken Ck SB (above Rt 41)	Phosphorus
18	02040202100050-01	Pennsauken Ck SB (below Rt 41)	Phosphorus
18	02040202100060-01	Pennsauken Ck (below NB / SB)	Phosphorus
17	02040206170040-01	Buckshutem Creek (above Rt 555)	Pathogens
17	02040206170050-01	Buckshutem Creek (below Rt 555)	Pathogens
16	02040206230060-01	Cox Hall Creek / Mickels Run (to Villas)	Pathogens
17	Eastern Gate Lake-17	Eastern Gate Lake-17	Pathogens
03	Erskine Lake-03	Erskine Lake-03	Pathogens
03	Forest Hill Lake-03	Forest Hill Lake-03	Pathogens
01	Forest Lake-01	Forest Lake-01	Pathogens
01	Fox Hollow Lake-01	Fox Hollow Lake-01	Pathogens
06	Foxs Pond-06	Foxs Pond-06	Pathogens
17	Franklinville Lake-17	Franklinville Lake-17	Pathogens
01	Furnace Lake-01	Furnace Lake-01	Pathogens
14	Hammonton Lake-14	Hammonton Lake-14	Pathogens
13	Holiday Lake-13	Holiday Lake-13	Pathogens
17	Holly Green Campground Pond-17	Holly Green Campground Pond-17	Pathogens
12	Hooks Creek Lake-12	Hooks Creek Lake-12	Pathogens
06	Indian Lake-06	Indian Lake-06	Pathogens
06	Intervale Lake-06	Intervale Lake-06	Pathogens
17	Iona Lake-17	Iona Lake-17	Pathogens
03	Kitchell Lake-03	Kitchell Lake-03	Pathogens
01	Lackawanna Lake-01	Lackawanna Lake-01	Pathogens
13	Lake Barnegat-13	Lake Barnegat-13	Pathogens
	Lake Coxtoxen	Lake Coxtoxen	Pathogens
03	Lake Edenwold-03	Lake Edenwold-03	Pathogens
01	Lake Hopatcong-01	Lake Hopatcong-01	Pathogens
03	Lake Ioscoe-03	Lake Ioscoe-03	Pathogens
19	Lake James-19	Lake James-19	Pathogens
16	Lake Laurie-16	Lake Laurie-16	Pathogens
02	Lake Mohawk-02	Lake Mohawk-02	Pathogens
	Lake Silvestro	Lake Silvestro	Pathogens
06	Lake Swannanoa-06	Lake Swannanoa-06	Pathogens
12	Lake Takanassee-12	Lake Takanassee-12	Pathogens

WMA	Assessment Unit ID	Assessment Unit Name	Parameter
01	Lake Winona-01	Lake Winona-01	Pathogens
03	Lionhead Lake-03	Lionhead Lake-03	Pathogens
16	Ludlams Pond-16	Ludlams Pond-16	Pathogens
17	Malaga Lake-17	Malaga Lake-17	Pathogens
13	Manahawkin Lake-13	Manahawkin Lake-13	Pathogens
19	Mirror Lake-19	Mirror Lake-19	Pathogens
06	Mountain Lake-06	Mountain Lake-06	Pathogens
13	Ocean County Park Lake-13	Ocean County Park Lake-13	Pathogens
13	Ocean Twp Bathing Beach-13	Ocean Twp Bathing Beach-13	Pathogens
06	Parsippany Lake-06	Parsippany Lake-06	Pathogens
17	Parvin Lake-17	Parvin Lake-17	Pathogens
13	Pine Lake-13	Pine Lake-13	Pathogens
06	Pond at Conference Center (Left &	Pond at Conference Center (Left & Rt.)	Pathogens
06	Powder Mill Pond-06	Powder Mill Pond-06	Pathogens
06	Rainbow Lakes-06	Rainbow Lakes-06	Pathogens
08	Randolph Park Lake-08	Randolph Park Lake-08	Pathogens
08	Ravine Lake-08	Ravine Lake-08	Pathogens
03	Skyline Lakes-03	Skyline Lakes-03	Pathogens
02	Sleep Valley Lake	Sleep Valley Lake	Pathogens
19	Sturbridge Lake-19	Sturbridge Lake-19	Pathogens
06	Sunrise Lake-06	Sunrise Lake-06	Pathogens
08	Sunset Lake-08	Sunset Lake-08	Pathogens
17	Sunset Lake-17	Sunset Lake-17	Pathogens
06	Telemark Lake-06	Telemark Lake-06	Pathogens
19	Timber Lake-19	Timber Lake-19	Pathogens
04	Toms Lake-04	Toms Lake-04	Pathogens
20	Upper Sylvan Lake-20	Upper Sylvan Lake-20	Pathogens
06	West Lake-06	West Lake-06	Pathogens
06	White Meadow Lake-06	White Meadow Lake-06	Pathogens
17	Wilson Lake-17	Wilson Lake-17	Pathogens

Appendix E

Response to Comments Document

Response to Comment
2006 Draft Integrated List

Part 1 General Public

Note: The term "assessment unit" means the spatial extent of a waterbody being assessed.

Commentors:

1. Ruiter, J Bart for DuPont Corporation
2. Williams, Spencer
3. Kaiser, Leonard for Bergen County Utilities Authority
4. Sajdak, Nathaniel for Sussex County Municipal Utilities Authority
5. Ali, Mohammad for the Division of Agricultural and natural Resources
6. Savage, Peggy for Stony Brook- Millstone Watershed Association
7. Cathcart, William for Cape May County Municipal Utilities Authority
8. ChemRisk, Inc and Tierra Solutions, Inc.
9. Bizub, Richard for Pinelands Preservation Alliance
10. Najarian Associates for the Musconetcong Sewerage Authority
11. Gulbinsky, Ellen for Association of Environmental Authorities
12. Kron, Larry for Nusbaum, Stein, Goldstein, Bronstein & Kron and the Musconetcong SA
13. Wallkill River Watershed Management Group
14. Patoczka, Jurek for Hatch, Mott & MacDonald
15. McDonald, Betsy for NY/NJ Baykeeper
16. Kushner, Ross for Pequannock River Coalition
17. Goodsell, Robert for Post, Polka, Goodsell, MacNeill, & Strauchler and Warren Township SA
18. Kehrberger, Patricia for HydroQual and Township of Parsippany-Troy Hills
19. Lizza, Justin for Township of Long Hill
20. Enright, Edward for Cerenzio & Panaro and Warren County MUA
21. Bill Wolfe
22. Kasabach, Haig and Carol
23. Hurwitz for Northwest Bergen County Utilities Authority
24. Akers, Fred for the Great Egg Harbor Watershed Association

GENERAL COMMENTS ON THE INTEGRATED REPORT

1. **Comment:** Where can I obtain the proposed TMDL dates for the pollutants listed in Zone 5? (1)

   Response: A schedule of TMDL and other actions to be taken in the next 2 years is provided as Appendix D to the 2006 Integrated Report. The Department will post the 2006 Integrated Report at http://www.state.nj.us/dep/wmm/sgwqt/wat/integratedlist/integratedlist2006.html. For more information on TMDLs go to the TMDL Program web site at: http://www.nj.gov/dep/watershedmgt/tmdl.htm or contact the Division of Watershed Management's Bureau of Environmental Analysis and Restoration, which administers the TMDL Program, directly at (609) 633-1441 or at http://www.nj.gov/dep/watershedmgt/bear.htm.

2. **Comment:** Which DRBC 305(b) report did you use for the 2006 listing and how may I get a copy? (1)

   Response: The Department incorporated the assessments provided by DRBC in their 2006 305 (b) Report. The 2006 Report and their 2006 Methods Document can be found at http://www.state.nj.us/drbc/public.htm.

3. **Comment:** There are several assessment units identified on Sublist 5 for non-attainment of a designated use that do not have parameters identified. (2,6)

   Response: Some parameters were mistakenly omitted from draft Sublist 5. In the 2006 Integrated List, Sublists 1 through 5 will identify the status of the designated uses for each assessment unit. For each assessment unit on Sublist 5, a separate "2006 303(d) List of Impaired Waterbodies with Priority Ranking" will identify the specific pollutants not attaining SWQS for each assessment unit. If the Department does not have sufficient data to identify the pollutant, the cause will be listed as "pollutant unknown" or toxic unknown", depending on available information.

4. **Comment:** The Department should provide Watershed regions and Watershed management areas as well as data sources in the list. Since there are several waterbodies in the state with similar names, additional identifiers are needed, for example East Creek (Assessment Unit #02040206210060-01). (6)(15)(24)

   Response: A column identifying watershed management areas (WMAs) has been added to the 2006 Integrated List. A spreadsheet identifying the individual stations associated with each assessment unit and the sources of the data is provided in Appendix F of the Integrated Report. The nomenclature used to identify the assessment unit name is taken directly from the U.S.G.S. Hydrologic Unit Code (HUC) categorization system, including all abbreviations, etc. While several waterbodies in the state have similar names, adding the column that identifies the watershed management area should rectify any confusion between similarly named waterbodies. The mapping provided in the final Report should also help in this regard.

5. **Comment:** The list should identify the sources of impairments. If specific sources are not known, the predominant land use in the influence areas should be included in the list. Phosphorus is a major cause of water quality impairment in many sub-watersheds. Since this parameter has possible implication for agricultural land use, please indicate how many of these impairments are suspected to be from agricultural sources. There appears to be a substantial number of impairments from arsenic chemicals. Please clarify if these are from natural sources or anthropogenic sources such as the historic use of arsenic pesticides. (5)

   Response: Once the Integrated List has been finalized, the Department identifies the potential sources associated with the various pollutants. This information is included in Section C3 of the Integrated Report. Agriculture has been identified as a potential source in 539 Assessment Units. The Department ran a GIS analysis based on 1995 agricultural use. If there is any agricultural use in an impaired waterbody, it was noted as a potential source.

6. **Comment:** There appear to be a good number of impairments from pH and Dissolved Oxygen in the Atlantic coastal sub-watersheds. Is it possible that the statewide standards are applied to the Pinelands areas where pH is naturally low? (5)

   Response: The Department used pH criteria specific to the Pinelands when assessing Pinelands waters. Most of the pH violations in the Pinelands represent elevated pH conditions which do not reflect natural Pinelands conditions. The dissolved oxygen impairments are located mostly outside of the Pinelands, along the coast.

7. **Comment:** What does it mean when an assessment unit was on Sublist 5 in 2004, but then is no longer on Sublist 5 in 2006? (6)

   Response: If an assessment unit was on Sublist 5 in the 2004 Integrated Report but is not on Sublist 5 in the 2006 Integrated Report, the assessment unit has been "delisted". Generally, an assessment unit is delisted because: 1) new data shows there is no longer an exceedance of a specific pollutant and/or attainment of the designated use has been achieved; 2) a TMDL has been scheduled/developed for the pollutant(s) that were the cause of the use impairment that was identified on the previous Sublist 5; or 3) data shows that the impairment is not being caused by a pollutant but rather by "pollution"; therefore, a TMDL would not be an effective response and other measures must be undertaken to attain the designated use(s) of the waterbody. A list of all waters which have been delisted along with the rational for the delisting is provided in Appendix C to the 2006 Integrated Report.

8. **Comment:** Please highlight changes between the draft and final integrated List. The 2006 Integrated List draft presentation was difficult to analyze and comment on because it did not highlight changes from the 2004 Integrated List. (11, 23)

   Response: Based on comments received, the Department re-evaluated phosphorus data for the Wallkill and Musconetcong Rivers which resulted in some delistings for phosphorus.
   In reviewing those waters included in an approved TMDL, the Department had originally identified on Sublist 4 only those waters which had violations of the SWQS and placed waters without any data on Sublist 3. After further input from the Division of Watershed Management, waters previously identified on Sublist 3 but included in a TMDL as a potential source were moved to Sublist 4. The criteria for mercury were updated to include recently adopted criteria which resulted in several delistings for Aquatic Life designated use. The Department will make the draft versions of the List available on the web along with the final List for comparison.

   The 2004 Integrated List (Sublists 1 through 5) assessed individual parameters while the 2006 Integrated List (Sublists 1 through 5) assessed designated uses, therefore a direct comparison of the Integrated Lists is not possible. However, the Department has prepared a comparison document which tracks pollutants (the actual (303(d) List) from one reporting cycle to the next and includes the changes from 2004 to 2006 (Addendum C to the 2006 Report). In addition, the Department will post the draft Integrated List available and the final List once finalized at http://www.state.nj.us/dep/wmm/.

9. **Comment:** The 1997 Watershed Act includes a clear provision prohibiting the use of CBT funds for NJPDES permittees. The Department is using NJPDES discharger data for the 303(d) List. This is seems to be a conflict of interest which should not be allowed under the Clean Water Act. (21)

   Response: The Watershed Protection and Management Act prohibits the use of watershed management grant funds for the "purpose of complying with NJPDES permit requirements". It does not prohibit the Department from using data generated by NJPDES permit holders for the purposes of assessing the quality of the state's waters. In preparing the 2006 Integrated Report, the Department reviewed all existing and readily available data, as required by the federal regulations at 40 CFR 130.7(b) (5), and used whatever data was relevant and of acceptable quality. Information on individual data sources used for development of the Integrated List is provided in the Integrated Report (see Appendix I). In determining which data are appropriate and readily available, the Department took into consideration quality assurance/ quality control, monitoring design, age of data, accurate sampling location information, data documentation and use of electronic data management.

10. **Comment:** Many of the Assessment Unit Names are abbreviated making the stream segment locations unclear. The Wallkill River within Sussex County, New Jersey flows in a northerly direction. Based upon the notation indicated on the draft list for the Wallkill Assessment Unit Names, it appears to read as if the direction of flow is indicated backwards. If this is the intended notation, a revised notation system is recommended to be used to help reduce such confusion. (4,6,13)

    Response: The Assessment Unit Names are the USGS nomenclature assigned to the HUC 14 subwatershed. The HUC 14 coverage is available on the Department's GIS and iMap webpage to facilitate location of the individual assessment units.

COMMENTS ON SPECIFIC WATERBODY LISTINGS

11. **Comment:** What are the pollutants listed on Sublist 3 for Delaware River Zone 5? (1)

    Response: Sublist 1 through 5 identifies the attainment status of each designated use. A waterbody is listed on sublist 3 for a particular designated use when there is no or insufficient data to evaluate the designated use.

12. **Comment:** What data set did you use to list Delaware River Zone 5C as being impaired for dissolved oxygen? (1)

    Response: The Delaware River Basin Commission assessed the data for the mainstem of the Delaware River. Their assessment indicated that 5C did not meet the DO criteria. As a result, we are listing this section as "non-attaining" in 2006.

13. **Comment:** Please correct the spelling of Cloce Acres Lake to Clove Acres Lake and indicate that it is located within WMA 02 (13) (4)(16)

Response: The typographical error has been corrected.

14. **Comment:** Has the Department taken into consideration the improvements to the Hackensack River due to the removal of PSE&G's thermal discharge? (3)

    Response: No assessment units associated with the Hackensack River have been identified as impaired for temperature. However, the Department has not determined whether these results are due to the removal of PSE&G's thermal discharge.

15. **Comment:** The Methods Document states that even if the water quality fully supports designated use, the watershed may be designated as "Non Attainment" in anticipation of future degradation. Please indicate exactly how many impairments belong to this category. These impairments should be eliminated from the list until the water quality standards are in fact violated. (5)

    Response: The Department is required to list waters which, based on trend data, may violate SWQSs within the next two years. No waterbodies have been listed on Sublist 5 in anticipation of future degradation. The 2006 Integrated List does not have any waters listed based on trends data at this time.

16. **Comment**: The Atlantic Ocean off Cape May is listed as impaired for PCBs in fish tissue. There is no evidence of any PCB contamination in the waters off of Cape May County; any fish species that are the subject of advisories are migratory species and may have been exposed to PCBs elsewhere. (7)

    Response: Most of the PCB listings on Sublist 5 are due to fish advisories that warn against consumption of fish contaminated with PCBs. Fish advisories are based on fish tissue studies that document the levels of PCBs in specific species of fish that are commonly caught and eaten either for recreation or for sustenance. This listing is based on the levels of PCBs detected in fish caught in the waters in question; it is not based on the levels of PCBs present in the waters where the fish were caught. USEPA requires that all waters with fish consumption advisories based on fish caught in that area must be listed, therefore the origin of the fish is immaterial. The fish caught in these waters may be contaminated with PCBs; therefore the designated use (fish consumption) is impaired.

17. **Comment:** The thermally-induced stratifications that are resulting in low dissolved oxygen levels are due to natural conditions unrelated to outside influences, including ocean dischargers. The Atlantic Ocean is not impaired for DO in the vicinity of CMCMUA's outfall according to data collected by the Cape May County Department of Health. There is also concern that the "Non Attain" status could lead to unnecessary monitoring requirements and/or limits in ocean outfall permits. (7)

    Response: The Department must use all available data in evaluating an assessment unit. The Department had data from its own network as well as that of USEPA which showed dissolved oxygen in violation of the SWQS. The Department is presently working with

Rutgers University to study ocean oxygen sags to determine the cause of the sags and whether or not they are due to natural conditions.

18. **Comment:** The commenter believes there is sufficient data to delist the Musconetcong River (Waterloo to Wills Brook) for total phosphorus and has submitted data to support the delisting. (10)(12)

    Response: After considering all the data, the Department has delisted phosphorus in the Musconetcong River (Waterloo to Wills Brook).

19. **Comment:** The Wallkill River (Assessment Unit ID 02020007010010-01) and the Wallkill River (Assessment Unit ID 02020007010020-01) should not be listed as impaired for total phosphorus. The Wallkill River Watershed Management Group submitted chemical sampling results in September 2003 from a monitoring program conducted under an approved QAPP, which when augmented with prior NJDEP data for total phosphorus showed compliance with the SWQS for total phosphorus at both the listed segments. These segments were delisted for the 2004 Integrated List. (4, 13)

    Response: The Wallkill River (Assessment Unit ID 02020007010010-01) and the Wallkill River (Assessment Unit ID 02020007010020-01) have been corrected and are not listed as impaired for total phosphorus. However, both assessment units are listed as impaired for aquatic life use as a result of biological data obtained through the Department's AMNET monitoring program. The Wallkill River (Assessment Unit ID 02020007010010-01) is listed on the 303(d) List for pollutant unknown and the Wallkill River (Assessment Unit ID 02020007010020-01) is listed for temperature.

20. **Comment:** The Wallkill River (Assessment Unit ID 02020007030010-01) should not be listed as impaired for Dissolved Oxygen. The WRWMG submitted chemical sampling results in September 2003 from a monitoring program conducted under an approved QAPP at five locations along the Wallkill River, which showed compliance with the SWQS for dissolved oxygen. (4,13)

    Response: The Wallkill River (Assessment Unit ID 02020007030010-01) is not listed as impaired for Dissolved Oxygen. It is listed as impaired for aquatic life use as a result of biological data obtained through the Department's AMNET monitoring program and the source is listed as pollutant unknown.

21. **Comment:** Papakating Creek (Assessment Unit ID 02020007020070-01) should not be listed as impaired for nitrate. The WRWMG has submitted chemical sampling results from a monitoring program conducted under an approved QAPP, which when augmented with prior NJDEP data for total nitrate, showed compliance with the SWQS for total nitrate at the listed segment. (4,13)

    Response: The Department evaluated data from multiple stations and found elevated nitrate levels at two different stations (Papakating Ck at Rt 565 in Wantage Twp and Papakating Ck at Sussex. Papakating Ck at Sussex had violations on two different days (30.5mg/l and

20.9mg/l). Due to the magnitude of the exceedance, the Department felt it appropriate to list this waterbody unit as impaired.

22. **Comment:** Data was submitted for many stations in the Pequannock and Wanaque watersheds that are missing or misidentified on the Integrated list. (16)

    Response: The 2006 Integrated List identifies an assessment unit as a subwatershed (HUC 14), not individual stations. In some assessment units, as in the case of the Pequannock and Wanaque watersheds which were data rich, data from multiple stations were combined into one overall assessment result. Appendix F of the Integrated Report identifies the individual stations that contributed to the assessment of each assessment unit.

23. **Comment:** It is appropriate to delist the Upper Passaic River with regard to copper and zinc where the natural hardness is greater than the default. Any future assessment of standards compliance should use site-specific hardness rather than the default hardness. (20)

    Response: The Department uses site specific hardness to determine compliance with the Surface Water Quality Standards. The Upper Passaic River is being delisted based on new data and site-specific hardness.

24. **Comment:** The methodology indicates that standards attainment assessment requires a "minimum data set" and where such data sets are not available the stream segment should be placed on Sublist 3 due to "insufficient data." This approach should also be applied to historical listing decisions, which were based on incomplete or now unavailable data. Under this circumstance, the stream segment should be moved to Sublist 3. The listing for cyanide in the Upper Passaic River should be moved to Sublist 3 if the Department can not produce the data and show that it is representative of present conditions. The data used for the listing does not meet the "legally defensible" standard as it is not readily available data. (11, 20)

    Response: The Department is required to retain cyanide on the 303(d) List until such time as a TMDL is completed or the Department has new data which shows that the SWQS for cyanide is being met. The Department anticipates collecting cyanide data to verify this listing during the next cycle.

25. **Comment:** The Pequest River (Assessment Unit ID 02040105090030-01 and 02040105090060-01) is listed as impaired for total phosphorus. It is clear that in-stream total phosphorus is above the SWQS in a number of instances, however these are during unusually high or low flow conditions. Since Phosphorus levels are below the standard during normal flow conditions, the Department should re-evaluate the assessment for phosphorus. The Pequest River (Assessment Unit ID 02040105090060-01) is listed as impaired for Total Suspended Solids (TSS). TSS exceed the standard where extremely high flows occurred. The Department should re-evaluate the assessment for TSS. (20)

    Response: The Department collects most of its data randomly to assess conditions over a variety of flows. The SWQS for TSS and phosphorus apply at all flows greater than the 7 day 10 year low flow. Therefore, data collected at high flows must be considered when assessing compliance with the criteria.

26. **Comment:** The Pequest River (Assessment Unit ID 02040105090060-01) is listed as impaired for pH. The addition of the HydroQual data from 2004 and 2005 to the data used by the Department would result in too few exceedances to result in an assessment of “non attaining”. (21)

    Response: USEPA guidance no longer allows the use of the 10% rule. Unless the Department can provide just cause not to, the Department must assess a designated use as non-attaining if two or more sample results violate the SWQS. The Pequest River (Assessment Unit ID 02040105090060-01) is listed as impaired because monitoring data at Belvidere had 3 exceedances out of 18 samples.

27. **Comment:** The Pequest River (Assessment Unit ID 02040105090060-01) is listed as impaired for temperature. There are four exceedances of temperature, all during the month of August when ambient temperature ranged from 68.1 in 2000 to 74.6 and 74.0 in 2001 and 2002 to 71.3 in 2004. The temperature violations were due to natural variations and not impairments as there are no thermal discharges to the Pequest River. The Department should re-consider its evaluation for this parameter. (20)

    Response: The Pequest River (Assessment Unit ID 02040105090060-01) is listed as impaired because 19% of samples showed an exceedance of the temperature criteria at monitoring station 01446400. Elevated stream temperature may be due to natural condition, unusual hot weather, storm water runoff, or stream bank deforestation. The TMDL program will verify the sources of temperature impairments on Sublist 5.

28. **Comment:** The Pequest River (Assessment Unit ID 02040105090060-01) is listed as impaired for arsenic. Four of the five samples were below the detection limits. This does not justify listing as impaired. Arsenic is naturally occurring in this part of the state. The non-attainment status could result in the inclusion of an effluent limitation for arsenic at the Oxford Wastewater Treatment Plant. (20)

    Response: The delisting protocol for metals (Section 7.3.1 in the Methods Document) requires the collection of data under base flow and elevated flow conditions. The Department has collected the base flow data but has not collected the elevated flow data. The data must meet the criteria under both flow conditions before it can be delisted. When the complete data set is available, the Department will re-evaluate the listing for arsenic.

COMMENTS RELATED TO THE ASSESSMENT METHODS

29. **Comment:** We are in support of the 2006 enhancement that will list waterbodies by HUC-14. (25)

    Response: The Department appreciates the commenter’s support.

30. Comment: The water quality impairments are reported on a HUC-14 subwatershed scale meaning if one or several small segments of a stream are impaired, the whole subwatershed is designated as impaired, which may not be the accurate representation of water quality in the stream or waterbody. We recommend that only the impaired segments of the stream be identified in the list rather than the whole subwatershed.(5)

Response: As explained in great detail in the Methods Document that accompanies this Report, previous Integrated Reports used hydrology, specifically stream order, to extrapolate the extent of attainment or impairment from the area monitored and assessed to a larger stream segment. As the Department increased the scale of resolution for rivers and streams (once 1:100,000; now 1:24,000; soon to be 1:2,400), the number of unassessed waters and stream miles will increase. In order to achieve a goal of assessing all water, the Department developed a new spatial extent methodology that uses watershed delineations to represent assessed waterbodies. Using the watershed spatial extent method, the State's waters are delineated based on Hydrologic Unit Code (HUC) 14 subwatersheds. Monitoring site(s) located within the HUC 14 subwatersheds are extrapolated to represent the waters within the entire HUC boundary. The Department will assess waterbodies based on subwatershed or HUC 14 boundary in a consistent and stable manor to identify and follow trends.

In practice, the HUC-14 approach provides a more conservative assessment since any impairment within a in a given HUC-14 watershed will result in that entire watershed being listed as impaired for that use/parameter. In addition, where a HUC-14 watershed contains waters of different classification, the more stringent classification was used to assess impairment and that impairment was then applied to the entire watershed. This approach is consistent with the Department's watershed-based approach to water quality management (see Section B.2 of the Integrated Report for more details on this approach) and serves as a useful screening tool for flagging impaired watersheds on a statewide basis.

However, because of the extent of extrapolation required for such an approach, more detailed assessment is required on a watershed basis to determine the actual cause, source and extent of impairment in the HUC-14 watershed before specific regulatory or other action could be taken to effectively address the impairment. This more detailed assessment is generally done through the development of Total Maximum Daily Loads (TMDLS), water quality-based effluent limits (WQBELs) or watershed restoration projects. For more information on these programs, see Sections B.2.5 (TMDLs), B.2.3 (NJPDES), and B.2.4 (NPS Control Program) for more information on these activities. The application of the HUC-14 approach to determining the spatial extent of an assessed impairment is discussed in more detail in Section 7 of the Methods Document.

PINELANDS

31. Comment: The Department should adopt the current scientific methods used by the Pinelands Commission science staff to assess use impairments within the Pinelands. These methods are better suited for evaluating the unique aquatic ecosystems of the Pinelands than the current method used throughout the State based on macroinvertebrates. The surface water chemistry of typical undisturbed Pinelands streams should be used as the standard by which Pinelands streams are assessed for water quality impairments. Greater emphasis should also be placed on the use of a median pH value and specific conductance when considering general stream health within the Pinelands. (9)

Response: In the past the Department had placed benthic macroinvertebrate assessments for Pinelands (PL) streams on Sublist 3 (Insufficient Data) because the statewide protocols were not appropriate for these waters due to their unique nature. However, the Pinelands Commission (Commission) has developed extensive biological assessments which the Department did use to assess the Aquatic Life Designated Use attainment for selected wadable streams in the Rancocas and Mullica watersheds (Watershed Management Areas 19 and 14, respectively). These assessments were based on extensive studies performed by the Commission of stream vegetation, fin fish, and anuran assemblages along anthropogenic disturbance gradients. For the Mullica drainage (Zampella, R.A., et al. 2001, and written communication) all three assemblages were employed. For the Rancocas drainage (Zampella, R.A., et al. 2003), stream vegetation and fin fish were used in lakes and streams and anuran assemblage studies were used only in lakes. (For more information on the assessment methodology used in PL waters, see Section 4.1.1.C of the Methods Document.)

PHOSPHORUS

32. **Comment:** The Department has indicated that any delisting for phosphorus must be done using the "Technical Manual for Phosphorus Evaluations For NJPDES Discharge to Surface Water Permits" (hereinafter "TP Manual") dated March 2003. This is improper and converts the TP Manual into a "legally binding SWQS and criteria." This TP Manual is clearly a "narrative criteria translator." Federal rules are clear that DEP must undergo rulemaking to impose the TP Manual in this manner and submit the TP Manual for EPA approval as part of the SWQS. (11, 22)

33. **Comment:** DEP acknowledges that biocriteria used to determine aquatic life impairment listings "have not been adopted in the SWQS, the biological indicators employed are regarded as "translators" reflecting use support status…." Use of such unadopted "translators" to declare waters as impaired is not lawful. These are "*ad hoc*" requirements that have not undergone rulemaking, state adoption or federal approval. They cannot be used to declare a waterbody "impaired." Such information may be considered to establish a separate listing for further investigation. All listings associated with unadopted "translators" should be moved to Sublist 3 for further evaluation. (11)

34. **Comment:** If phosphorus data are not accompanied by some stream impacts data confirming that excessive plant growth is occurring, such waters should be placed on Sublist 3 "insufficient data." (11,23)

35. **Comment:** The Methodology on page 14 indicates that an aquatic life impairment listing may not occur where a chemical exceedance exists but periphyton impacts are not found. Thus, where "Off Ramp" stream studies have been conducted and no excessive plant growth has been demonstrated, the phosphorus standard should be determined inapplicable as

clearly phosphorus is not limiting plant growth in those cases since elevated periphyton may occur far above DEP's 150 mg chl 'a'/m^2 trigger level when instream TP levels exceed 50 ug/l (0.050 mg/l) (Attachment 1 – PADEP study confirming importance of canopy in controlling periphyton growth). (11,23)

36. Comment: The Department should not list a waterbody on sublist 5 for phosphorus unless the Department has determined that the phosphorus levels impair the use. The Department has misstated the purpose of the narrative criteria for nutrients and is imposing the existing standard in a more restrictive manner without undergoing rulemaking. The nutrient policy, adopted in 1985, was not considered a separate narrative standard in addition to the numeric nutrient criteria. That regulatory language was adopted to ensure that the standards were properly applied, considering site-specific information. As stated by the Department during the 1985 SWQS adoption process, the nutrient policy was adopted to increase flexibility. The 1980 phosphorus standards plainly required that use impacts information be obtained *before* the numeric criteria are applied. When the criteria were modified in 1985, the Department's Response to Public Comments document affirmed to the public that "the existing criteria along with the new nutrient policy and effluent standard offered a *more flexible approach to phosphorus control.*" Total Phosphorus limits were only imposed "where such limits are necessary as permits come up for renewal." EPA's approval of the revised standards further noted "the inclusion of a nutrient policy for phosphorus will improve implementation of the phosphorus standards *by linking the allowable phosphorus level to protection of site-specific uses.*" Thus, it is apparent that the Department intended the standards to be applied in a flexible manner on a case-by-case basis considering site-specific impacts information. Blanket imposition of stringent effluent limitations pending TMDL development is not consistent with the Department's observations on how to properly apply the phosphorus standards. (11)(24)

37. Comment: The Department should assess compliance with the Phosphorus criteria by averaging data collected between May/June and September under non-peak flows. Methodology acknowledges that averaging period and algal growing season must be considered when determining whether an exceedance of the phosphorus criteria has occurred. See Methodology at page 41 and 44 ("…nutrient data sampled during the growing season to determine eutrophic conditions…"). In addition, data collected under high flow conditions may not be used if the high flow does not occur over a sufficient duration. Methodology on page 42. These principles need to be further refined to properly apply to phosphorus, particularly to riverine situations. For streams, phosphorus cannot impact algal/periphyton growth during high flow/scour periods because detention time is insufficient to grow plants and rooted plants are being scoured from the system under these conditions. TP is not limiting under these conditions, physical conditions are. Only data sets that meet these screening criteria should be used for comparison with the 0.1 mg/l instream numeric standard in streams. For lakes, data sets should be restricted to the primary algal growing season June –September and be averaged over this period. All phosphorus listings should be revised, as suggested with the screening criteria discussed above. (11) (23)

Response to Comments 34 through 39:

Phosphorus is a required nutrient for plants and algae but is considered a pollutant when it stimulates excessive primary production. The symptoms of excessive primary productivity include oxygen super saturation during the day, oxygen depletion during the night, and high sedimentation rate. Algae are the catalysts for these processes. Excessive oxygen depletion can result in fish kills. Secondary biological impacts can include loss of biodiversity and structural changes to communities. Excessive primary production may occur primarily in depositional areas such as impoundments and under summer low flow conditions. Excessive primary production may be manifested as blooms of floating algae (seston), attached algae (periphyton) or dense aquatic vegetation, which in turn affects diurnal oxygen dynamics.

The Surface Water Quality Standards include both numeric and narrative water quality criteria for TP in FW2 lakes and streams, as follows:

> a) Lakes: Phosphorus as total P shall not exceed 0.05 (mg/L) in any lake, pond or reservoir, or in a tributary at the point where it enters such bodies or water, except where watershed or site-specific criteria are developed pursuant to N.J.A.C. 7:9B-1.5(g)3.
>
> b) Streams: Except as necessary to satisfy the more stringent criteria in the paragraph above or where watershed or site-specific criteria are developed pursuant to N.J.A.C. 7:9B-1.5(g)3, phosphorus as total P shall not exceed 0.1 (mg/L) in any stream, **unless it can be demonstrated that total P is not a limiting nutrient and will not otherwise render the waters unsuitable for the designated uses** *(emphasis added).*

Where ambient data is available that shows exceedances of the numeric criterion for total phosphorus but there is not data regarding excessive algal growth or other stream impacts, the HUC-14 watershed containing that waterbody is identified on Sublist 5 as impaired due to excessive phosphorus because surface water quality standards specify that the numeric criterion applies "**unless it can be demonstrated that total P is not a limiting nutrient and will not otherwise render the waters unsuitable for the designated uses** *(emphasis added)*."

The Department's numerical criteria are based on a "causative" indicator, namely total phosphorus. The applicability of the criterion in lakes and streams allows for an evaluation based upon "response" indicators to determine whether uses are being rendered unsuitable because of the concentration of phosphorus in the specific lake or stream or by excessive algae caused by nutrients. In 2002, the Department began to fully implement the numeric water quality criteria for total phosphorus in NJPDES permits to ensure that the surface water quality standards would be achieved. A water quality based effluent limit was imposed in the NJPDES permits of facilities discharging to waterbodies listed as impaired for total phosphorus on the State's 2002 List of Impaired Waterbodies. In March 2003, the Department published *Technical Manual for Phosphorus Evaluation for NJPDES DSW Permits* to assist facilities in determining whether total phosphorus levels rendered the waters unsuitable for the designated uses. NJPDES facilities were provided the opportunity to obtain diurnal dissolved oxygen measurements as well as chlorophyll a levels in phytoplankton and periphyton that the Department could use to evaluate whether the phosphorus levels did not render the waters unsuitable.

This methodology was developed specifically for determining the applicability of the surface water quality criteria for total phosphorus in NJPDES discharge permit effluent limitations. This methodology also provides a scientifically and defensible methodology for de-listing of total phosphorus where the concentration of total phosphorus exceeds SWQS but does not impair the use.

The Department agrees that rulemaking would be required in order to use the Technical Manual for listing purposes, since that would mean the Department was establishing a new narrative criterion translator for the purposes of defining impairment (i.e. non attainment of uses). However, as explained in the Methods Document that accompanies this Report, the Technical Manual is being used for solely for delisting of waters were ambient levels of total phosphorus exceed 0.1 mg/l but data obtained in accordance with the Technical Manual indicate that phosphorus does not render the waters unsuitable for the designated use. No such delistings in included in this Report.

ARSENIC

38. Comment: The Department used total recoverable metal arsenic measurements to determine that the inorganic arsenic level was exceeded. This approach is inconsistent with the approach used on aquatic life standards that are expressed as dissolved metals. Where only total recoverable metal readings were available, the Department did not list such waters as impaired but stated that more information was needed to make the impairment determination. Methodology at 42. The Department needs to collect inorganic arsenic data to confirm that the standard is exceeded. (11, 20, 24)

Response: The human health criterion for arsenic of 0.017ug/l is for total recoverable arsenic. The aquatic life criterion is based on dissolved arsenic but is less stringent than the human health criterion.

39. Comment: The Department should develop a new screening criteria indicating that arsenic impairment listings will not result in any more restrictive requirements placed on wastewater or drinking water contributors if the source of the elevated arsenic is the water supply and the 3 ug/l drinking water standard is being met. Arsenic listings should be placed in their own sublist due to the inconsistency between drinking water and surface water human health requirements. (11, 19, 23)

Response: The Integrated List is required to identify waters which do not meet SWQS. Concerns regarding requirements placed in permits should be directed to the Division of Environmental Regulation.

40. Comment: Where human health parameters are involved (such as arsenic), the minimum data set should be used along with the annual average. Single readings or small data sets should be placed on Sublist 3. (23)

Response: Single readings are ot used to identify impaired waters. The Department uses a long term average where appropriate for human health criteria.

41. Comment: A minimum of eight samples over two years is not sufficient to statistically demonstrate classification of a waterbody as non-attainment for a specific measurement parameter. At minimum, the 8-value data set collected must be viewed as a subset of a five-year data set with total data counts of 20 - 30 values. Making such a critical decision, as non-attainment, on eight values, in some cases four values, and in some cases with less than four values, is contrary to a number of statements made within the "*Methods Document*" that decisions are to be based on the weight-of-the-evidence. (4,13)

Response: The Department would prefer to have data sets with 20 to 30 samples but this is not possible statewide. Many stations do have 20 or more samples and when several stations are combined to evaluate the assessment unit, the Department often has 20 to 60 data points for the more common parameters. However, this is not the case in all waters of the entire state. The Department is required to use all data and can not ignore small data sets. The Department has identified conditions under which it will consider small sets of data on the Methods Document in order to meet USEPA requirements.

42. Comment: The compiled list of impaired waterbodies does not cover all watersheds in the state. The AMNET process should be used to assess watersheds not currently assessed in the next 2 year cycle. (15)

Response: The Department's AMNET program is quite extensive and provides data for most of the freshwater watersheds. The Department is developing additional sampling and assessment protocols to expand the use of AMNET monitoring in the remaining freshwater areas such as small watersheds and the Pinelands as well as protocols for tidal and coastal areas. However, this data can only be used to assess aquatic life use. Additional monitoring is needed to assess drinking water, agriculture, industrial, recreation, and fish and shellfish uses.

43. Comment: The Department should evaluate using Tom Schueler's Impervious Cover Model to guide water quality assessments. The Impervious Cover Model is a predictive model that predicts water quality impairment as a function of percentage of impervious surface in and around first and second order streams, and can guide the targeting of assessment methodology and costs at the very beginning of the planning process. (24)

Response: The Department agrees that models can be very useful to identify areas and sometimes parameters of concern and inform the monitoring planning process.

Part 2 USEPA Region2

1 Comment: EPA Region 2 has not seen and therefore cannot comment on i) Priority ranking for TMDL development including waters targeted for TMDL development within the next two years, ii) A description of the data and information used to identify waters, including a description of the existing and readily available data and information used, and iii) A rationale for any decision to not use any existing and readily available data and information.

Response: The priority ranking is included with the final 2006 303(d) List of Impaired Waters with priority Ranking. The 2 year schedule includes all parameters identified as a high priority and will be included with the Integrated List submittal. A list of data sources was provided on the Integrated Report web page. The Department has provided a summary of data sources and a rationale for any data not used in Appendix F.

2 Comment: A detailed crosswalk should be sent with the official submission as has occurred in previous years which identifies how each waterbody/pollutant combination on the 2004 section 303(d) list either remained, changed, or was removed for the 2006 section 303(d) list.

Response: A crosswalk identifying how each waterbody/pollutant combination on the 2004 section 303(d) list either remained, changed, or was removed for the 2006 section 303(d) list is provided in Appendix C.

3 Comment: The official submission of NJ's 2006 section 303(d) list must clearly identify what is to be considered *the* section 303(d) list and this section 303(d) list must identify the pollutants (or "unknown pollutant/unknown toxicity" per methods document) exceeding WQS when a designated use has not been attained (since the methods are based on designated use attainment).

Response: To eliminate confusion, the Integrated List will identify the designated uses on one of 5 sublists for each assessment unit. A separate 2006 303(d) List of Impaired Waters with Priority Ranking will be provided which will list the assessment units on Sublist 5 and the parameters (causes) for the impairment along with their TMDL ranking.

4 Comment: EPA Region 2 still requires the accompanying explanatory notes for any specific instances (for a "case-by-case" determination) where either the "10% rule" was applied for assessing WQS attainment; a *de minimus* area of non-attainment was included in the geographic extent of an assessment of attainment; best professional judgement was employed for a weight of evidence approach; or a modified water quality assessment is used. The identification of where these methods may have been employed for the section 303(d) list was not provided. Also, please note that when reporting out on *de minimus* areas, it is important to make clear the absolute size of the impaired, *de minimus* area (in acres, etc.) in addition to identifying what percentage it represents of the area being assessed as in attainment.

5 Comment: It is unclear if natural conditions have been defined and used in any instances to explain non-attainment of any WQS. If they have been defined and used as a justification, then this information must be reported.

Response to Comment 4 and 5: The basis for any decision not to list a pollutant on the 303(d) list based on Best Professional Judgement (BPJ) is described in Assessment Section of Integrated Report.

6 Comment: There is no discussion in the methods document nor any assessments identified for the drinking water use for lakes and reservoirs.

Response: The designated use assessment methodology for drinking water applies to all FW2 waters. As noted in the gaps analysis section of New Jersey's Water Monitoring Strategy, the Department has not had a lake monitoring program for some time. Therefore, data to assess drinking water is not available for individual lakes. However, the watershed associated with the lake (the HUC 14) has been assessed for drinking water. For the 2006 Report, the list of lakes includes impoundments greater than 2 acres which are often small swimming ponds on the run of the river. The Department intends to re-evaluate lakes for the 2008 cycle and incorporate many of the smaller run of river lakes into the associated HUC based assessment unit which will eliminated much of the "double counting". The Department can then focus future lake monitoring and assessment on lakes which are truly a unique waterbody.

<u>Concerns Regarding the Methods</u>

7 Comment: For the purposes of identifying the state's section 303(d) list, data which indicate that a narrative or numeric WQS has been exceeded must be used to list that waterbody on the section 303(d) list. This does not appear to be the case based on the methods document.

The methods document must make clear that no impairment of any WQS will go unrecorded on the section 303(d) list. That is, if the lack of a minimum dataset requires an assessment of "insufficient data" for a specific designated use, then there is still a method to capture any non-attainment of any WQS based on the available data or information for placement on the section 303(d) list.

Response: If only one of several parameters necessary to assess a designated use is available and is fully attaining, the data is insufficient to list the designated use as fully attaining. However, if any one parameter of a set of parameters in is non-attain status, the designated use will be listed as non-attaining. However, the Department has determined where the biological indicator (AMNET) indicates an unimpaired condition, the Department will evaluate whether or not to list exceedences of temperature, pH, and dissolved oxygen based on natural conditions. Although the Methods Document indicates that the Department does not automatically assume "eutrophic" lakes are impaired for recreational use, the Department has not delisted any lakes or reservoirs identified on the 2004 303(d). The Department plans to reevaluate its lake assessment method for 2008.

8 Comment: The document needs to be clear in the difference between the suite of data requirements used to assess a designated use and the "minimum dataset" necessary in order to being able to make a use decision of attaining.

Response: The Department has addressed this confusion by revising the methods document to use the phrase "minimum suite of parameters" necessary to assess a designated use and "minimum dataset" to refer to the amount of data necessary to evaluate a specific parameter. As indicated above, the pollutant status is evaluated independently from the designated use assessment. The Department determined that it was not appropriate to consider a use "fully attained" without a complete suite of parameters.

9 Comment: The methods document does not discuss assessment of FW-1 waters. N.J.A.C. 7:9B-1.14(a), states that "surface water criteria for FW-1 waters shall be maintained as to quality in their natural state." Since "monitoring site(s) located within the HUC 14 subwatersheds are extrapolated to represent the waters within the entire HUC boundary" the HUC-14 watersheds will contain FW-1 waters.

Response: The Department classified waters as FW1 to protect these waters from anthropogenic impact which could change natural water quality. To qualify for FW1, the entire upstream watershed had to be protected from anthropogenic impacts. No attempt was made to determine what the natural water quality was at the time of classification. Therefore, the Department can not determine whether or not change has occurred. However, if an exceedence of the water quality criteria is identified, the waterbody will be listed on Sublist 5.

10 Comment. Table 4.1.1c for the aquatic life designated use assessment method for PL streams does not include the use of chemical and physical data.

Response: The Department uses both biological and chemical/physical data to evaluate the aquatic life use. Table 4.1.1c addresses only the biological component.

11 Comment: Radioactivity should be included in dataset of parameters for the drinking water designated use assessment at Section 4.5 of the methods document.

Response: Although a criteria exists for radioactivity, the Department does not monitor its ambient waters for radioactivity. The Department has not included radioactivity in the "minimum suite of parameters" to assess drinking water use. If water quality data is available, it will be evaluated. No changes have been made to the Methods Document.

12 Comment: The numeric WQS for radioactivity in FW-2, SE and SC waters at N.J.A.C. 7:9B-1.14(c) is "prevailing regulations including all amendments and future supplements thereto adopted by the U.S. Environmental Protection Agency pursuant to Sections 1412, 1445, and 1450 of the Public Health Services Act, as amended by the Safe Drinking Water Act (PL 93-523)." Therefore, the radioactivity standard is to be met in FW-2, SE and SC waters whether or not the water is designated for the drinking water use and this should be mentioned in the methods document.

Response: The Section 6.4 of the Methods Document has been revised and does not restrict radioactivity to drinking water use.

13 Comment: The public notice points out that data for the Delaware River mainstem is assessed by the DRBC and provides an incorrect email address for Jon Zangwill at DRBC as a way to ask for the assessment methods for the Delaware River. The Delaware River is a New Jersey water and if the methods used to evaluate it are different than the ones used throughout the rest of the state of New Jersey, then these different methods must be identified by NJDEP in order to understand the attainment or non-attainment decisions for New Jersey's Delaware River segments. Also, there should be explanation of the assessment unit IDs and assessment unit names used for the Delaware River since they do not follow the schema for the rest of the state.

Response: DRBC has provided the information on their website so it is no longer necessary to give Mr. Zangwill's email address. This web site address is noted in the public Response to Comment document as well as the Integrated Report and the Department's website. An explanation of the assessment units are provided in the spatial extent section of the Methods Document (page 10).

14 Comment: The censored data discussion on page 43 is confusing. If the concentration falls between the detection and reporting limits, does NJDEP plan to use the ½ of the number, the reporting limit, or the detection limit? Does this change with parameters? The final document should clearly state the method for considering censored data.

Response: For all parameters**, w**hen results are below the method detection level, the value will be set at ½ the detection level.

15 Comment: The methods document indicates that NJDEP is more likely to assess 100% of the State's waters with the delineation of HUC-14 subwatersheds. However, no significant change in the number or location of monitoring stations occurred since its 2004 Integrated Report. The current draft does not justify how the use of the current monitoring system and the HUC-14 subwatershed scale now results in assessment of 100% of New Jersey's waters. NJDEP indicates it applies a linear extrapolation and does not consider the impact of site selection and spatial distribution. At a minimum, the final 2006 Methods should explain and justify this approach. General analysis of representativeness, which should describe the selection of all current monitoring sites, including the basis for the original site selection, and should explain the ability of a single monitoring station to represent an entire unit, i.e. how does the site selection impact and/or limit the ability to extrapolate to larger unit areas.

Response: The Department has utilized subwatersheds (HUC14) as its assessment units for the 2006 Integrated Report. This approach allows the Department to maintain a consistent list of waterbodies. The Department will be tracking water quality status at 970 subwatersheds which average 8.5 square miles. The 2004 Integrated List was based on stations, so that as new stations were added, new assessment units were created. This became an unmanageable system.

Using subwatersheds standardizes the process and is consistent with the approach EPA has taken on its Performance Assessment Measures related to watersheds

Listings

16 Comment: On May 12, 2006, Barbara Hirst reported that there are 23 places where water column mercury readings are in violation of mercury numeric WQS. There are no listings for non-attainment of mercury in the water column in the spreadsheet identifying non-attainment by parameter. These 23 sites need to be listed on the section 303(d) list for non-attainment of mercury if they are not already listed based on mercury in fish tissue.

Response: In 2004, Region 2 advised the Department that it was “double counting” when listing a waterbody for mercury (in the water column) and mercury (fish tissue). At Region 2’s request we combined the listings and now list mercury as the parameter.

17 Comment: Waters exceeding standards for dieldrin, trichloroethylene, thallium, and selenium were on the 2004 section 303(d) list but are missing from the draft 2006 section 303(d) list.

Response: Corrections have been made to the 2006 303(d) list.

18 Comment: Please explain the chemical constituents and basis for listing for the parameter “DDX (tissue).”

Response: DDX is a common term used to include DDT, DDE and DDD.

19 Comment: There are no listings for Delaware Bay (Zone 6 of the Delaware River/Estuary) on the draft 2006 section 303(d) list. There were many on the 2004 section 303(d) list.

Response: There were seven assessment units listed on the draft list for multiple parameters. The assessment unit name began with Delaware Bay or DL Bay.

20 Comment: The assessment unit “Spring Lake fork of Bound Brook” is shown on the integrated list by HUC-14 as Sublist 3 (insufficient data) for fish consumption yet it is on the New Jersey list of waterbody-specific fish consumption advisories as “do not eat all fish species.”

Response: Spring Lake fork of Bound Brook has been added to sublist 5 for PCBs.

21 Comment: According to the methods document on page 48, a water placed on Sublist 1 is a water where all designated uses are in full attainment. This protocol is followed on the spreadsheet identifying the integrated list by HUC-14s. The protocol is not followed on the spreadsheet showing the integrated list by lakes for: Alcyon Lake, Allentown Lake, Hammonton Lake, Lake Matawan, Lake Musconetcong, Lenape Lake, Manahawkin Lake, North Hudson Park Lake, Round Valley Reservoir, Spruce Run Reservoir, Tuckahoe Lake, Turnmill Lake, Union Lake, and Upper Sylvan Lake. For each of these lakes, there is a designated use assessment as either Sublist 3 or 5 along with a Sublist 1 assessment.

Response: The Department has revised all lakes listed as Sublist 1 for a designated use as "Sublist 2". In the Integrated Report, no lakes have been listed on Sublist 1 indicating all uses assessed and attaining.

22 Comment: There are many instances of a specific lake appearing at the same time on both the integrated list of lakes by parameter spreadsheet and the integrated list of HUC-14s by parameter spreadsheet. This will cause double-counting. Please eliminate these double listings.

Response: The lake assessment was not integrated with the subwatershed assessments in 2006. However, some of the subwatershed names may include reference to the predominate feature in the subwatershed which could be a lake. For example, 02030104090030-01 is named "Deal Lake". The Department has not made any changes to the assessment unit names.

23 Comment: The methods document refers to Sublists 4A, 4B and 4C. The May 1, 2006 public notice states that every Sublist 4 assignment refers to instances where a TMDL is in place, that is, as Sublist 4A. Please make it clear if Sublist 4B (other enforceable pollution control requirements are reasonably expected to result in the attainment of the water quality standard in the near future) and Sublist 4C (impairment is not caused by a pollutant) are not being used.

Response: All non lake assessment units are only Sublist 4A. The final list has been revised to Sublist 4A for clarification.

24. Comment: The following waterbodies were identified in the April 2004 NEPPS Annual Performance Report (under the Watershed Management program implementation activity description) as having Watershed Management Plans implemented with the goal of removing them from Sublist 5: Adams Branch, Great Falls, and Holmes Creek. Also, Wreck Pond is identified as having a restoration plan implemented in order to solve the bacteria problem and should also appear as Sublist 5 for bacteria or Sublist 4B. Right now, Wreck Pond shows no information in the column for bacteria. But Wreck Pond brook is both Sublist 5 and 4. None of these waters currently appears on either Sublist 4b or 5. Until these waters meet the WQS for which they were originally determined to be impaired, these waters must appear on either Sublist 4B or 5.

Response: Wreck pond has been corrected and is on Sublist 4B. Adams Branch, Great Falls, and Holmes Creek were not specifically listed on the State's 2004 303(d) but were located near an impaired segment. We determined that these plans would not address the impairment for the entire segment. Therefore, the assessment unit is listed on the appropriate sublist either Sublist 4 or Sublist 5 on 2006. .

Other

25 Comment: Page 59 of the methods document states that relevant federal agencies will be contacted. Please make sure to include in these contacts: the U.S. Fish & Wildlife Service via email to Tim_Kubiak@fws.gov and the NOAA Fisheries via email to Julie.Crocker@noaa.gov.

Response: These email addresses have been added to our address book and will be included.

26 Comment: NJDEP does not provide source identification for the draft 2006 section 303(d) list. While source identification is optional, an ADB or an ADB-compatible submission requires a preliminary determination of sources. Sources may be identified as point, nonpoint or unknown. Please include a preliminary source determination as part of your 303(d) list. CSO-permitted facilities are substantial contributors to water quality issues associated with pathogens, as per the *New Jersey 2004 Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d))*(page 128). For the purposes of the 2006 section 303(d) list, please identify:

(i) the current waterbodies on the proposed 2006 section 303(d) list that are associated with specific CSO-permitted facilities;
(ii) the waterbodies on the 2004 303(d) list that are associated with specific CSO-permitted facilities; and,
(iii) what, if any, water quality data is available for waterbodies associated with these permitted facilities and not proposed for inclusion on the section 303(d) list.

Response: The Department has identified sources, including CSOs, for each designated use and has provided that information to RTI to include in New Jersey's ADB submittal.

27 Comment: The methods document makes reference to a Sublist 5B as meeting the requirements under section 303(d) yet there is no Sublist 5B presented in the May 1, 2006 public notice and the methods in the methods document do not refer to placement of impaired waters on a Sublist 5B.

Response: Based on feedback from Region 2, the Department did not use Sublist 5B and the Methods Document has been revised to reflect this.

28 Comment: There are many instances where abbreviations or acronyms are used as the assessment unit names. To the untrained eye, these might be impossible to decipher. Examples are: LDRV tribs, GEHR, Dl Bay, Big T Ck SB, Atl Cst, CM inlet, Arhter Kill (should be Arth<u>u</u>r Kill). Please either spell these out or provide a key defining them.

Response: The USGS HUC 14 number is used as the assessment unit ID and the associated USGS HUC 14 name was used as the assessment unit name, therefore insuring that each waterbody had a unique standardized name. This information is available in the GIS coverage.

29 Comment: The use of "N/A" on the integrated list spreadsheet by designated use should be defined as "not applicable," if this is what it stands for.

Response: A definition has been added to the tables.

30 Comment: "Cloce Acres Lake" should be "Clove Acres Lake."

Response: The Department made the change.

31 Comment: When a lake name appears twice but in different WMAs on the integrated list by lakes spreadsheet, please confirm that these are unique listings.

Response: The WMA number is used to differentiate between lakes having a similar name.

Data Source	Data Type	Web Link	Address
Atlantic County Health Department	Beach data	Environmental Health - Atlantic County Government	Stillwater Building 201 South Shore Road Northfield, NJ,08225 (609) 645-7000
Brick Township MUA	Ambient surface water (Metedconk River)		Brick Township Municipal Utilities Authority 1551 Highway 88 West Brick, NJ 08724 Phone: 732-458-7000
Cape May County Health Department	Beach data	Cape May County - Hot Topics-Bathing Beach Reports	Cape May County Health Department 4 Moore Road Cape May Court House, NJ 08210 Phone (609) 465-1187 Fax (609) 465-3933
DRBC	Ambient surface water (Delaware River)		P.O. BOX 73P.O. BOX 7360, West Trenton, NJ 08628-0360 Voice (609) 883-9500 FAX (609) 883-9522
Hackensack Meadowlands Commission	Ambient surface water	Meadowlands Environmental Research Institute	Meadowlands Environment Center 2 DeKorte Park Plaza Lyndhurst, NJ 07071 201-460-8300
Hagedorn Center for Geriatrics Wastewater Treatment Plant	Rocky Run Biological		Amy S. Greene Enviromental Consultants, 18 Commerce Street Plaza,Flemington, NJ 08822-1743 (908) 788-9676
Hatch Mott McDonald	Black Brook		Micheal S. Bennett, Hatch Mott McDonald, 27 Bleeker Street, MillBurn, NJ 07041-1008 (937) 912-2541
Hatch Mott McDonald	Millstone		Jurek Patoczka, Hatch Mott McDonald, 27 Bleeker Street, MillBurn, NJ 07041-1008 (937) 912-2541
HydroQual, Inc	Ambient surface water (Dead River)		HydroQual, Inc. 1200 MacArthur Blvd. Mahwah, NJ 07430 Phone: (201) 529-5151 Fax: (201) 529-5728
HydroQual, Inc. and Warren County MUA	Ambient surface water (Pequest River)		WC (Pequest River) MUA P.O. Box 159, Belvidere, NJ 07823 475-5412 / HydroQual, Inc. 1200 MacArthur Blvd. Mahwah, NJ 07430 Phone: (201) 529-5151 Fax: (201) 529-5728 (Patricia Kehrberger)
Interstate Environmental Commission	Ambient surface water (NY/NJ Harbor area)	http://www.iec-nynjct.org/	311 West 43rd Street - Suite 201 New York, New York 10036 Phone: (212) 582-0380 Fax: (212) 581-5719
Monmouth County Health Department	Ambient surface water and biological data	Water Quality Monitoring	Monmouth County Health Department 3435 Hwy. 9 Freehold, NJ 07728 (732) 431-7456
Musconetcong S.A./ Najarian Ass.	Ambient surface water (Musconetcong)		Tavit Najarian. Najarian Ass. Industrial Way West. Eatontown, NJ 07724
NJDEP	Shellfish data, Ambient surface water and biological data	http://www.nj.gov/dep/wmm/monitoringdata.html	NJDEP Water Monitoring and Standards, PO 409, 401 E. State Street, Trenton, NJ 08625
Ocean County Health Department	Beach data	http://www.ochd.org/beach/	Ocean County Health Department 175 Sunset Ave. Toms River, NJ 08754 (732) 341-9700 or 1-800-342-9738

Data Source	Data Type	Web Link	Address
Omni Environmental	southwest branch Rancocas Creek, biological		211 College Road East, Princeton, NJ 08540-6623 (609) 243-9393
Passaic Valley Sewerage Authority	Ambient surface water		739 Hastings Street Traverse City, MI 49686 Phone: (231) 941-2230 Fax: (231) 941-2240 (M. De Grave)
Pequannock River Coalition	Ambient Surfsce water - temp. Pequannock and Wannaque		Ross Kushner, PO Box 392, Newfoundland, NJ 07435 (973) 492-3212
Pinelands Commission	Ambient surface water and biological data	New Jersey Pinelands Commission | Major Research Projects	Pinelands Commission Science Office P.O. Box 7 New Lisbon, New Jersey 08064 Phone: (609) 894-7300 Fax: (609) 894-7330
Princeton Hydro,LLC (Eric Silldorf))	Sidney Brook Biological and chemical		Princeton Hydro, LLC 1108 Old York Road, Suite 1 • PO Box 720 • Ringoes, NJ 08551 • Telephone: 908-237-5660 • Fax: 908-237-5666
Princeton Hydro,LLC (Fred Lubnow)	Ambient surface water (Musconetcong and Hopatcong)		Princeton Hydro, LLC 1108 Old York Road, Suite 1 • PO Box 720 • Ringoes, NJ 08551 • Telephone: 908-237-5660 • Fax: 908-237-5666
Sussex County MUA	Ambient surface water (Papakating River)	http://www.wallkillriver.org/	Sussex County Municipal Utilities Authority/ Wallkill River Watershed Management Group 34 South Route 94 Lafayette, NJ 07848 (973)-579-6998 x 109
TRC Omni Environmental (Lisa Evrard)	Ambient surface water (Lawrence Brook)	TRC Omni Environmental Corporation - Staff / Contact	TRC Omni Environmental Corporation Research Park 321 Wall Street Princeton, New Jersey 08540-1515 Tel: 609-924-8821 / Fax: 609-924-8831
TRC Omni Env'l Corp.Mike Wright)	Beaver Brook Biological		321 Wal Street, Princeton, NJ 08540-6623 (609) 924-882
USEPA	Ambient surface water	http://www.epa.gov/storet/	
USGS	Ambient surface water	http://waterdata.usgs.gov/nwis/sw	810 Bear Tavern Rd., Suite 206 West Trenton, NJ 08628 Phone: (609) 771-3900 Fax: (609) 771-3915
Western Monmouth UA	Duhernal Lake		Allied Biological, Inc. of NJ 580 Rockport Rd., Hackettstown, NJ 07840 973.579.6998 ext 109
NJ Meadowlands Commission			Diane Trapp, New Jersey Meadowlands Commission, 1 DeKorte Park Plaza,
NJ Harbor Discharge Group	Passaic River ambient chemical data		GLEC 739 Hastings St., Traverse City, MI 49686 231-941-2240 Mick DeGrave

2006
Integrated Water Quality Monitoring and Assessment Methods

This document was prepared pursuant to Sections 303(d) of the Federal Clean Water Act

State of New Jersey
Department of Environmental Protection
Water Monitoring and Standards

Jon Corzine, Governor
Lisa P Jackson, Commissioner

December 2006

2006 Integrated Water Quality Monitoring and Assessment Methods

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List of Acronyms and Abbreviations

AGWQN	Ambient Ground Water Quality Monitoring Network
AMNET	Ambient Biological Monitoring Network
AQLa	Aquatic Life Acute
AQLc	Aquatic Life Chronic
AU:	Assessment unit.
BMP(s)	Best Management Practice(s)
BPJ	Best Professional Judgment
ASMN	Ambient Stream Monitoring Network
C1	Category 1
CALM:	Comprehensive Assessment and Listing Methods
CCMP:	Cooperative Coastal Monitoring Program
CEHA:	County Environmental Health Act
CLP	Clean Lakes Program Phase I diagnostic studies
DF	Dissolved fraction
DFW	Division of Fish and Wildlife
DO	Dissolved Oxygen
DRBC	Delaware River Basin Commission
DRP	Dissolved Reactive Phosphorus
DSRT	Division of Science, Research and Technology
DWQS	Drinking Water Quality Standards
EQUIS	Earthsoft's EQUIS
EWQ	Existing Water Quality (network)
FC	Fecal Coliform (bacteria)
FW	Fresh Water
FW1	Fresh Water Category 1
FW2	Fresh Water Category 2
GIS	Geographic Information System
GW	Groundwater
GWIA	Groundwater Impact Areas
HE	Harbor Estuary Program
HH	Human Health
HUC	Hydrologic Unit Code
IBI	Index of Biotic Integrity
IEC	Interstate Environmental Commission (formerly Interstate Sanitation Commission)
LWQA	Lake Water Quality Assessment Reports
CWA	Federal Clean Water Act
MA1CD10	minimum average 1 day flow with a statistical recurrence interval of 10 years
MA7CD10	minimum average 7 day flow with a statistical recurrence interval of 10 years

MA30CD5	minimum average 30 consecutive day flow with a statistical recurrence interval of 5 years
MCL	Maximum Contaminant Level
MDL	Maximum Detection Limit
MPN	Most Probable Number (of Fecal Coliform bacteria)
NAWQA	National Ambient Water Quality Assessment
NJ	New Jersey
N.J.A.C	New Jersey Administrative Code
NJADN	New Jersey Air Deposition Network
NJDEP	New Jersey Department of Environmental Protection
NJDHSS	New Jersey Department of Health and Senior Services
NJIS	New Jersey Impairment Score
NJPDES	New Jersey Permit Discharge Elimination System
NJLMP	New Jersey Lake Management Program Reports
N.J.S.A.	New Jersey Statutes Annotated
NO_2	Nitrite
NO_3	Nitrate
NRCS	National Resource Conservation Service
NSSP	National Shellfish Sanitation Program
NWIS	National Water Information System. USGS's water information database
NY	New York
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
P.L.	Public Law (federal)
PPM	parts per million
PPB	parts per billion
QUAPP	Quality Assurance Project Plan
RF3	River Reach File 3
RBP	Rapid Bioassessment Protocol
SC	Saline Coastal
SE	Saline Estuary
SIIA	Sewage Infrastructure Improvement Act
SRP	Site Remediation Program
STORET	Storage and Retrieval, USEPA's water quality database
STP	Sewage Treatment Plant
SWAP	Source Water Assessment Program
SWQS	Surface Water Quality Standards
TCE	Tetrachloroethlylene
TIBC	(Interagency) Toxics in Biota Committee
TMDL	Total Maximum Daily Load
TIN	Total Inorganic Nitrogen
TM	Trout Maintenance
TP	Total Phosphorus or Trout Production
TR	Total Recoverable

TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WCE	Water Compliance and Enforcement
WLA	Waste Load Allocation
WMA	Watershed Management Area
WQ	Water Quality
VOC	Volatile Organic Compound
305(b):	Water Quality Inventory Report
303(d):	Impaired Waterbodies List

1.0 Introduction

1.1 Background

The US Environmental Protection Agency (USEPA) began issuing guidance (USEPA 2001) for the development of an Integrated Water Quality Monitoring and Assessment Report (Integrated Report) by the states beginning with the Year 2002 submittal. This guidance recommended, for the first time, that states integrate their Water Quality Inventory Report (Section 305(b) of the Clean Water Act) with their Impaired Waterbodies List (Section 303(d)). USEPA reiterated this recommendation in their guidance for the 2004 List (USEPA 2003) and, once again, for the 2006 List (USEPA 2005).

The New Jersey Department of Environmental Protection's (Department) 2006 Integrated Report is intended to provide an effective tool for maintaining high quality waters and improving the quality of waters that do not attain their designated uses. The Integrated Report also provides water resource managers and citizens with detailed information regarding the following:

- Delineation of water quality assessment units, providing geographic display of assessment results;
- Methods used to assess Designated Use attainment status;
- Designated Use attainment status;
- Management strategies (including Total Maximum Daily Loads (TMDLs) under development to attain water quality standards;
- Pollutants and waters requiring TMDLs;
- TMDL development schedules;
- Progress toward achieving comprehensive assessment of all waters;
- Additional monitoring needs and schedules.

The USEPA Guidance for developing the 2006 Integrated Report (USEPA 2005) recommends placing the assessment results into one of five specific categories. USEPA Guidance defines the five categories as follows:

Category 1: A waterbody is attaining all designated uses and no uses are threatened.
Category 2: A waterbody is attaining the designated use.
Category 3: Insufficient or no data and information are available to determine if the designated use is attained.
Category 4: The waterbody is impaired or threatened for one or more designated uses but does not require the development of a TMDL . There are three subcategories:
- **A.** A TMDL has been completed for the impairment parameter for the waterbody.
- **B.** Other enforceable pollution control requirements are reasonably expected to result in the conformance with the applicable water quality standard(s) in the near future.
- **C.** Impairment is not caused by a pollutant.

Category 5: The designated use is not attained. The waterbody is impaired or threatened for one or more designated uses by a pollutant(s), and requires a TMDL.

(Note: The Department has chosen to use the term "sublist" rather than "category" when referring to the five parts of the Integrated List to eliminate confusion between the Category 1 of the Integrated List and Category 1 waters under Surface Water Quality Standards (SWQS)).

The Department elected to develop an Integrated Report for New Jersey since this approach offers several significant improvements, as well as challenges, over the traditionally separate Water Quality Inventory and Impaired Waterbodies List Reports. Through the Integrated Report, the USEPA and the Department have begun to implement recommendations regarding comprehensive monitoring strategies included in the National Research Council's Report *"Assessing the TMDL Approach to Water Quality Management"* (National Research Council, 2001). This report emphasizes the importance of science-based decision-making in both monitoring and assessment for developing an effective water quality management program.

The Integrated Report combines the non-regulatory requirements of the Water Quality Inventory Report (305(b)) with the regulation-based List of Impaired Waterbodies (303(d)), which mandates TMDL development. The success of integrating the previous reports into a single report requires an awareness of requirements and procedures. In particular, Sublist 5 of the Integrated Report represents the USEPA reporting requirements under Section 303(d) (Impaired Waterbodies), and the remaining sublists represent assessment under Section 305(b) (Water Quality Inventory). The regulatory requirements (i.e., USEPA approval and adoption; public participation, etc.) for the 303(d) impaired waterbodies listing, therefore, apply only to Sublists 4 and 5 of the Integrated List.

The Integrated Report improves water quality reporting by providing detailed descriptions of data sources and assessment methods as a basis for sound, technical assessment decisions. In addition, assessment results are represented in a spatial context, presenting a clearer picture of water quality across the state. Monitoring needs and schedules are described, facilitating the articulation of monitoring priorities and identifying opportunities for cooperation with other agencies and watershed partners. TMDL needs and schedules, as well as other management strategies, are defined to convey plans for water quality improvements. Finally, the public participation aspects provide opportunities for data submittal and open discussion of water quality assessment methods and results.

The methods used to develop New Jersey's Integrated Report are described in this document (Methods Document). The goal of the Methods Document is to provide an objective and scientifically-sound waterbody assessment methodology including:

- A description of the data the Department will use to assess attainment of the designated uses;
- The quality assurance aspects of the data;
- A detailed description of the methods used to evaluate designated use attainment;
- The rationale for the placement of waterbodies on one of the five sublists.

The Methods Document is a companion to the Integrated Report. It is anticipated that this is an evolving document that will be modified, as appropriate, to reflect changes in assessment methodology from one reporting cycle to the next.

1.2 Summary of Major Changes from the 2004 Methods Document

Reporting. USEPA uses the terms "assessment unit" and "waterbody" interchangeably. The Department will use the term "assessment unit" when referring to the spatial extent of a waterbody being assessed.

In 2004, the Department evaluated each assessment unit by comparing specific chemical, physical and biological parameters with the surface water quality criteria and placing the assessment unit/parameter combination on one or more of the sublists (i.e. the Metedeconk River, NB at Jackson was listed on Sublist 1 for nitrates, on Sublist 3 for pH and TSS and on Sublist 5 for aquatic life, phosphorus and fecal coliform). In the 2006 Integrated Report, the Department has identified the designated uses applicable to each assessment unit and assessed the status of use attainment for each applicable designated use. Designated uses include:

- aquatic life ,
- recreation,
- fish consumption,
- shellfish harvesting for the purpose of consumption,
- drinking water supply,
- industrial water supply, and
- agricultural water supply.

The assessment unit is then placed on the appropriate sublist for each use.

An assessment unit may be listed in one or more sublists depending on the results of the assessment.(i.e., on Sublist 2 for drinking water, Sublist 3 for aquatic life and Sublist 5 for recreation). If all uses for an individual assessment unit are assessed and attained, the assessment unit will be placed on Sublist 1.

Note that Sublist 2 was not used in 2004. If an individual pollutant was "Full Attain", the assessment unit was placed on Sublist 1. For the 2006 List, an individual designated use which is "Attaining" is placed on Sublist 2. When all designated uses are "attaining", the assessment unit will be placed on Sublist 1.

In order to assess whether or not an assessment unit supports a designated use, the Department has identified a suite of parameters that will serve as the minimum data set associated with each designated use. If one or more designated uses are assessed as "non-attain" (Sublist 5), the assessment unit with the pollutant(s) causing the non-attainment status will be identified on the "303(d) List of Impaired Waters with Priority Ranking". The ranking refers to the priority given a specific pollutant when scheduling the pollutant for a TMDL. Refer to Section 8 for more details on the priority ranking and

TMDL schedules. When the pollutant causing non-attainment is not known, the pollutant will be listed as “pollutant unknown” or “toxic unknown”.

Use of ADB. USEPA is revising its Assessment Database (ADB) to accept a waterbody/designated use approach. The Department is working with USEPA to facilitate use of ADB for reporting its 2006 assessment results.

Spatial Extent. In previous Integrated Reports, New Jersey used hydrology, specifically stream order, to extrapolate the extent of attainment or impairment from the area monitored and assessed to a larger stream segment. As the Department increased the scale of resolution for rivers and streams (once 1:100,000; now 1:24,000; soon to be 1:2,400), the number of unassessed waters and stream miles increased. Since this increase of the number of unassessed waters is incompatible with the goal of providing a comprehensive assessment of state waters, the Department developed a new spatial extent methodology that uses watershed delineations to represent assessed waterbodies. Using the watershed spatial extent method, the State’s waters are delineated based on Hydrologic Unit Code (HUC) 14 subwatersheds. A HUC is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the U.S. Geological Survey on State Hydrologic Unit Maps. Monitoring site(s) located within the HUC-14 subwatersheds are extrapolated to represent the waters within the entire HUC boundary.

In practice, the HUC-14 approach provides a more conservative assessment since any impairment of any waterbody in a given HUC-14 watershed will result in that entire watershed being listed as impaired for that use/parameter. In addition, where a HUC-14 watershed contains waters of different classification, the more stringent classification was used to assess impairment and that impairment was then applied to the entire watershed. This approach is consistent with the Department’s watershed-based approach to water quality management and serves as a useful screening tool for flagging impaired watersheds on a statewide basis. However, because of the extent of extrapolation required for such an approach, more detailed assessment is required on a watershed basis to determine the actual cause, source and extent of impairment in the HUC-14 watershed before specific regulatory or other action could be taken to effectively address the impairment. This more detailed assessment is generally done through the development of Total Maximum Daily Loads (TMDLS), water quality-based effluent limits (WQBELs) or watershed restoration projects. The application of the HUC-14 approach in determining the spatial extent of an assessed impairment is discussed in more detail in Section 7 of this Document.

De minimis: During the assessment process, the Department may identify small isolated areas within a HUC-14 assessment unit that do not meet the designated use(s) but which are considered *de minimis*, or of little significance, to the overall assessment of the waterbody. Most *de minimis* areas are small bathing beaches and isolated shellfish restrictions. These *de minimis* areas will be identified in the Integrated Report and are regulated for remediation under other programs such as National Shellfish Sanitation Program and the Department of Health and Senior Services.

2.0 Statutory Authority and Guidance

The rules, regulations, and guidance that are relevant for the development of the Integrated Report are briefly discussed below.

The Federal Water Pollution Control Act and its subsequent amendments are collectively known as the Clean Water Act (CWA). The CWA provides the statutory requirements for numerous water programs including Surface Water Quality Standards, Water Quality Inventory Report, Impaired Waterbodies List, and Total Maximum Daily Loads (TMDLs).

Surface Water Quality Standards (SWQS) include water quality goals, policies, numeric and narrative criteria (including design flows) and waterbody classifications. The terms “applicable SWQS” and “applicable criteria” refer to the legally binding SWQS and criteria for the waterbody depending on jurisdiction and waterbody classification. Federal SWQS are promulgated by the USEPA. As required, New Jersey has adopted SWQS that are at least as stringent as the federal standards. The latest revisions to the New Jersey SWQS were adopted at N.J.A.C. 7:9B on June 20, 2005. The numerical criteria for some toxic parameters are found in USEPA’s National Toxics Rule (CFR, 1989). The Delaware River Basin Commission (DRBC) establishes standards for the Delaware River, estuary, and tributaries to the head of tide. The most recent standards for the Delaware River were promulgated on October 23, 1996 (DRBC, 1996). The New Jersey Department of Health and Senior Services (NJDHSS) establishes sanitary quality standards and beach closure procedures for ocean, bay, and lake bathing beaches (NJDHSS, 2004). Sanitary criteria for shellfish harvesting in coastal waters are set by the Federal Food and Drug Administration (FDA) through the National Shellfish Sanitation Program.

Water Quality Inventory Reports (305(b)) are prepared every two years by states and submitted to the USEPA as required under Section 305(b) of the CWA. Water Quality Inventory Reports contain assessments of water quality for waters of the state as well as descriptions of applicable water resources management programs. These reports are used by Congress and the USEPA to establish program priorities and funding for federal and state water resources management programs. The USEPA issues guidance as needed regarding the preparation of water quality inventory reports.

Impaired Waterbodies Lists (303(d)) are required under Section 303(d) of the CWA. Federal regulations on implementation of the CWA can be found at 40 CFR 130.7. New Jersey regulations regarding Impaired Waterbodies Lists are found at N.J.A.C. 7:15-6. These regulations require identification of impaired waterbodies, i.e., waters for which required pollution controls were not stringent enough to achieve the State’s surface water quality standards. Impaired Waterbodies Lists are required every two years and must be developed based on a documented methodology that includes an evaluation of existing and readily available data. Waterbodies continue to be included on subsequent Impaired Waterbodies Lists until: 1) TMDLs are completed; 2) Applicable criteria are met; or 3) the original basis for the listing is shown to be flawed (See Section 7.3). Public participation in the development of Impaired Waterbodies Lists is required (See Section 11). The USEPA is required to review and approve each State's 303(d) List. In New Jersey, the final 303(d) List (Sublist 5 with Priority Ranking) is adopted as an amendment to the Statewide Water Quality Management Plan, as required in N.J.A.C. 7:15-6 (see Section 11).

The state is required to establish TMDLs for the waterbodies identified on the 303(d) List. The schedule for TMDL development over the next two years is developed based on a priority ranking and is included as part of the Integrated Report. A TMDL specifies the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet water quality standards, and allocates pollutant loadings among point and nonpoint pollutant sources.

Integrated Report Guidance. The USEPA provided guidance to the states for developing Integrated Reports (USEPA 2001, USEPA 2003). The guidance for the 2006 Integrated Report is available on the web at http://www.epa.gov/owow/tmdl/2006IRG and an overview of how the Department assesses waters based on this approach is described in Section 8.0 (Integrated Listing Guidance Methods). The Integrated Report guidance does not alter the statutory provisions in sections 305(b) and 303(d) of the Federal Clean Water Act, nor does it change existing rules governing development of the Impaired Waterbodies Lists discussed above. Since the Year 2000 Integrated Report, the USEPA has recommended the use of five sublists to convey water quality standards attainment status.

Assessment Scope. Most of the assessment units (HUCs) have information from at least one monitoring station, but there are situations where the assessment units have data from multiple monitoring stations. The Department will use a weight of evidence approach to determine if all data within the assessment unit are of equal value (See Section 5 on Weight of Evidence). When all data are of equal weight, the worst case assessment results will apply to the entire assessment unit. If there are data from multiple stations whose data strongly suggest that substantial areas of the assessment unit are significantly different and warrant different assessments, the Department may choose to divide the assessment unit into smaller assessment units. However, it is the Department's desire that the assessment units remain as consistent as possible over multiple assessment cycles to allow the development of trends and facilitate tracking of waterbodies from one cycle to the next, and therefore, will subdivide an assessment unit in as few cases as possible.

In assessment units which are data rich (i.e., shellfish waters), the Department will consider the overall size of the assessment unit and the aerial extent of the impact before applying the worst case assessment. If the impaired area is considered *de minimis*, details as to the size and rational for *de minimis* status will be explained in the Integrated Report (See Section 4.2, Recreation, Section 4.4 Shellfish Consumption and Section 5.0, General Considerations for a more detailed explanation).

3.0 Spatial Extent of Assessments

Currently, chemical water quality and biological monitoring are performed at sampling sites throughout the State's waters. Reporting requirements in CWA sections 305(b) and 303(d) require that these point assessments be extrapolated to river miles, lakes, or coastal waters and be reported as either linear miles, acres or square miles for 305(b), or as discrete waterbodies for 303(d). Spatial extent is the methodology employed by the Department to extrapolate water quality status from a point (the monitoring location) to discrete stretches of streams or waterbodies (for lakes and coastal waters).

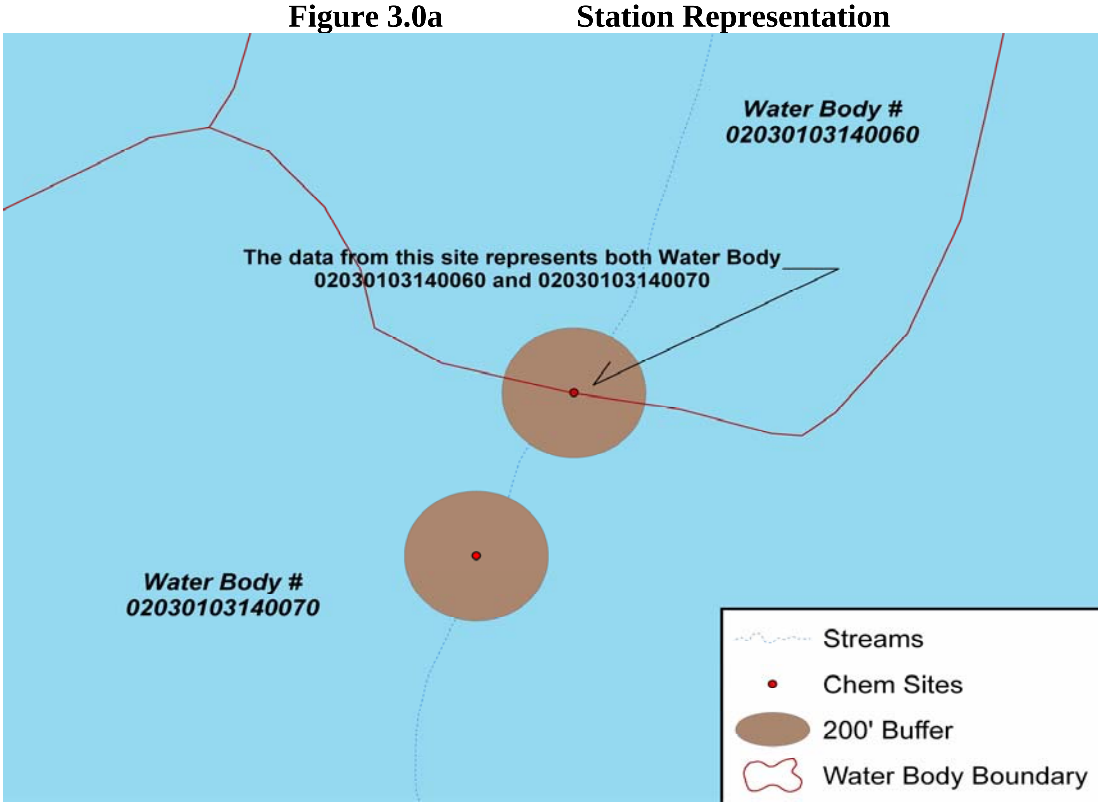
In accordance with EPA's requirement for states to assess all waters, the Department has reevaluated its spatial extent method for the 2006 Integrated Report. In the 2002 and 2004 Integrated Reports, New Jersey used spatial extent assessments based primarily on hydrology, specifically stream order, to determine spatial extent and extrapolate monitoring assessments. This method often excluded small tributaries from consideration. However, with the advances of digital technology, the resolution for rivers and streams significantly increased within the State's Geologic Information System (GIS) from 1:100,000 to1:24,000. This resolution will soon reach 1:2,400. As hydrologic resolution increased, the number of small tributaries increased, creating a significant increase in total river miles counted as waters of the state while also increasing the extent of unassessed waters, due to those small tributaries excluded under the previous assessment methodology to extrapolate monitoring assessments. Since this expansion of unassessed waters is incompatible with the goal of comprehensive assessments of State waters, a new spatial extent method was developed to help resolve this issue since the expansion of the monitoring networks to cover all small tributaries is not fiscally possible. The 2006 spatial extent method is based on watershed delineations.

This new method provides a more comprehensive coverage of the State's waters, permanent assessment unit delineations (i.e., the assessed area will not change as the sampling sites change), as well as flexibility to incorporate smaller tributaries as hydrologic resolution increases in the future. In the subwatershed spatial extent method for rivers, the State's waters are delineated based on HUC-14 subwatersheds. A HUC is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the U.S. Geological Survey on State Hydrologic Unit Maps. HUC-14's range in size from 0.1 to 42 square miles, with an average size of 8.5 square miles. Under the subwatershed spatial extent method, monitoring site(s) located within the HUC-14 subwatersheds are extrapolated to represent all streams and tributaries within the HUC boundary.

Assessment Unit Identification. Each assessment unit was delineated from the State of New Jersey's HUC-14 GIS Coverage. This HUC-14 coverage has a 14-digit numbering system associated with each GIS polygon. This 14-digit code was used as the assessment unit identification number (ID). The HUC-14 coverage also has a unique name associated with each HUC. This name was used as the assessment unit name. The Department decided to split some HUC-14 polygons as described above in Section 3.1. After a HUC-14 was split, an assessment unit identification system had to be derived for the newly created HUC. The new IDs were determined using the original HUC-14 numbering system, with the addition of a two digit ID number added to the end. For example, the HUC-14 with the 14-digit code of 02030104010030 had to be cut into two separate assessment units. The new assessment units are now identified as 02030104010030-01 and 02030104010030-02. The new HUCs kept the assessment unit name but with "upstream" or "downstream" added.

Station Representation. It is common for monitoring sites to be placed at the terminus of one HUC as it flows into an adjacent HUC. When a monitoring site fell within 200 feet of the delineation along a contiguous length of stream, the assessment based upon that site is applied to both the HUC containing the site and to the adjacent HUC as shown in Figure 3.1a below. This assignment is made provided that there are no significant tributaries, impoundments, or other hydrological alterations that could impact water quality between the monitoring site and the neighboring HUC. In addition, stations whose 2004 spatial extent extending into an adjacent HUC were also evaluated on a case-by-case basis to determine if the data from these stations should be used in assessing the adjacent HUC. Once again, significant tributaries, impoundments, or other hydrological alterations, as well as land use and major roads that could impact water quality between the monitoring site and the neighboring HUC, were used in the evaluation.

Figure 3.0a Station Representation



Assessment Scope. Most of the assessment units (HUCs) have information from a single monitoring station but there are situations where the assessment units have data from multiple monitoring stations. The Department will use a weight of evidence approach to determine if all data within the assessment unit is of equal value (see Section 5 on Weight of Evidence). When all data are of equal weight, the worst case assessment results will apply to the entire assessment unit. If there are data from multiple stations whose data strongly suggest that substantial areas of the assessment unit are significantly different and warrant different assessments, the Department may choose to divide the assessment unit into smaller assessment units. However, it is the Department's desire that the assessment units remain as consistent as possible over multiple assessment cycles to allow the development of trends and facilitate tracking of waterbodies from one cycle to the next and will, therefore, subdivide an assessment unit in as few cases as possible.

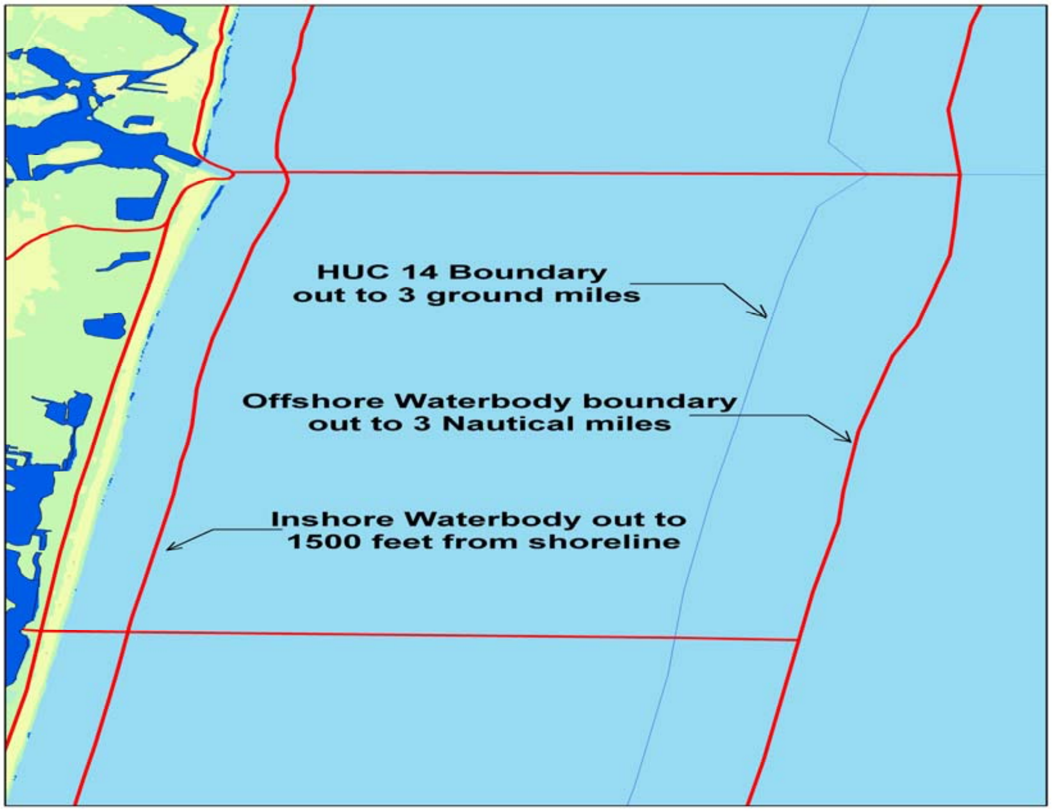
3.1 Assessment Units in Coastal Waters

For estuaries, the previous spatial extent method was based primarily on shellfish classification areas to determine assessment unit delineations. Since the classification areas are updated each year, in the past the assessment unit boundaries and the stations within an assessment unit constantly changed. As the number of waterbodies varied from reporting cycle to reporting cycle, it became extremely difficult to track trends for a particular assessment unit and the need for more permanent assessment unit delineations became evident. Similar to the Year 2006 assessment method for rivers and streams, the spatial extent method for estuaries is (now?) based on HUC-14 subwatersheds that are adjusted or divided to incorporate delineations based on hydrology (i.e., bays, inlets, inshore/offshore).

All HUCs that are located along the New Jersey coastline have been divided and realigned. The original HUC-14 delineations along the coast extended perpendicular to the shore out three statute miles. The offshore boundary of the HUC was enlarged by extending the boundary from three statute miles to three nautical miles, which represents the jurisdictional water of the State of New Jersey (see Figure 3.1a). Three nautical miles is also consistent with the boundaries employed by Water Monitoring and Standards' Bureau of Marine Water Monitoring in delineating the shellfish harvest waters under the National Shellfish Sanitation Program. In addition, previous Integrated Reports used three nautical miles as the offshore boundary to represent assessed ocean waters.

Once the offshore boundary was thus enlarged, the HUCs were divided into a nearshore HUC extending perpendicular to the shore 1500 feet out and an offshore area extending from 1500 feet to the three nautical mile boundary. The inshore HUC represents the outward extent of the designated bathing beaches along the Atlantic coast. For example, HUC-14 with the 14-digit-code of 02030104010030 had to be cut into two separate assessment units. The new assessment units are now identified as 02030104010030-01 and 02030104010030-02. "Inshore" and "offshore" were added to the HUC assessment unit names for the HUCs located along the coast.

Figure 3.1a Offshore HUC Extensions



3.2 Lake Assessments

Individual lakes in the 2006 Integrated Report are assessed as an individual assessment unit. Lakes are associated with their corresponding HUC-14 subwatershed in the manner applied to streams and coastal waters and identified by the suffix "L" following the identification number. This approach, however, may not be practical for the numerous small lakes found throughout New Jersey. The Department will re-evaluate the treatment of small lakes as individual assessment units in 2008.

3.3 Delaware River

The Delaware River Basin Commission has historically broken the river into 5 zones plus a zone 6 for the bay for water quality reporting purposes. For the Integrated Report, these zones were broken down into smaller segments by DRBC. Each assessment unit ID begins with the zone number filed by a letter representing subwatersheds within each zone. These subwatersheds were broken down further and numbered consecutively starting upstream.

4.0 Designated Use Attainment Assessment Methods

The SWQS identify specific designated uses for the waters of the State according to their waterbody classifications. Designated uses include:

- aquatic life (maintenance, migration, and propagation, see section 4.1 below),
- recreation,
- fish consumption,
- shellfish harvesting for the purpose of consumption,
- drinking water supply,
- industrial water supply, and
- agricultural water supply.

The Department uses both numeric and narrative criteria to protect designated uses. Narrative criteria are descriptions of the conditions necessary for an assessment unit to attain its designated uses while numeric criteria are concentration values deemed necessary to protect designated uses. To implement narrative data, which are qualitative in nature, the Department has identified assessment approaches, also known as “translators”, to quantitatively interpret narrative criteria. This section outlines the assessment methodologies for designated use attainment that include the utilization of both numeric and narrative criteria.

The Department has identified the parameters which are used to assess a specific designated use. Sufficient data for every parameter are not always available and therefore, a minimum suite of parameters necessary to assess the use has also been specified. The designated use will be evaluated as attaining or non-attaining if sufficient data for the minimum suite of parameters are available. The parameters for each designated use are described in Table 4.0 below.

Table 4.0 Data Requirements

Designated Use	Data Requirements
Aquatic Life	If available, benthic macroinvertebrate and fin fish data, pH, DO, temperature, total phosphorus, TDS and TSS. DO is the minimum data requirement. (Temp & DO trout)
Recreation • **Primary and Secondary Contact** • **Aesthetics (Lakes only)**	Enterococcus, fecal coliform or E. coli Aesthetic listings are “carry-overs” and were assumed to be phosphorus related. The Department is developing a methodology to better assess lakes which should be available for the next assessment cycle.
Fish Consumption	Fish Consumption Advisories for one or more parameters
Shellfish Harvesting	Fecal coliform or total coliform
Drinking Water Supply	Metals, toxics, nitrate, TDS, chloride, and source water use restrictions. The minimum data requirement is nitrate.
Industrial Water Supply	TSS and pH
Agricultural Water Supply	TDS and salinity

4.1 Aquatic Life (AL) Designated Use Assessment

Biological Data and Assessments: General Considerations. The Department prefers to assess the health of aquatic biota (and the degree to which a waterbody attains the aquatic life designated use) by directly evaluating biotic communities. This direct evaluation is done using biological information that integrates a full suite of environmental conditions over many months (for macroinvertebrates) to many years (for fish-based indicators). When the preferred data are not available, the Department must rely on chemical water quality data, such as dissolved oxygen (DO), to indirectly assess the health of the biota, even though chemical water quality data provide only a "snapshot" in time rather than the longer-term assessment supported by biological indicators.

The Department prefers to base all of its aquatic life designated use assessments upon benthic macroinvertebrate data, used in conjunction with fin fish community data and supplemented with a broad suite of biologically relevant physical/chemical data (e.g., dissolved oxygen, temperature, toxic pollutants). Unfortunately, fin fish data are currently available only for certain locations and assessment categories (see “Fin Fish Assessment” later in this section). Chemical water quality data are also limited as there are many more benthic monitoring sites in New Jersey (greater than 800) than chemical monitoring sites; therefore, many biological sites lack corresponding chemistry data. In some instances, chemical monitoring sites have no corresponding biological data. While the Department is steadily working to expand both fish and chemical monitoring to achieve a complete dataset for each assessed waterbody, the Department has developed methods to ensure that all aquatic life assessments are scientifically-sound even when only biological or only chemical water quality data are available.

River and stream biological assessments for the 2006 Integrated List were based principally upon benthic macroinvertebrate studies, used in conjunction with physical/chemical data wherever available. At selected sites, fin fish population data were employed as an additional assessment tool. Where violations of aquatic life-based criteria were found and accompanying observations of impaired biota, and physical/chemical data were also available, waters were listed as not attaining the aquatic life designated use and were also listed by the parameter(s) in exceedance of the criteria. Where violations of aquatic life-based criteria were found with accompanying observations of impaired biota but chemistry data were not available to document an actual exceedance of an aquatic life-based criterion, waters were listed as “pollutant unknown.”

The aquatic life assessment methods discussed in this manual distinguish between these two classifications due to their widely differing water quality and biological characteristics. Currently, because numerical biocriteria for assessment of aquatic life have not been adopted in the surface water quality standards, the biological indicators employed are regarded as “translators” reflecting the use attainment status in light of the narrative aquatic life criteria denoted in the previous paragraph.

Flow Effects and Biological Sampling. Research by the United States Geological Survey (USGS) has indicated that insufficient base flow can have detrimental effects on aquatic macroinvertebrate populations. The Department is currently investigating this issue more closely through several research projects being performed in cooperation with USGS, one of which would define the base flow conditions necessary to protect in-stream ecological uses including aquatic life. Until the Ecological Base Flow Goals Study has been completed, the Department assumes that the ten year seven day (MA7CD10) design flow should be sufficient to attain the aquatic life use in assessed waters. The Department realizes that in some cases, non-attainment of the aquatic life use may be due to extended drought or other actions that result in reduced base flow. If sites reflect impaired status due to extensive drought-induced low flow conditions that are not known to be anthropogenically aggravated, they will be assigned to Sublist 3 pending a re-assessment or assessed as reflecting natural conditions.

Considerations Regarding Multiple Lines of Evidence. The Department will evaluate the strength of the various data sources to determine aquatic life use attainment. Examples below denote situations where chemical water quality data might result in a determination that the waterbody does not attain aquatic life use even though the benthic macroinvertebrate (AMNET) monitoring data indicate nonimpaired status.

- More recent chemical sampling shows violations of the water quality criteria although older AMNET results indicate no biological impairment.

- The most recent assessment of an AMNET site indicates a decline in the score reflecting in the biological conditions compared to previous sampling events.
- The score is 24, which is the lowest score within the "nonimpaired" condition.
- Other studies suggest that algal growth is excessive and the waterbody may be rendered unsuitable for its designated use(s).
- Documented chemical violations of the SWQS are known to impact a biological group, such as fin fish and/or periphyton.

Conversely, the Department will evaluate the strength of data and may determine not to list a waterbody as “non-attain” for aquatic life use when violations of aquatic life criteria are observed but the AMNET results indicate no impairment, such as under the following scenarios:

- Chemical water quality monitoring data documents exceedances of pH, temperature or dissolved oxygen criteria in FW2-NT waters, but the concentrations actually represent a natural condition.
- Exceedances of chronic aquatic life criteria are observed under high flow conditions that are not representative of a chronic condition (lasting four-days).

Benthic Macroinvertebrates. The most spatially complete and robust biological indicator currently employed for the assessment of biological conditions in rivers and streams is benthic macroinvertebrates (bottom dwelling organisms, such as insects, crustaceans, snails, and worms). This indicator is applied statewide, with the exception of the Pinelands Region of New Jersey (PL waters) where the unique nature of Pinelands streams requires that alternative assessment methods be employed (see “Designated Use Assessment of PL Waters” later in this section for additional information).

All macroinvertebrate sampling must be conducted in accordance with USEPA guidance (USEPA 1989) and the Department’s field sampling procedures (NJDEP 1992). Quality control measures must be consistent with USEPA procedures (USEPA 1999) and all specimen identifications must be performed by a qualified biologist.

Initially, macroinvertebrate data collected under New Jersey’s Rapid Bioassessment Protocol (RBP) were evaluated employing the New Jersey Impairment Score (NJIS) scoring system for any stream location in the state. As the Department reviewed results, it became apparent that some assessments extended beyond the extent for which the indicator had been calibrated. In response to concerns raised by the New Jersey Pinelands Commission and other agencies, an Interagency Technical Workgroup with representation from the Department, USEPA Region II and USGS was formed to address these concerns. The workgroup developed the following guidelines for station location selection and interpreting macroinvertebrate data when using the protocol and scoring system:

- The current scoring system and protocol are not to be applied to the New Jersey Pinelands Area because of the unique nature of the low pH-adapted organisms within these waters (i.e., PL designated surface waters, as per N.J.A.C. 7:9B). These waters

include both “Preservation” and “Protection” areas within the Pinelands, the Mullica and Great Egg Harbor River watersheds as well as the eastern portions of some Delaware tributaries;
- Monitoring sites must be located at points that represent the downstream terminus of a catchment area of 6 sq. mi. or greater;
- Sites should not be located within 500 feet of a lake or impoundment outlet;
- Sites should be sampled between April and November, inclusive; and
- Sampling should avoid periods when extensive drought has induced unusually low flow conditions.

When an assessment unit was determined to be "non-attain" for aquatic life uses based exclusively on biological data (i.e., no water chemistry data were available), the source pollutant was identified on Sublist 5 as “pollutant unknown”.

Fin Fish Assessment - Fish Index Of Biotic Integrity (IBI). Beginning with the Year 2006 Integrated Report, the Fish Index of Biotic Integrity (IBI) data, which is based on fin fish populations, were used in concert with benthic macroinvertebrate data to assess aquatic life use attainment at selected sites in rivers and streams. The web site for the Department’s Bureau of Freshwater and Biological Monitoring (BFBM) provides the following description of the IBI program:

> …the BFBM began to supplement benthic macroinvertebrate monitoring with an index of biotic integrity (IBI) during the summer of 2000. An IBI is an index that measures the health of a stream based on multiple attributes of the resident fish assemblage. Each site sampled is scored based on its deviation from reference conditions (i.e., what would be found in a non-impacted stream) and classified as poor, fair, good or excellent. The current IBI measures the following metrics:
> 1. total number of fish species
> 2. number of benthic insectivorous species
> 3. number of trout and/or sunfish species
> 4. number of intolerant species
> 5. proportion of individuals as white suckers
> 6. proportion of individuals as generalists
> 7. proportion of individuals as insectivorous cyprinids
> 8. proportion of individuals as trout or proportion of individuals as piscivores (top carnivores)- excluding American Eel
> 9. number of individuals in the sample
> 10. proportion of individuals with disease or anomalies (excluding blackspot disease).

Streams sampled are currently limited to those of 5 square miles of drainage area or greater. Segments selected for sampling must have a minimum of one riffle, run, and pool habitat to be considered representative. Additional details can be viewed at http://www.state.nj.us/dep/wmm/bfbm/amnet.html.

The current IBI is only applicable to streams in northern New Jersey, specifically those waters confined to the Highlands, Ridge and Valley, and Piedmont physiographic provinces. The Bureau of Freshwater Fisheries is near completion of an IBI applicable to the Coastal Plain streams in southern New Jersey, thereby completing statewide spatial coverage for the IBI. Additional information on the IBI can be obtained at the BWBM web site at NJDEP-WM&S/BFBM, Fish Index of Biotic Integrity.

The Department is planning to upgrade the robustness of the fish IBI calibrated for the northern portion of the state in response to recommendations from the Philadelphia Academy of Natural Sciences, who conducted a detailed review of the suite of biological indicators available to the Department (macroinvertebrates, fish IBI and periphyton indicators). As a result, the Department has employed the IBI initially on a limited basis for the Year 2006 assessment. The Department relied on IBI assessments of “poor” as an indicator of impaired fish community, while IBI assessments of “excellent” and “good” were considered reflective of a non-impaired community. IBI assessments of “fair” will not be employed until the indicator can be further refined.

When available, the Department evaluated both fish and macroinvertebrate data in order to determine attainment of the aquatic life designated use. A determination of "non-attain" would ensue from an assessment of impairment from either set of data. Both sets of data must indicate " attain" to support a determination of attainment of the aquatic life use.

Lake Biological Assessments. The Department does not have a standardized biological indicator for lakes and relies upon program specific assessments provided by the Bureau of Freshwater Fisheries for a selected group of FW lakes**.** PL lakes contained in the Rancocas and Mullica River drainages are assessed by the Department using biological data collected by the New Jersey Pinelands Commission using a suite of biological indicators employed by the Commission to assess Pinelands waters. Assessment methods for each program are described in detail in section 4.1.3.

4.1.1 Aquatic Life Designated Use Assessment in Non Tidal Rivers

A. FW Non Trout Waters

The methodology for assessing the aquatic life designated use in rivers classified as Non Trout waters is outlined in Table 4.1.1a below.

Table 4.1.1a: Assessment of FW Non Trout Waters

Biological Data Available, No Chemical/Physical Data Available	
Results	**Assessment Determination**
Biomonitoring shows no impairment	Attain
Biomonitoring indicates impairment	Non-attain and listed as "pollutant unknown"
Both Biological and Chemical/Physical Data Available for Assessment	
Results	**Assessment Determination**
Both Biomonitoring and Chemical data show no impairment	Attain
Biomonitoring indicates impairment AND chemical/physical data show violations of relevant criteria	Non-attain and listed by the constituent in exce
Biomonitoring indicates impairment BUT chemical/physical data show no observable violations of relevant criteria	Non-attain and listed as "pollutant unknown"
Biomonitoring indicates non impairment BUT chemical/physical data show violations of relevant criteria	The Department will use BPJ to evaluate the weight of evidence and decide on a case by case basis.
Biological Data Not Available, Only Chemical/Physical Data Available[1]	
Results	**Assessment Determination**
Minimum data requirements unavailable	Insufficient Data
No violations of relevant criteria observed	Attain
Violations observed of relevant criteria	Non-attain for the constituent(s) in exceedance

B. FW Trout Production and Trout Maintenance Waters

Aquatic life use assessments in Trout Production and Trout Maintenance waters were based upon biological assessments, when available, and supplemented with instream dissolved oxygen (DO) and temperature data. Assessment methods are summarized on Table 4.1.1b below.

Table 4.1.1b: Assessment of Trout Production and Trout Maintenance Waters

Results	Assessment Determination
Minimum suite of parameters unavailable	Insufficient Data
Biological monitoring indicates non-impairment AND temperature and DO data meet relevant trout water criteria	Attain
Biological monitoring indicates non-impairment AND temperature and/or DO indicate violations of relevant trout water criteria	Non-attain and listed by the constituent(s) in exceedance
Biological monitoring indicates impairment and violations are observed for trout water criteria for DO and/or temperature as well as possibly other water quality constituents	Non-attain and listed by the constituent in exceedance
Biological monitoring indicates impairment and no violations are observed for trout water criteria for DO and/or temperature as well as possibly other water quality constituents	Non-attain and listed as "pollutant unknown"

C. Pinelands (PL) Waters

In the past, the Department had placed benthic macroinvertebrate assessments for PL streams on Sublist 3 (Insufficient Data) because the state-wide protocols were not appropriate for these waters due to their unique nature. The Pinelands Commission (Commission) has developed extensive biological assessments which the Department has used to assess the Aquatic Life Designated Use attainment for selected wadable streams in the Rancocas and Mullica watersheds (Watershed Management Areas 19 and 14, respectively). These assessments are based on extensive studies performed by the Commission on stream vegetation, fin fish, and anuran assemblages along anthropogenic disturbance gradients. For the Mullica drainage (Zampella, R.A., et al. 2001, and written communication) all three assemblages were employed. For the Rancocas drainage (Zampella, R.A., et al. 2003), stream vegetation and fin fish were used in lakes and streams and anuran assemblage studies were used only in lakes.

Assessments of attainment and non-attainment were established when the Commission's biological data delineated which sites represented clearly background (undisturbed) or clearly disturbed situations respectively; in other words, the Department's assessments came from the two non-ambiguous ends of the disturbance gradient. Sites lying within the more central portions of the disturbance gradient were assessed as having insufficient data and will await additional indicators or protocols to determine attainment of the Aquatic Life use. Use of the Commission's data has allowed the Department to reassess sites in the Mullica and Rancocas drainages and move some sites from Sublist 3 to 2 or 5.

The Department is working with USEPA Region II to develop a biological indicator for PL waters based upon benthic macroinvertebrates, using methodologies similar to what are currently employed in the FW classified portion of the Coastal Plain in New Jersey. Results are promising and a methodology is expected to be in use soon and provide assessments for the 2008 Integrated List.

Table 4.1.1c. Aquatic Life Designated Use Assessment Method for PL Streams

PL Biological Assessment Status	Result
All biological indicators located in highest quintile range or all but one biological indicator located in highest quintile range and remaining indicator in second to highest range.	Attainment
All biological indicators located in lowest quintile range or all but one biological indicator located in lowest quintile range and remaining indicator in second to lowest range.	Non-attainment
Biological indicators not as above, assessments tending to lie within the middle quintile ranges.	Insufficient Data

Note that if instream physical/chemical data are available and violations of aquatic life based criteria are found accompanying observations of impaired biota, the assessment unit will be listed as not attaining the designated use and listed by the parameter exceeding the SWQS. Likewise, if only biota is impaired, the assessment will be listed as “impaired – pollutant unknown”.

4.1.2 Aquatic Life Assessment in Freshwater Lakes

Fish populations are sampled by the Department’s Bureau of Freshwater Fisheries using methods such as electro-fishing, shoreline seining, and/or gillnetting. Population assessments are then performed by experienced fishery biologists to determine the lake’s actual or potential recreational value as a fishery. These assessments are based upon the diversity of a wide range of fish species and not just of species possessing recreational value. Species stocked by the Department are also identified and addressed in these assessments. As with Trout Production (TP) and Trout Maintenance (TM) streams, Trout Production and Trout Maintenance lakes require an additional data set of in-lake temperature and DO in order to perform an adequate AL assessment. TP and TM lakes which lack these required datasets will be placed on Sublist 3 until the necessary datasets are collected and assessed. The aquatic life designated use assessment methods for FW lakes not located within the Pinelands area are outlined in Table 4.1.2a.

Table 4.1.2a: Aquatic Life Designated Uses Assessment Method for FW Lakes

Aquatic Life Designated Uses Assessment Methods	Result
Fishery is well balanced, exhibiting good diversity. Consistent recruitment.***** No one species dominates the community. No observable factors limiting the fishery.	Attainment
Threatened Waters******: Fully supported fishery, however, anticipated changes in surrounding land use, lake water levels or in-lake water quality (all being consequences of human activities and not simply natural processes) have the potential to cause future declines in fishery quality.	Non-Attainment /Pollutant Unknown
Fishery assessments incomplete or insufficient to assess fishery status	Insufficient Data
Fisheries present, however, fish diversity not at potential expected for the type of lake in question due to anthropogenic activities and not natural conditions. Predators to prey populations are not in balance, inconsistent recruitment***.**	Non-Attainment /Pollutant Unknown
Fishery exhibits poor diversity as a consequence of anthropogenic activities and not natural conditions. Fishery dominated by a few tolerant species (carp, goldfish, mudminnows, killifish, etc) and/or general overall number of individuals is low. Poor recruitment* and growth of individuals.	Non-Attainment/ Pollutant Unknown

**Recruitment* refers to the number of young fish, which survive to ultimately become large enough to reproduce and/or become harvestable. For example: reproduction of a number species of fish in a lake may be good but there may be insufficient habitat cover resulting in many of these fish being eaten by their larger counterparts before they grow to sufficient size to either reproduce or be sought after by anglers. In such a scenario, recruitment is regarded as poor.

******Note that because of the nature of the information that form the basis of the *"Threatened"* category as it applies to lake aquatic life assessments, the strict 2-year window applied to conventional parameters is not applied here. "Threatened" status here operates within a broader time window, which could encompass a period of, for example, 5 years.

Pineland (PL) Lakes

As with Pineland streams, the Department has used the Pinelands Commission's extensive biological database to assess the Aquatic Life Designated Use for selected lakes in the Rancocas and Mullica watersheds (Watershed Management Areas 19 and 14, respectively). These assessments are based on extensive studies performed by the Commission of lake finfish and anuran assemblages along anthropogenic disturbance gradients. Fish and anuran data employed for the Mullica assessments are taken from Zampella, R.A., et al. 2001 and written communication; biological assessments for the Rancocas are taken from Zampella, R.A., et al. 2003, and written communication.

Assessments of attainment and non-attainment were established when the Commission's bioassessment delineated sites which represented clearly background or clearly disturbed situations respectively; in other words, the assessments came from the two non-ambiguous ends of the disturbance gradient. Sites lying within the more central portions of the disturbance gradient were assessed as having insufficient data and will await additional indicators or protocols to determine if they are attaining the Aquatic Life use.

Table 4.1.2b. Aquatic Life Designated Use Assessment Method for PL Lakes

Pinelands Biological Assessment Status	Result
All biological indicators located in highest quintile range or all but one biological indicator located in highest quintile range and remaining indicator in second to highest range.	Attainment
All biological indicators located in lowest quintile range or all but one biological indicator located in lowest quintile range and remaining indicator in second to lowest range.	Non-attainment- Pollutant unknown
Biological indicators not as above, assessments tending to lie within the middle quintile ranges.	Insufficient Data
Note that if in-lake physical/chemical data are available and violations of aquatic life based criteria are found accompanying observations of impaired biota, the lake will be listed to be in non-attainment and listed by the parameter causing non-attainment.	

4.1.3 Aquatic Life Assessment in Tidal Waters

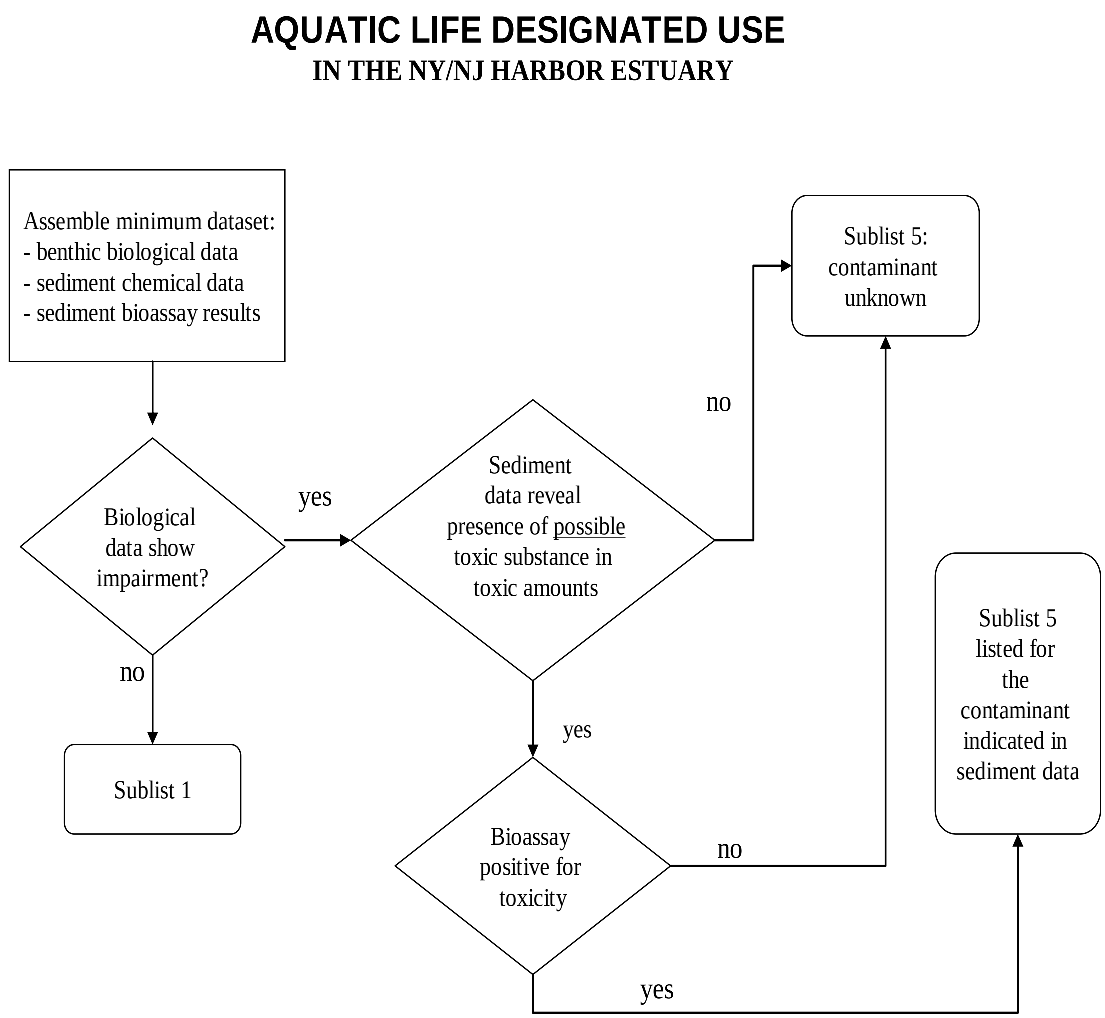
For this discussion, tidal waters include tidal rivers, estuaries and nearshore ocean waters. These waters are critical to New Jersey for tourism and for recreational and commercial fisheries. These waters are also impacted by river discharge from one of the most densely populated watersheds in the country as well as numerous wastewater discharges from coastal communities. Understanding the impact to the coastal ecosystem of these pollutant sources relative to impacts such as ocean upwelling and global warming is critical.

One of the primary uses to be assessed is the ability of the water to support healthy, natural communities of biota. While there are biological tools available to make this assessment for the State's fresh waters, no comparable tool for biological assessment has been developed by the Department for tidal waters. The Department has based its measure of the ecological health of its coastal waters solely on dissolved oxygen measurements. For the State's ocean waters, no index of benthic (or pelagic) community structure is generally recognized. Research is needed to establish an appropriate index for New Jersey's nearshore ocean waters. For estuarine waters, a couple of benthic indices exist that could be applied. However, these indices must be evaluated to establish which one would be most appropriate for New Jersey estuarine waters. If these tools existed, it would aid the Department in accurately assessing where impairments exist and in targeting resources to address such impairments. The Department is working toward identifying an indicator of ecosystem health for the benthic community in the estuarine and nearshore ocean waters of New Jersey. Achieving this goal will require the completion of three objectives. The first is to compile existing data on benthic communities in the nearshore ocean waters and estuaries of New Jersey and to identify any data needs. The second is to collect any data necessary to fill the data needs. Third is to assess these data in order to establish a valid benthic index for these waters.

EPA's National Coastal Assessment (NCA) program is providing the states with the first complete and consistent dataset on the condition of benthic communities in the nation's estuarine waters (including some tidal rivers). In order to use these data in assessments for the Integrated Report, the Department assembled a workgroup with participants from USEPA Region 2, USEPA Office of Research and Development, Rutgers University, and the Department to research existing benthic indices and review available data to determine if an appropriate biological index was available. The workgroup identified the Benthic Index of Biotic Integrity developed for the New York/New Jersey Harbor (Weisberg, 1998) as an appropriate indicator for the harbor area. As a result, the Department will use this assessment of benthic community in the 2006 Integrated Assessment for one of its estuaries (NY-NJ Harbor). The Department would also like to extend ecosystem-based assessment to the nearshore ocean waters of the State as well. The Department will continue to evaluate existing estuarine data and develop additional biological indices for the remaining estuarine waters for use in future Integrated Reports.

New York/New Jersey Harbor Area. The Benthic Index of Biotic Integrity developed for the New York/New Jersey Harbor based on EMAP data will be used to assess the waters of Raritan Bay, the Arthur Kill and the Kill van Kull. (http://www.epa.gov/emap/remap/html/docs/nynjsedapp1.pdf) The assessment methods for these waters are outline in Figure 4.1.3 below.

Figure 4.1.3


AQUATIC LIFE DESIGNATED USE
IN THE NY/NJ HARBOR ESTUARY
Assemble minimum dataset:
- benthic biological data
- sediment chemical data
- sediment bioassay results
Biological data show impairment?
yes
no
Sublist 1
Sediment data reveal presence of possible toxic substance in toxic amounts
no
Sublist 5: contaminant unknown
yes
Bioassay positive for toxicity
no
yes
Sublist 5 listed for the contaminant indicated in sediment data

Tidal Rivers and Estuaries (except NY/NJ Harbor). Dissolved oxygen (DO) is necessary for most aquatic life forms and monitoring data for DO in tidal waters is readily available through existing monitoring networks. In contrast to surface DO levels, the EPA monitoring has found benthic low DO conditions off the New Jersey coast for most of its length during the quiescent periods of the summer and early fall. These are brought about by thermal stratification that establishes during this period. Storms and the onset of autumn bring about surface to bottom mixing resulting in a breakup of these low DO conditions until the onset of warmer temperatures again in June. The impacts to benthic aquatic life and the possible anthropogenic contributions to these benthic conditions are currently unknown. However, until such time as a biological indicator is identified, DO status is used as an indirect indicator for tidal water aquatic life designated use assessment. The assessment and listing methodology for DO are summarized on Table 5.2 for conventional parameters.

4.2 Recreational Designated Use Assessment (Human Health and Aesthetic Quality)

The Recreational Designated Use Assessment evaluates both human health and aesthetic impacts on recreational use of the waterbody. The SWQS identify two levels of recreation – primary and secondary. Primary recreation includes those water-related recreational activities that involve significant ingestion risks and includes, but is not limited to, wading, swimming, diving, surfing, and water skiing. Secondary Contact Recreation is defined as recreational activities where the probability of water ingestion is minimal and includes, but is not limited to, boating and fishing. Primary Contact Designated Use applies to SC, SE1, PL, FW2 and FW1 waters. Secondary Contact Designated Use applies to SC, SE1, SE2, SE3, PL, FW2 and FW1 waters. It is presumed that a waterbody which meets the requirements for Primary Contact is attaining for the less stringent Secondary Contact.

4.2.1 Recreational Designated Use Attainment (Human Health)

The Department is proposing to amend the criteria for bacterial indicators, as required by the USEPA in accordance with the Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000. The BEACH Act amended the Clean Water Act to require each state with Coastal Recreation waters to adopt water quality criteria for pathogen indicators. The criteria should be at least as stringent as those outlined in "EPA's *Ambient Water Quality Criteria for Bacteria-1986"* (EPA 440/5-84-002), published by USEPA. The Department is proposing changes to the criteria in FW 2 and PL waters based on new scientific information and the USEPA's recently adopted amendments to 40 CFR 131 for Coastal and Great Lakes Recreation Waters (Water Quality Standards for Coastal and Great Lakes Recreational Waters; Final rule. 69 FR 67218, November, 16, 2004).

The Department is proposing to delete the fecal coliform criteria for primary contact recreation in all waters. Historically, fecal coliform had been the preferred indicator of fecal matter in ambient water by the USEPA and the Department. However, USEPA no longer supports the use of fecal coliform as a reliable indicator of human illness risk from full body contact recreation. The USEPA now recommends the use of *E. coli* and Enterococcus as pathogen indicators for fresh waters and Enterococcus for marine waters (USEPA's draft *Implementation Guidance for Ambient Water Quality Criteria for Bacteria. November 2003*). The Department is proposing to replace the existing fecal coliform criteria for those waters designated for primary contact recreation (such as FW2, SE1 and SC classifications), with either Enterococcus or E. coli indicators. The Department will use the indicator organism adopted at the time the Integrated List is developed.

Primary and secondary contact recreation areas. According to the existing SWQS, fecal coliform and Enterococcus are the pathogen indicators for all waters. Human health issues are addressed by the comparison of pathogenic indicator data to numeric criteria. Waterbodies in general are assessed by comparing the geometric mean of the water quality data to the appropriate SWQS for pathogenic indicators as outlined in Section 5.2.

Designated Bathing Beaches. "Designated bathing beaches" include any coastal beaches that are heavily used for primary contact recreation such as swimming, bathing, and surfing during the recreational season pursuant to the New Jersey State Sanitary Code N.J.A.C. 8:26. When determining the spatial extent for assessments and TMDL development, a designated bathing beach represents an area within 1,500 feet from the shoreline in the saline coastal waters (or SC waters) and a spatial extent of 200 feet from the shoreline in saline estuarine waters (or SE1 waters).

The Department of Health and Senior Services regulates public recreational bathing beaches under Chapter IX of the State Sanitary Code N.J.A.C. 8:26 Public Recreational Bathing. The Department has a Cooperative Coastal Monitoring Program in which various agencies perform sanitary surveys and monitor concentrations of bacteria in near-shore coastal and estuarine waters and determine if and when a bathing beach should be closed. All waterbodies in this assessment are accessible to the public and are designated bathing areas with lifeguards. This assessment method uses the duration and frequency of days for which an individual beach is closed. When there are no beach closures of 7 or more consecutive days in any year or the average number of beach closures is less than 2 per year over a five year period, the beach is assessed as attaining the designated use. Complete closure procedures are outlined in N.J.A.C. 8:26-8.8. (http://www.state.nj.us/health/eoh/phss/recbathing.pdf). One beach closure per year of 7 or more consecutive days or an average of 2 or more beach closures per year over a five year period will identify the beach as potentially non-attaining the designated use. The Department will review the closure data to ascertain if these closures were transient anomalies, laboratory error or due to other than water quality issues. The Recreation Designated Use assessment method is outlined in table 4.2.1 below.

Table 4.2.1: Recreational Designated Use (Human Health) Assessment Method

Assessment	**Result** (see note below)
Beach closure data show violations or geometric mean does not meet SWQS	Non-attainment
Beach closure data does not result in violations and the geometric mean meets SWQS.	Attainment

NOTE: In assessment units where bathing beaches play a minor role or where several bathing beaches are attaining and only one is not, the Department will look at the water quality of the non-bathing beach areas and the frequency and duration of the violations on the one beach before determining the attainment status of the entire waterbody. In those instances where the Department uses BPJ and determines that the non-attaining area is *de minimis,* the individual beach will be listed on the List of "Waters of Concern." In order for the area to be considered *de minimis*, it must contain less than 10% of the area of the waterbody.

4.2.2 Recreational Designated Use Attainment (Aesthetic Quality in Lakes)

Many past and current lake problems brought about as the consequences of eutrophication are due to public perception and are further complicated by the fact that lakes can have competing uses. An example is the need for weed beds in lakes to promote a healthy fishery. Aquatic plants provide critical fish cover, the lack of which can affect recruitment necessary to maintain a healthy game fish population; in contrast, these same weed beds can interfere with the aesthetic quality as perceived by bathers wishing to swim in the same lake. Extensive weed growth can also interfere with boating.

In response to these and other dilemmas that have plagued New Jersey's lake use assessment methodology, the Department will be examining a series of lake assessment issues to develop a comprehensive long term lake assessment methodology to apply to Integrated Listing. Much of the effort will focus on how best to assess attainment of uses in the light of eutrophication. Other issues to resolve are the minimum size of lakes to assess**.** For the purposes of Integrated Listing, the Department currently assesses lakes as small as 2 acres. The assessment discussions will also review current probabilistic lake monitoring methods to determine how best to use this methodology in the context of the Integrated List and use assessment, both statewide and in lake-specific contexts. Results of these discussions will lead to a new lake assessment methodology, the results of which will be reflected in future Integrated Lists.

4.3 Fish Consumption Designated Use Assessment

Fish consumption designated use assessments are based on the presence of fish consumption advisories or bans. The data collection, risk assessment and the issuance of fish consumption advisories and bans are overseen by the New Jersey Interagency Toxics in Biota Committee (ITBC). Through the ITBC, a joint effort between the Department and the NJ Department of Health and Senior Services, research projects are coordinated to monitor levels of contaminants in commercially and recreationally harvested fish, shellfish and crustacean species. Edible portions of individual animals are tested for one or more bioaccumulative chemicals (e.g., PCB's, chlorinated pesticides, dioxins, and mercury). These data are evaluated for development of consumption advisories and bans, as appropriate, to protect human health.

The Department followed the USEPA's "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories – Volume II Risk Assessment and Fish Consumption Limits" (USEPA 2000) for establishing PCB advisories. For mercury consumption advisories, the ITBC used health risk-based mercury guidelines established by the NJDEP (NJDEP, 1994) which follow closely guidelines recommended by the Year 2000 National Research Council report - *Toxicological Effects of Methylmercury*. For dioxin, New Jersey used an FDA advisory opinion issued in 1981 (see FDA. 1981 and FDA. 1983); however a new methodology was adopted in March 2006 that will be the basis of dioxin assessments in the 2008 Integrated Report.

The methodology for determining the assessment status for fish consumption is outlined in table 4.3 below.

Table 4.3: Fish Consumption Designated Use Assessment Method

Assessment	Result
No fish restrictions or bans in effect	Attainment
"Restricted Consumption" of fish in effect (restricted consumption defined as limits on the number of meals or size of meals consumed per unit time for one or more fish species); or a fishing ban is in effect for a sub-population that could be at potentially greater risk for one or more fish species or included on 1998 Impaired Waterbodies List and no new data available.	Non-attainment
"No consumption", or fishing ban in effect for general population for one or more fish species; or commercial fishing ban in effect.	Non-attainment
Fish tissue data not available	Unassessed
Statewide advisory based on extrapolated data	Insufficient Data

4.4 Shellfish Harvesting Designated Use Assessment Method

Shellfish harvesting designated use is applicable in all waters classified as SC and SE 1 in the SWQS. Shellfish harvest classifications are based on the National Shellfish Sanitation Program (NSSP) requirements (NOAA, 1997). This program is overseen by the federal

Food and Drug Administration to ensure the safe harvest and sale of shellfish. The adopted shellfish harvesting classifications are included in the NJ SWQS by reference in N.J.A.C. 7:9B-1.12(g). Based on sampling data and assessment procedures in the NSSP manual, waters are classified for unrestricted harvest, special restricted, seasonal or prohibited. Prohibited, special restricted, and seasonal areas are further separated into waters where shellfish harvest is prohibited due to poor water quality or administrative closures based on land use, resource availability, or sanitary surveys.

Administrative closures are established in areas around potential pollution sources, such as sewage outfalls and marinas. These areas are closed as a preventive measure to protect shellfish from contamination in areas immediately adjacent to the 15 sewage outfalls in the ocean and from an emergency such as a sewage bypass or a break in an outfall pipe. In marinas, prohibited areas are established to protect human health from contamination from boat wastes and runoff. Where closings are based on land use (i.e., marinas, STP outfalls, etc.), these areas are identified as attaining. This assessment methodology (Table 4.4) is consistent with the USEPA’s guidance on the use of shellfish classifications in 303(d) decisions which states that waters classified “Prohibited” due to administrative closures should not be classified as impaired if data are not available to document impairment. (USEPA, 2000). USEPA guidance for the 2006 Integrated Report (USEPA, 2005) states that non-attainment of fishable waters is demonstrated when the advisory is based on shellfish tissue, or a lower than ‘Approved” classification is based on water column and/or shellfish tissue data.

Table 4.4: Shellfish Harvesting Designated Use Assessment Method

NSSP Classification	Result (See note below)
Approved	Attainment
Prohibited/Administrative Closure	Attainment
Prohibited, Special Restricted or Seasonal classifications based on water quality	Non-attainment

NOTE: Shellfish classification boundaries were used in past reporting as waterbody assessment units. However, they change annually with each update of the shellfish growing areas as required by the NSSP. Using shellfish classification boundaries requires establishing new waterbodies every assessment cycle, making it difficult to track waterbodies from cycle to cycle and impossible to assess trends. The use of the new assessment units allows the Department to both track waterbodies over cycles and assess trends. However, the use of HUC boundaries does not reflect the shellfish classification boundaries and will, in many instances, contain more than one classification. In most instances, the attainment status for the assessment unit will reflect the worst classification found within the HUC boundary. In the few instances where only a *de minimus* portion of the acreage within the HUC has less than approved classification, the assessment will reflect the assessment of the non-*de minimus* area (i.e., the assessment unit contains 30 acres of which 2 acres are seasonally approved and 28 acres are fully opened; based on data from 12 stations, the HUC would be assessed as attainment). Any *de minimus* areas that are not fully approved and are not subject to administrative closures will be discussed in the Integrated Report along with actions being taken. The use of HUC assessment units will, overall, exaggerate the extent of impairments. The official adopted Shellfish Classification maps should be referenced for determining exact locations for TMDL development.

4.5 Drinking Water Supply Designated Use Assessment Method

Drinking water designated use is defined as waters that are potable after conventional filtration treatment and disinfection, and do not have consistent removal issues for chemical constituents. Drinking water designated uses apply to surface waters classified as Pinelands (PL) and Freshwater Category 2 (FW2). It is important to note that many waterbodies do not have drinking water intakes due to stream size and other considerations. The parameters which may be used to assess drinking water use are: arsenic, cadmium, chromium, copper, cyanide, lead, mercury, thallium, zinc, nitrate, TDS and chloride. These parameters are included in the USGS/NJDEP cooperative chemical monitoring program, the primary source for much of the available data; however, other metal and organic data with human health criteria will be included if sufficient data are available.

In addition to the chemical parameters, the Department uses monitoring data from treated or finished water supplies to determine compliance with the Safe Drinking Water Act's National Primary Drinking Water Regulations (NPDWRs or primary standards) and water supply use restrictions. Pollutants monitored for the protection of human health under the primary standards include volatile organic compounds, semi-volatile organic compounds, inorganic constituents, salinity, radioactive constituents, and disinfection by-products. Use restrictions include closure, contamination-based drinking water supply advisories, better than conventional treatment requirements and increased monitoring requirements due to confirmed detection of one or more pollutants.

The Department's Bureau of Safe Drinking Water summarizes Safe Drinking Water Violations annually. The Drinking Water Designated Use assessment method uses the data provided in these reports. Only those violations which can be attributed to surface water sources are considered. Violations for copper and lead which could be attributed to the collection system are not used for assessing source water unless the violations occur in the ambient waters. This assessment method is explained in Table 4.5 below. The assessment of nitrate and TDS, as an indicator for drinking water designated use, follows the assessment method for conventional water quality parameters explained in Section 5.2.

Metals and organics follow the assessment method for toxic water quality parameters explained in Section 5.3 .

Table 4.5: Drinking Water Designated Use Assessment Method

Safe Drinking Water Actions	Result
No closures or use restrictions or water quality violations	Attainment
Closure or water quality violations	Non-attainment
Surface water quality is such that more than conventional treatment is required	Non-attainment
Contamination based drinking water supply advisories	Insufficient Data
Increased monitoring requirements due to confirmed detection of one or more pollutants	Insufficient Data

4.6 Industrial Water Supply Designated Use Assessment Method

Industrial water supply designated use assessment assesses waters used for processing or cooling. The SWQS do not have criteria specific to industrial use. If the waterbody meets the Drinking Water Use, it is presumed to meet the Industrial Water Use. If the drinking water use is non-attaining for human health criteria, the Department will use total suspended solids (TSS) and pH, a measure of acidity, as indicators for industrial water supply use. A pH range of 5 to 9 will be used to assess attainment. The assessment methodology for industrial water supply designated use follows the assessment methods outlined in Section 5 for conventional parameters in Table 5.2.

4.7 Agricultural Water Supply Designated Use Assessment Method

The agricultural use of surface water includes irrigation and livestock farming. This assessment applies to waters classified as FW2 and PL in the SWQS.

Although the SWQS are applicable to agricultural water use, numeric criteria are not included. The water quality suitable for agriculture is normally less stringent than that needed to protect aquatic life and human health. Therefore, it is presumed that any waterbody which is assessed attaining for Drinking Water Use, is also attaining for Agricultural Use. In order to evaluate water supplies that support agriculture in New Jersey, guidelines are referenced from the U.S. Department of Interior Natural Resources Conservation and other states (Follet, 1999 and Bauder, 1998). These guidelines are used to evaluate whether water supplies support common agricultural uses such as irrigation and livestock raising.

For the assessment, total dissolved solids (TDS) and salinity were selected as indicators of agricultural use. Salinity was chosen due to its adverse and immediate detrimental effects on all agricultural practices. TDS has similar negative effects and also indicates possible contamination from runoff. The more stringent of the recommended standards for irrigation and livestock is applied in the assessment as the acceptable level to attain the agricultural use. Acceptable levels for total dissolved solids and salinity were established as at or below 2,000 mg/l (Follet, 1999). If TDS or salinity data are not available, specific conductance is used as a surrogate with a specific conductance of 3,000 us/cm, approximately equivalent to TDS and salinity levels of 2,000 mg/l (United Nations, 1985). Toxics are also a primary concern for agricultural uses; however, the state's criteria for toxics apply to human health and aquatic life protection, which are more stringent than the criteria needed for agricultural use. Several other states have established criteria for agricultural uses and further research will be done to evaluate the feasibility of applying their criteria to our state water quality for agricultural uses.

Note: Crops and livestock may be negatively affected by numerous non-water factors such as type of livestock, crop tolerance, soil type, drainage, irrigation methods and management. Therefore, exceedances of these guidelines do not necessarily impair uses for agriculture. On the other hand, concentrations below these limits may restrict agricultural use in certain circumstances. Therefore, the designated use assessment of "non-attainment" is applied only when water quality no longer supports existing agricultural water supply uses.

5.0 Use of Physical, Chemical, and Toxicological Data – General Considerations

Data Quality. The Department reviews all existing and readily available data as required and is committed to using only data with acceptable quality to develop the Integrated Report. Information on individual data sources used for development of an Integrated List will be provided in the Integrated Report. In determining which data are appropriate and readily available, the Department will consider quality assurance/ quality control, monitoring design, age of data, accurate sampling location information, data documentation and use of electronic data management.

Quality Assurance. The Department maintains a strong commitment to the collection and use of high quality data to support environmental decisions and regulatory programs. Quality Assurance Project Plans (QAPP) describe the procedures used to collect and analyze samples and to review and verify the results in order to certify high quality data. The Department maintains a policy that an approved QAPP accompany all environmental data collection activities performed by, or for use by, the Department as outlined in both the Department's and the USEPA Region II's approved FY03-FY04 Departmental Quality Management Plan (NJDEP, 2003). The QAPP should be approved by the Department's Office of Quality Assurance prior to the start of any sampling. The Department also published a Field Sampling Procedures Manual that includes approved procedures for sample collection, field quality assurance, sample holding times, and other data considerations (NJDEP, 1992). Use of this manual, or equivalent field procedures as determined by the Department's Office of Quality Assurance, is required in order for the data to be evaluated as part of the Integrated Assessment. Samples must be analyzed at a laboratory certified by the Department's Office of Quality Assurance, or a federal laboratory (e.g., the USGS National Water Quality Laboratory in Denver) using analytical methods, or their equivalents, as certified by the Department, (N.J.A.C. 7:18), the USEPA, or the USGS.

The QAPPs for all routine ambient monitoring programs operated by the Department are approved annually prior to initiation of sampling and prior to initiating research projects. The Interagency Toxics in Biota Committee (ITBC) reviews data and risk assessment methods used to develop fish consumption advisories. The Site Remediation Program (SRP) requires very extensive quality assurance documentation and QAPPs, which must be approved by the Department or the USEPA, as required. NJ Department of Health and Senior Services (NJDHSS) oversees quality assurance procedures for the monitoring programs conducted by local health authorities (e.g., Lake Beach Monitoring).

All data and information submitted to the Department for consideration in the development of the Integrated Assessment is required to follow the Department's quality assurance guidelines (NJDEP, 2002) and must include a QAPP.

Locational Data. Accurate locational data are particularly important for the Integrated Report. For some parameters (e.g., dissolved oxygen, temperature, and pH), the applicable SWQS criterion depends on specific stream classification areas established by regulation (N.J.A.C.7:9B). In addition, sampling stations must be outside of mixing zones and zones of initial dilution. Accurate locational data are required to ensure comparison to appropriate SWQS criteria, as well as confirming that sampling stations are located outside of regulatory mixing zones. The Department will accept monitoring data if sampling locations are accurate to within 200 feet. Digital spatial data (GIS or GPS) or latitude/longitude information accompanied by USGS Quadrangle maps are acceptable methods of providing locational information. Only sampling data that are spatially referenced will be used to develop the Integrated Report. Location data for all the Department's monitoring stations are recorded utilizing a Global Positioning System.

Electronic Data Management. In general, only electronic data are considered "readily available", due to the significant effort needed to computerize and analyze hard copy data. The Department uses electronic data from the USEPA Storage and Retrieval (STORET) system; the USGS National Water Information System (NWIS), and other special programs (e.g., the USEPA Helicopter Beach Monitoring Program and local monitoring entities). Typically, the Department uses Microsoft databases (i.e., Excel, Access) for database management and retrieval; however, STORET formatting is encouraged as a standard for data management, exchange and archiving. Additional information on STORET is available at http://www.epa.gov/STORET. A user friendly template developed by the Department for data not submitted directly into STORET can be viewed at http://www.state.nj.us/dep/wmm/sgwqt/wat/datasolicitation.htm.

Reference Reports. In order to establish a strong technical foundation for the Integrated Report, the Department requests "citable" hard-copy reference reports for each data source. This request ensures that the monitoring entities are responsible for compiling the data, completing a detailed quality assurance review, and addressing questions regarding the dataset. Furthermore, citable reports offer those who review the New Jersey Integrated Report an opportunity for independent evaluation of the underlying data. Written reports are available for most datasets and range from very basic raw data reports (that include a brief description of the monitoring program and tables of raw data) to very thorough peer-reviewed reports. The availability of reports used in developing the Integrated List will be noted in the Integrated Report.

Assessments Based Upon Weight of Evidence. Weighing data is necessary when evaluating numerous data sets that have different data collection and analysis methods, temporal or spatial sampling variability, or direct applicability to the water quality standards. This weighing will be applied in the following situations: newer data have more weight than older data unless past conditions are more representative of current conditions; larger data collection sets have more weight than nominal data sets; direct indicators of designated uses have more weight than surrogate indicators; and, higher quality data are given more weight based on sampling protocol, equipment, training and experience of samplers, quality control program, lab and analytical procedures. If the Department has the occasion to assess different weights of data, the specific rationale used will be detailed in the Integrated Report.

Data Assessment Method. The Department does not feel that one individual digression from a SWQS over a five-year period results in the impairment of the designated use of that waterbody. The Department intends to use 10% as the allowable excursions over a five year period with a minimum of 2 violations before the waterbody is deemed impaired.

***De minimus* Impairments.** In data rich waterbodies, it would not be an effective, manageable policy to assign an assessment unit to each and every station. This is particularly true in the estuaries where shellfish waters are intensely monitored. A tiny cove may not be fully opened, but the main body of the assessment unit is fully approved. The Department will use Best Professional Judgment and look at the magnitude and aerial extent of any violations and determine the attainment status. In order to use BPJ, the non-attaining area must be less than 10% of the assessment unit's acreage. Any areas designated as *de minimis* will be identified on the List of Waters of Concern.

5.1 Numeric Water Quality Criteria Assessment – General Issues

Numeric water quality criteria are available for conventional parameters (i.e., dissolved oxygen, pH, temperature), toxics (i.e., metals, organics, unionized ammonia, radioactivity), and sanitary quality (i.e., pathogens); see www.state.nj.us/dep/wmm/sgwqt/sgwqt.html. Water quality data are compared to applicable numerical criteria and may be assessed alone or in combination to determine designated use attainment (e.g., pH and TSS data are integrated to evaluate industrial water supply designated uses).

Surface Water Quality Standards Considerations. The following aspects of the applicable numeric water quality criteria (N.J.A.C 7:9B, the USEPA's National Toxics Rule and DRBC Water Quality Regulations) are considered in each assessment:

- **Design Flows:** Design flows in the NJ SWQS are defined in N.J.A.C. 7:9B-1.5 and apply to the USEPA's National Toxics Rule and State criteria as follows:
  a) carcinogenic effect-based human health criteria, toxic substances with a bioaccumulation or bioconcentration factor greater than 200 Liters/kilogram, and bromodichloromethane: the design flow shall be the flow which is exceeded 75 percent of the time for the appropriate "period of record" as determined by the United States Geological Survey;
  b) non-carcinogenic effect-based criteria: minimum average 30 consecutive day flow with a statistical recurrence interval of 5 years (MA30CD5);
  c) acute aquatic life protection criteria: minimum average 1-day flow with a statistical recurrence interval of 10 years (MA1CD10);

d) chronic aquatic life protection criteria for ammonia: the design flow shall be the minimum average 7-day flow with a statistical recurrence interval of 10 years (MA30CD10); and
e) design flow for all other criteria: the minimum average 7-day flow with a statistical recurrence interval of 10 years (MA7CD10).

Ideally, data should be collected when streams are at or above “design flows” in the applicable numeric water quality standard. Since this is not always possible, flow data will be reviewed when violations occur. Data collected at flows below “design flows” will not be used to identify waters as impaired.

- **Frequency of Exceedance:** The Department has established a minimum of 2 exceedances of a SWQS to confirm impaired waters. When there are two or more exceedances in a large data set resulting in < 10% of the data exceeding SWQS, the Department will further evaluate the magnitude, duration, and frequency of the violations and other available data to determine whether or not they are minor excursions. For toxics, with the exception of human health carcinogens, the allowable frequency of exceedance is 1 in 3 years. The long term average is used for human health carcinogens (see table 5.3).

- **Magnitude of Exceedance:** The SWQS and the USEPA guidance do not provide methods to consider the magnitude of the exceedance. However, the Department will evaluate the magnitude of an exceedance when exceedances occur in less than 10% of the data.

- **Duration of Exceedance:** The SWQS include duration considerations for average concentrations over 1 hour for acute aquatic life criteria, 4 days for chronic aquatic life, 30 days for non-carcinogens and 70 years for carcinogens. In general, based on the current monitoring protocols (i.e., grab samples) it is not possible to consider the duration of exceedance. Therefore, individual exceedances were considered to extend over the applicable duration, providing a more conservative assessment. However, if exceedance only occurs under high flow conditions and flow data are available which show that the high flow condition did not meet the duration, then it would not be listed as non-attaining.

- **Natural Conditions:** Waterbodies that do not meet applicable SWQS criteria potentially due to natural conditions will be carefully evaluated. If the excursions cannot be conclusively attributed to natural conditions, the waterbody will be classified as “non-attainment” providing a conservative analysis. If excursions can be attributed to natural conditions, the natural water quality will be used in place of the criteria, and the elevated levels will not be considered exceedances of the applicable criteria, as per N.J.A.C. 7:9B-1.5 (e.g., good biological data and low DO below a swamp).

- **Metals, Dissolved vs. Total Recoverable:** Surface Water Quality Standards (SWQS) criteria for metals include human health (HH), acute aquatic life (AQLa) and chronic aquatic life (AQLc). HH criteria are based on the total recoverable (TR) form of the metal to protect human health from all forms of the metals. Most AQL criteria (both acute and chronic) are based on dissolved fraction (DF) form of the metal; exceptions are AQLc only for mercury and AQL acute and chronic for selenium. AQL criteria for cadmium, copper, lead, nickel, silver, and zinc are calculated based on hardness at the time of sampling. The applicable criterion decreases as hardness decreases, due to the increased bio-availability of metals in low hardness waters.

  To the extent available, total recoverable (TR) and dissolved fraction (DF) data will be compared to TR and DF criteria, respectively. When only TR data are collected, TR concentrations above the DF criteria will trigger additional sampling for DF data to confirm exceedance of DF criteria.

- **Protocols When The Applicable Criteria Are Below Detection:** In some cases, the applicable criterion lies below the analytical minimum detection limit (MDL) (i.e., concentrations at or below the criterion are not measurable). This occurs for arsenic (MDL: 1 part per billion (ppb), HH criterion: 0.017 ppb) and mercury (MDL: 0.04 ppb, AQLc criterion: 0.012 ppb). In low hardness waters, AQLc criteria for cadmium, copper and lead will not be measurable in some samples. An exceedance is identified if the ambient metal concentration is above the MDL and thus clearly above the criterion. An exceedance will not be identified if the criterion and metal concentration are both below the MDL (i.e., non-detect). In these cases, analyses with lower MDLs will be sought. When a site is currently listed for an AL exceedance of a metal and the criterion is below the MDL, current data show no detections, and co-located biological data show non impaired conditions, the site will be delisted for the metal in question.

- **Censored Data:** Censored data are data with concentrations that are less than the minimum reporting level of an analytical procedure. These data are usually labeled with a "<" symbol followed by the reporting limit in the data report received from the laboratory. For example, total phosphorus below the minimum reporting level would be "< 0.01 mg/l". These values are set to one-half of the reporting limit for assessments, so that for the above example, 0.005 mg/l would be used in the assessment of total phosphorus. If the concentration and criteria are both below the minimum reporting level, the data will not be used to make an assessment. Conversely, values above the maximum detection level are set at the maximum detection level.

  In assessing toxic substances against a human health carcinogen criterion, the Department will employ the delta log normal distribution analysis as delineated in the EPA Technical Support Document for Water Quality-based Toxic Control, EPA/505/2-90-100, dated March 1991.

- **Significant Figures:** These are the number of reliably known digits used to locate a decimal point reported in a measurement. Proper use of significant figures ensures that the uncertainty of the measurements is correctly represented. When assessing data, the Department will limit the significant figures in data results to that associated with the SWQS being assessed with one exception. The SWQS for total phosphorus is 2 significant places for lakes (0.05) and one significant place for rivers (0.1). Since the analytical methods used and the precision is the same for a sample irregardless of which standard applies, the Department will apply 2 significant figures when assessing Total phosphorus data

- **Minimum Data Set Requirements:** The recommended sampling frequency is at least 8 samples collected quarterly for a minimum of 2 years. If data collection does not meet these recommended requirements, then a modified assessment method (see Modified Assessment Method below) may be applied to more limited data sets with a minimum data requirement of at least 4 samples. These data requirements are intended to ensure that existing water quality conditions are accurately portrayed and do not characterize transitional conditions or use obsolete data. When calculating a geometric mean, the data set should have at least 5 samples collected over a 30 day period.

- **Data Age:** In most cases, the Department will use the most recent 5 years of readily available data. Data more than 5 years old may be used on a case-by-case basis (for example, older data could be used if conditions in the waterbody have not changed, or if the older data are used in conjunction with newer data to demonstrate water quality trends where appropriate analytical methods are used and results can easily be compared with more recent data).

- **Assessments Using Sub-samples:** A sample may consist of many individual samples collected spatially at one station location. When data are collected in a vertical or horizontal cross section, or at several locations within close proximity to each other, the data may be combined and assessed as one sample. The individual "subsamples" are assessed as follows: when comparing data to a "not to exceed at any time" criterion, the sample is represented by the worst case subsample; when comparing the data to a criterion based on an average or geomean, all the individual subsamples would be combined to determine the average or geomean. For example, if data were collected at the surface, mid way and bottom of the water column (DO readings of 3.0, 4.0 and 5.0 mg/l), the average of the 3 subsamples would be 4.0mg/l and the value to compare to the "not to exceed" criterion would be 3.0mg/l.

- **Assessment Based Upon Continuous Monitoring:** Often a sample consists of one unique grab sample - one sample at one location at a station. These grab samples are considered to be representative of the water quality for that day. Other times, a sample consists of many individual subsamples collected temporally at one station location (e.g., diurnal DO sampling where samples are collected every hour or half hour). The parameters most commonly measured in this fashion are water temperature and dissolved oxygen (DO). The protocol for comparing these data to the criterion is as follows:

Data collected over the long term (i.e., the entire summer season): The lowest value of each 24 hour period will be compared to the "not less than any time" (i.e., DO), or the highest value to a "not to exceed" (i.e., temperature) criterion. For example, with hourly DO readings ranging from 6.0 mg/l to 3.0 mg/l, the 3.0 mg/l would be used to represent the 24 hour period. The station will be assessed as in exceedance if two or more days violate the criterion for the summer season. When comparing the data to a criterion based on an average or geomean, all the individual subsamples would be combined to determine the average or geomean.

Data collected over a shorter term (at least 72 hours): If two or more sample intervals equaling at least one hour exceed the criterion within a 24 hour period, it will be considered an exceedance. If there is an exceedance in more than one 24-hour period, the station would be considered to be non-attaining.

- **Assessments Based Upon Limited Datasets (Modified Water Quality Assessment):** A modified assessment method is used for datasets that do not meet the recommended data requirements as outlined for each assessment, but still have value in assessing water quality. Examples of this type of data may include: 1) datasets of less than 8 samples; 2) sampling less than quarterly frequency; or 3) the duration of sampling is less than 2 years. Datasets of these types are evaluated on a case-by-case basis to determine if the data characterize the range of water quality variation that adequately represents conditions of existing water quality. Other examples of data sets that may be assessed by the modified method include: pathogenic indicators data sampled during the swimming months to determine compliance with recreational standards, nutrient data sampled during the growing season to determine eutrophic conditions, or temperature data sampled from late spring to early fall to determine conditions during the warmer months.

  If it is determined that data do not adequately represent existing water quality conditions based on these or other possible qualifying factors, the result will be an assessment of "insufficient data." At least two exceedances are needed to confirm that the water quality does not meet SWQS. Therefore, a single sample is insufficient to determine attainment status. This ensures that even with additional sampling, which would meet the recommended data requirements, the assessment result will not change. The assessment results and the basis and rational for using the data will be provided in the Integrated Report when the modified water quality assessment is used.

5.2 Assessment Methods Using Conventional Water Quality Parameters and Pathogens

Conventional water quality measurements include parameters such as dissolved oxygen, pH, total phosphorus, total suspended solids, total dissolved solids, sulfate, temperature, chloride, and nitrate. The Department has established the SWQS in a conservative manner so that an occasional digression will not impair aquatic life or human health. The assessment methodology to determine an unacceptable level of exceedances for conventional water quality parameters is outlined in Table 5.2 below. Note that the status of a designated use (such as Aquatic Life) is based upon a suite of parameters and an exceedance of the SWQS for a single parameter may not necessarily render the designated use as "non-attainment".

Table 5.2.1: Conventional Water Quality Parameters Assessment Method

Water Quality Assessment for Recommended Sampling Protocol	Result
< 2 samples exceed applicable SWQS or excursions are due to natural conditions	Assessed as <u>not</u> exceeding SWQS
Threatened Waters: Degrading WQ trends indicate SWQS are likely to be exceeded within 2 years	Assessed as exceeding SWQS
At least two (2) samples exceed applicable SWQS	Assessed as exceeding SWQS
Modified Water Quality Assessment	
No samples exceed applicable SWQS or excursions are due to natural conditions	Assessed as <u>not</u> exceeding SWQS
One (1) sample exceeds applicable SWQS	Insufficient Data
Data does not adequately represent existing water quality conditions	Insufficient Data
Two (2) or more samples exceed applicable SWQS	Assessed as exceeding SWQS

Pathogenic Indicators. Assessing recreational designated use in non designated bathing beaches will use the geometric mean of the pathogenic indicator; see section 4.2.1 for bathing beach and overall recreation use assessments.

Table 5.2.2 Pathogenic Indicator Water Quality Parameters Assessment Method

Assessment Method	Result
The geometric mean less than the geometric mean criterion, or excursions were due to natural conditions	Assessed as <u>not</u> exceeding SWQS
The geometric mean greater than the geometric mean criterion	Assessed as exceeding SWQS

5.3 Toxic Water Quality Parameters Assessment

Toxic parameters include un-ionized ammonia, metals, and organics. Organics include current and historical pesticides and volatile organic compounds (VOCs). Un-ionized ammonia is calculated from total ammonia concentrations using pH and temperature at the time of sampling. Table 5.3, below, summarizes the assessment methodology for toxic parameters. Note that toxic parameters are often used in concert with other datasets to determine designated use attainment. See section 4.1 for details regarding Aquatic Life Use Assessments and section 4.5 for Drinking Water Use assessment.

Table 5.3: Toxic Water Quality Parameters Assessment Method

Assessment Method	Result
Water Quality Assessment for Recommended Sampling Protocol	
Less than or equal to 1 exceedance in 3 years of applicable SWQS criteria; or excursions were due to natural conditions	no water quality violations
Threatened Waters: Less than or equal to 1 exceedance in 3 years of applicable SWQS criteria, but degrading WQ trends indicate SWQS are likely to be exceeded within 2 years	water quality violations
Two (2) or more samples exceeded SWQS criteria Human carcinogens: Average concentration greater than SWQS criteria [1]	water quality violations
Water Quality Assessment for Modified Assessment	
All samples meet SWQS or excursions were due to natural conditions	no water quality violations
One (1) sample exceeded applicable SWQS	Insufficient Data
Data do not adequately represent existing water quality conditions	Insufficient Data
Two (2) or more samples exceeded SWQS Human carcinogens: Average concentration greater than SWQS criteria [1]	water quality violations
[1]In accordance with the USEPA guidance (USEPA, 2001), the Department may use the mean of the measured ambient concentration compared to the criterion when assessing impairment of a chemical human health criterion based on a long term exposure. If the mean exceeds the criterion, the water quality standard is not being attained. If the mean does not exceed the criterion, the water quality standard is being attained.	

6.0 Narrative Criteria and Policies

Narrative criteria are descriptions of the conditions necessary for a waterbody to attain its designated uses. To implement narrative data, which is qualitative in nature, the

Department has identified assessment approaches, also known as “translators”, to quantitatively interpret narrative criteria. New Jersey’s SWQS contain the following narrative criteria:

6.1 Antidegradation Policy

The SWQS contain an antidegradation policy that applies to all surface waters of the State. Under this policy, existing uses shall be maintained and protected. Designated uses shall be maintained or, as soon as technically and economically feasible, be attained wherever these uses are not precluded by natural conditions. No irreversible changes may be made to existing water quality that would impair or preclude attainment of the designated uses of a waterway. No changes shall be allowed in waters which constitute an outstanding National or State resource or in waters that may affect these outstanding resource waters.

Where water quality exceeds levels necessary to attain the designated uses, that quality shall be maintained and protected unless the Department finds that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.

The SWQS articulate how this policy is to be applied to waters of different classifications throughout the state. The Department applies the antidegradation policy in tandem with the classification of the receiving waterbody in making decisions about proposed new or expanded discharges to surface waters, including stormwater permits, as well as certain land use permits for activities in lands in Category One Watersheds and other areas of special protection or concern.

For more information about the SWQS antidegradation policy, go to: http://www.nj.gov/dep/wmm/sgwqt/sgwqt.html. For more information about antidegradation policy in the Highlands Region, go to Section B.2.1 of the Integrated Report. For more information about antidegradation policy and Category One Waters, go to Section B.2.2 of the Integrated Report or http://www.nj.gov/dep/cleanwater/c1.html. For more information about Category One Waters and the Stormwater Management Rules, go to Section B.2.4 of the 2006 Integrated Report.

6.2 Toxics

There are two narrative criteria for toxics found in the SWQS:

> [Toxic substances] None, either alone or in combination with other substances, in such concentrations as to affect humans or be detrimental to the natural aquatic biota, produce undesirable aquatic life, or which would render the waters unsuitable for the desired use.

And

> Toxic substances shall not be present in concentrations that cause acute or chronic toxicity to aquatic biota, or bioaccumulate within the organism to concentrations that exert a toxic effect on that organism or render it unfit for human consumption.

These narrative criteria are supplemented by the Department's toxics policy:

> "Toxic substances in waters of the State shall not be at levels that are toxic to humans or the aquatic biota, or that bioaccumulate in the aquatic biota so as to render them unfit for human consumption".

In addition to the numeric criteria for individual toxic parameters specified in the SWQS which protect aquatic life as well as human health, the Department uses several translators to assess compliance with the narrative toxic criteria. These translators include: fish consumption advisories (Section 4.3), shellfish closure data (Section 4.4), and drinking water designated use assessments (Section 4.5) with regard to human health, and macroinvertebrate data to assess toxic effects on aquatic life (Section 4.1).

6.3 Nutrients

In addition to the numerical water quality criteria for total phosphorus, the SWQS include narrative nutrient policies, at N.J.A.C. 7:9B-1.5(g), that apply to all freshwaters of the state. The narrative nutrient policies prohibit nutrient concentrations that cause objectionable algal densities, nuisance aquatic vegetation or render waters unsuitable for designated uses.

Nutrient Criteria:

> **[Lakes]** Phosphorus as total P shall not exceed 0.05mg/l in any lake, pond, or reservoir, or in a tributary at the point where it enters such bodies of water, except where watershed or site-specific criteria are developed pursuant to N.J.A.C. 7:9B-1.5(g)3.

> **[Streams]** Except as necessary to satisfy the more stringent criteria above or where watershed or site-specific criteria are developed pursuant to N.J.A.C 7:9B-1.5(g)3, phosphorus as total P shall not exceed 0.1mg/l in any stream, unless it can be demonstrated that total P is not a limiting nutrient and will not otherwise render the waters unsuitable for the designated uses.

Nutrient Policy:

> Except as due to natural conditions, nutrients shall not be allowed in concentrations that cause objectionable algal densities, nuisance aquatic

> vegetation, abnormal diurnal fluctuations in dissolved oxygen or pH, changes to the composition of aquatic ecosystems, or otherwise render the waters unsuitable for the designated uses.

In addition to assessing the numeric criteria for phosphorus, the Department assesses the narrative nutrient policy, as explained in Section 4.2.2 under the Recreational Designated Use Assessment- Aesthetics, as a translator.

The Department, in alignment with the EPA's recommendation (USEPA 2002), is investigating nutrient criteria based on linking stressors (i.e., total phosphorous, nitrogen) with biological responses (i.e., periphyton diatoms, biomass, chlorophyll a, diurnal DO, turbidity, etc.). Active field investigations and site specific studies are currently underway to investigate the relationships between nutrients (stressors) and response indicators (e.g., chlorophyll a, algal biomass and algal community structure) to determine if predictive stressor–response models may be constructed that are protective of designated uses and which can be used in future assessments. These will be incorporated into future Methods Document as they are developed.

In the meantime, the Department has developed a "Technical Manual for Phosphorus Evaluations (N.J.A.C. 7:9-1.14 (c)) for NJPDES Discharge to Surface Water Permits" (http://www.state.nj.us/dep/dwq/techmans/phostcml.pdf), which outlines the steps to be taken to demonstrate compliance with the nutrient criteria and policy when the numeric criteria are exceeded. Further explanation can be found in Section 8.3 under the heading Delisting Protocol for Phosphorus.

6.4 Radioactivity

Prevailing regulations including all amendments and future supplements thereto adopted by the USEPA pursuant to Sections 1412, 1445, 1450 of the Public Health Services Act, as amended by the Safe Drinking Water Act (PL 93-523). The Department's assessment methodology for radioactivity is covered under the Numeric water quality criteria Assessment in Section 5.1.

6.5 Natural Conditions

The natural water quality shall be used in place of the promulgated water quality criteria of N.J.A.C. 7:9B-1.14 for all water quality characteristics that do not meet the promulgated water quality criteria as a result of natural causes.

Waterbodies that do not meet applicable SWQS criteria potentially due to natural conditions will be carefully evaluated. If the excursions cannot be conclusively attributed to natural conditions, the waterbody will be classified as "non-attaining", providing a conservative assessment. If excursions can be attributed to natural conditions, the natural water quality will be used in place of the criteria, and the elevated levels will not be considered exceedances of the applicable criteria, as per N.J.A.C. 7:9B-1.5. The Department will provide a justification where natural conditions will be used in place of the statewide criteria. For example, the aquatic life designated use will be assessed as being attained based on biological data even though violations of pH, DO or temperature may exist.

7.0 Integrated Listing Guidance

The USEPA Guidance for developing Integrated Reports (USEPA 2005) of water quality and listings of impaired water segments recommends placing the assessment results into one of five specific categories. The USEPA's Guidance defines the five categories in which a waterbody may be placed. Briefly, those categories are:

Category 1: A waterbody is attaining for all designated uses and no uses are threatened. Based on USEPA guidance, Fish Consumption is not used for this determination.

Category 2: Waterbody is attaining the designated use.

Category 3: Insufficient or no data and information to determine if the designated use is attained.

Category 4: Impaired or threatened for one or more designated uses but does not require the development of a TMDL (three sub-categories).

A. TMDL has been completed.
B. Other enforceable pollution control requirements are reasonably expected to result in the attainment of the water quality standard in the near future.
C. Impairment is not caused by a pollutant.

Category 5: The designated use is not attained. The waterbody is impaired or threatened for one or more designated uses by a pollutant(s), and requires a TMDL.

7.1 Integrated Listing Methodology

The Department has chosen to use the term "sublist" rather than "category" when referring to the 5 parts of the Integrated List to eliminate confusion between the Category 1 of the Integrated List and Category 1 waters under Surface Water Quality Standards (SWQS). The Department will develop the Integrated List by assessment unit/designated use combinations, not just by assessment unit. This will enable the Department to present each designated use for each assessment unit in the appropriate sublist. This results in the possibility of an assessment unit being placed on multiple sublists. The Department will also prepare a 303(d) List of Impaired Waters which will include all assessment units with one or more designated uses on Sublist 5 and identify the pollutant causing the impairment, when known.

The Integrated Listing Method provided in Table 7.1 describes how the results of the individual assessments, described in Sections 4.0 and 5.0, will be integrated to determine the listing assignment for each waterbody/designated use combination. The following are important considerations associated with the Integrated Listing Method:

- Waters on Sublist 5 of the Previous Integrated List: Waters included on Sublist 5 of the previous Integrated List are re-evaluated using all existing and readily available data and the methods described in Section 4, 5, 6, and 7 and placed in the appropriate sublist.

- Assessment units classified as “non-attainment” due to impairment or threat of impairment by one or more pollutants may be reclassified to another sublist without completing a TMDL if additional data and information indicating this classification was inappropriate becomes available by the next listing cycle.

- Results of studies conducted to further evaluate relationships between designated use attainment, policies, and applicable criteria may be used to develop site-specific or watershed-specific criteria, clarify designated uses or reclassify waterbodies to another sublist without completing a TMDL. For example, studies to evaluate relationships between designated uses, nutrient policies and total phosphorus criteria are anticipated in some waterbodies that do not meet the numerical criterion.

- The USEPA guidance (USEPA, 2001) requires a TMDL only when the cause of the impairment is a pollutant. If the impairment is caused by pollution and not a pollutant, the waterbody will be placed on Sublist 4C. Pollutant is defined in the CWA as “spoil, solid waste, incinerator residue, sewerage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water”. Pollution is defined as “the man-made or man-induced alteration of the chemical, physical, and radiological integrity of a waterbody”.

Table 7.1: Integrated Listing Method

Assessment	Integrated Assessment	Sublist
Full Attainment	All designated uses are assessed and in attainment	**Sublist 1:** If all Designated Uses are attainment, the Assessment Unit will be placed on Sublist 1.
Attainment	Designated use assessment is complete and results for the assessment indicated Attainment.	**Sublist 2:** Attaining Designated Use
Insufficient Data	Results of designated use assessment indicated “Insufficient Data”	**Sublist 3:** Insufficient or no data and information to determine if designated use is attained.
Non-attainment	Designated use assessment is complete and results for the assessment indicate Non-Attainment or threatened for a pollutant.	**Sublist 4a**: The designated use is not attained or is threatened and a TMDL has been adopted in New Jersey Register and approved by the USEPA.

Assessment	Integrated Assessment	Sublist
Non-attainment	Non-attainment due to pollutants, other enforceable strategies being used to restore attainment status.(i.e., watershed management, non-point source controls, lake restoration plan, permitting, enforcement, finance, site remediation and other relevant water quality improvement projects)	**Sublist 4b:** Document water quality improvement strategies and expected timeframe of SWQS attainment.
Non-attainment	Non-attainment due to pollution, including impoundments, flow alterations, habitat degradation	**Sublist 4c**: The cause of impairment could reasonably be determined and was attributed solely to pollution.
Non-attainment	Designated use assessment is complete and results for the assessment indicate Non-Attainment.	**Sublist 5:** The pollutant causing the "non-attain" status of the use will be identified on the 303(d) list. "Pollutant unknown" will be used when the specific parameter is not known.

7.2 Determining Causes and Sources of Impairment

In making 305(b) water quality/use attainment assessments, the primary focus is the evaluation of existing data and information. Some of that information may include knowledge of conditions known or likely to be the source of the impairment. Many times, however, biological data may indicate impairment but the cause and source are unknown. In other cases, monitoring staff may have knowledge of particular discharges or land use conditions that could potentially be the source and cause of the impairment, but do not have the specific information or resources to conduct a thorough investigative study to verify causes and sources. When there is definitive information regarding the cause (pollutant), the cause will be identified. If unknown, the cause will be listed as "pollutant unknown". The pollutant sources indicated are the best estimations of staff. Once a waterbody or segment is designated for TMDL development, however, a more thorough investigative study will be conducted to determine the cause, if previously unknown, and the sources of impairment. These investigations may include more intensive ambient water quality sampling, aquatic toxicity studies, sediment or fish tissue analysis and/or dilution calculations of known discharges. In some cases the determination of causes and sources may not be possible.

7.3 Delisting

For waters listed on previous 303(d) Lists, there are several possible scenarios that may result in a waterbody being removed from a 303(d) list (Sublist 5). Each delisting will be documented. Some scenarios that could result in the removal of a waterbody from Sublist 5 follow:

1. A determination is made that the waterbody is meeting the designated use (i.e., no TMDL is required). For example:
   a) An error was made in the initial listing causing an erroneous listing;
   b) New Information: More recent and/or more accurate data, which meets the QA/QC requirements identified in Section 5 of this Methods Document, demonstrates that a designated use is being met for the waterbody (with or without a TMDL). See additional information regarding metals data in Section 8.3 below;
   c) Revisions to the SWQS may cause a waterbody to come into compliance.

2. Reassessment of available information or data: Waterbody listed on previous 303(d) list is based on data which are insufficient to meet current data quality requirements. Some examples:
   a) New Macroinvertebrate Protocol: Macroinvertebrate data had been collected under conditions not calibrated to reference conditions specified in the sampling protocol. See Section 4.1 for detailed information.
   b) Criterion not measurable.
   c) Sufficient data not available (i.e., frequency, number of samples or QA/QC requirements not met).

3. TMDL has been completed. A waterbody will be removed from Sublist 5 and placed in Sublist 4a once a TMDL, which is expected to result in attainment of the designated use, has been developed and approved by the USEPA.

4. Other enforceable pollution control requirements are reasonably expected to result in the attainment of the designated use in the near future. These requirements must be specifically applicable to the particular water quality problem. This includes the installation of new control equipment or elimination of discharges.

5. Impairment is not caused by a pollutant. In cases of biological impairment, the Department will follow its protocol to determine the cause(s) of impairment (Stressor Identification or SI) and will evaluate if these causes are pollutants to be scheduled for TMDLs or "pollution" whereby the waterbody will be transferred to Sublist 4C as per our listing methodology.

6. New spatial extent – When sufficient data warrants, waterbodies previously listed on a large scale may be broken down into smaller assessment units and placed in other sublists, if appropriate.

7. Natural causes – These are waters that do not meet the designated where it can be documented that there are no human contributions to the standard exceedance (See Section 5.1 for definition for "natural").

8. Benthic Macroinvertebrate will no longer be listed as a pollutant. It will be replaced with a specific aquatic life pollutant when possible and if no pollutant is identified, it will be replaced with "pollutant unknown" or "toxic unknown".

9. Dams removed. Lake no longer exists.

7.3.1 Delisting Protocol for Metals (in non-tidal waters)

An Interagency 303(d) Technical Workgroup, including representatives from the Department, the USEPA Region II and the USGS, were tasked with developing a water quality assessment procedure for metals. This workgroup developed a procedure using New Jersey's Whippany River Watershed in a pilot project as per the USEPA Region II and the Department's Memorandum of Agreement (MOA) for TMDL development (March 13, 2000). This procedure is outlined below. This metals procedure will be applied in assessing the results from the previous NJ Impaired Waterbodies List and current data.

De-Listing Approach for Metals

A. When chemical data only are available -

For each listed assessment unit:

Step 1: Compare metals data for a minimum of 3 samples (total recoverable and dissolved form) collected under baseflow conditions to applicable SWQS criteria. If criteria are met for all samples, proceed to Step 2; if criteria are not met for all samples, retain on the Impaired Waterbodies List.

Step 2: Collect new data under elevated flow conditions; proceed to Step 3.

Step 3: Compare data collected under elevated flow conditions to applicable SWQS criteria. If criteria are met for all samples, pursue delisting. If criteria are not met for all samples, retain on Sublist 5 and collect additional data under elevated flow conditions.

B. When biological and chemical data are available -

The following applies to waterbodies previously listed on Sublist 5 for a metal in exceedance of an *aquatic life criterion*.

If:

1. the criterion for that metal lies below MDL, and
2. the current metal data display non detects, and
3. biological data show nonimpaired conditions,

then the Department will delist the assessment unit for the metal in question and place the assessment unit on Sublist 2 for attaining the Aquatic Life Use (or on

Sublist 1 if all designated uses for the HUC-14 subwatershed are assessed and attained).

If conditions #1 and #2 are met, but the biological condition (#3) is *impaired*, the site will be listed on Sublist 5 as "impaired biota, pollutant source unknown" and the metal in question will be removed from the list.

7.3.2 Delisting Protocol for Phosphorus

The New Jersey Surface Water Quality Standards (SWQS) include both numeric and narrative water quality criteria for Total Phosphorus (N.J.A.C. 7:9B-1.14(c)). In FW2 freshwater lakes and streams, the SWQS state:

a) Lakes: Phosphorus, as total P, shall not exceed 0.05 (mg/L) in any lake, pond, or reservoir, or in a tributary at the point where it enters such bodies or water, except where watershed or site-specific criteria are developed pursuant to N.J.A.C. 7:9B-1.5(g)3.
b) Streams: Except as necessary to satisfy the more stringent criteria in the paragraph above or where watershed or site-specific criteria are developed pursuant to N.J.A.C. 7:9B-1.5(g)3, phosphorus, as total P, shall not exceed 0.1 (mg/L) in any stream, unless it can be demonstrated that total P is not a limiting nutrient and will not otherwise render the waters unsuitable for the designated uses.

In addition, at N.J.A.C. 7:9B-1.5(g)2, the SWQS state:

- Except as due to natural conditions, nutrients shall not be allowed in concentrations that cause objectionable algal densities, nuisance aquatic vegetation, abnormal diurnal fluctuations in dissolved oxygen or pH, changes to the composition of aquatic ecosystems, or otherwise render the waters unsuitable for the designated uses.

The Department has provided technical guidance for conducting evaluations concerning total phosphorus in the "Technical Manual for Phosphorus Evaluations for NJPDES Discharge to Surface Water Permits," dated March 2003. This document is available on the web at http://www.state.nj.us/dep/dwq/techmans/phostcml.pdf. These analyses are in accordance with the allowable demonstrations provided for in the SWQS at N.J.A.C. 7:9(B)-1.14(c) to demonstrate whether or not TP is the limiting nutrient and whether or not TP otherwise renders the waters unsuitable for the designated uses. The results of these evaluations will be used to determine the applicability of the TP SWQS criteria.

In order to successfully demonstrate that the 0.1 mg/L phosphorus criterion does not apply, it must be demonstrated that phosphorus is not the limiting nutrient AND the designated uses would not otherwise be impaired.

8.0 Method to Rank and Prioritize Impaired Waterbodies

Section 303(d) of the Federal Clean Water Act requires states to rank and prioritize impaired waterbodies (i.e., waterbodies in Sublist 5). The goal of priority ranking is to focus available resources on the right waterbodies at the right time, in the most effective and efficient manner, while taking into account environmental, social and political factors. The Department will prioritize and rank individual listings identified in Sublist 5 dependent upon the following factors:

- Importance of parameter of concern (refer to Table 8.0);
- TMDL complexity;
- Status of parameter: actively produced or legacy;
- Additional data and information collection needs;
- Sources of the pollutants;
- Severity of the impairment or threatened impairment;
- Spatial extent of impairment;
- Designated uses of the waterbodies;
- Efficiencies of grouping TMDLs for waterbodies located in the same subwatershed or for the same parameter of concern;
- Efficiencies related to leveraging water quality studies triggered by NJPDES permit renewals;
- Status of TMDLs currently under development;
- Timing of TMDLs for shared waters;
- Watershed management activities (e.g., priority watershed selection or 319 grant activities);
- Other ongoing control actions that will result in the attainment of SWQS (e.g., site remediation activities);
- Existence of endangered and sensitive aquatic species;
- Recreational, economic, cultural, historic and aesthetic importance;
- Degree of public interest and support for addressing particular waterbodies.

Table 8.0: Importance of Pollutants of Concern

Pollutant of Concern	Importance
Pathogen indicators	Direct human health issues.
Metals and Toxics	Direct human health issues. Designated use impacts.
Other conventional pollutants such as phosphorous, nitrate, pH, Dissolved Oxygen, temperature, total dissolved solids, total suspended solids, unionized ammonia	Significant designated use implications. Indirect human health issues.

9.0 Method for Developing the Monitoring and Assessment Plan

The Integrated Report guidance (USEPA 2002) requires that states should include: 1) description of additional monitoring that may be needed to determine water quality standard attainment status and, if necessary, to support development of TMDLs for each pollutant/waterbody combination; and 2) schedule for additional monitoring planned for waterbodies.

Consistent with Section 106(e)(1) of the CWA, the Integrated Report will include a comprehensive Monitoring and Assessment Plan that describes the State's approach to obtaining data and information necessary to characterize the attainment status of all assessment units. Elements of this strategy include: a description of the sampling approach (i.e., rotating basin, fixed and probabilistic station array), a list of the parameters to be collected (i.e., physical, chemical, and biological), and an approach to assess the data with respect to SWQS and spatial extent. The Integrated Report will include a schedule (both long term and annually) for collecting data and information for basic assessments and for TMDLs.

It is neither necessary nor practical to conduct site-specific monitoring of all waters to support comprehensive assessments. Various approaches will be employed to prioritize and target collection of new water quality data, assess data from available sources, and use advanced assessment tools such as spatial statistics, probabilistic monitoring and modeling to estimate water quality. Assessment of data is an important component of the Monitoring and Assessment Plan. Assessments may include the following:

- Comparing site-specific data to applicable SWQS;
- Estimating the spatial extent of monitoring;
- Conducting trends analyses or other statistical methods to evaluate changes in water quality over time and predict future water quality changes (i.e., threats to water quality);
- Identifying causes of impairment, particularly biological impairment; and
- Estimating the effectiveness of water quality improvement strategies (i.e., pollutant load reductions, flow alterations, TMDL implementation).

The schedule associated with the monitoring and assessment plan will consider the following priorities:

- TMDL planning and development;
- Identifying causes of impairment for waterbodies on Sublist 5B;
- Identifying waterbodies that may be impaired by pollutants and require TMDLs;
- Monitoring and assessments for waterbodies that currently have no data or insufficient data (monitoring and assessments may be prioritized based on existing uses (potable supply, recreational contact, aquatic life)); and
- Continuing routine monitoring for waterbodies that are currently assessed.

It is important to recognize that monitoring and assessing each waterbody will require significant effort and can only be accomplished over the long term. Several strategies will be key to accomplishing this goal including:

- Using advanced statistical techniques to evaluate water quality in waterbodies that are not sampled based on probabilistic sampling;
- Exchanging and using data and assessments from other programs within the Department and from watershed partners;
- Expanding ongoing and planned monitoring and assessments to address data limitations identified for waterbodies on Sublist 3.

Causes of Biological Impairment. As stated above in section 7.3, in cases of biological impairment, the Department will determine the cause(s) of impairment and will evaluate if these causes are pollutants to be scheduled for TMDLs or “pollution,” whereby the waterbody will be transferred to Sublist 4C as per our listing methodology. The protocol developed by the Department is based upon methodology developed by USEPA and termed Stressor Identification or SI.

10.0 Public Participation

The Integrated Report combines the reporting requirements under Section 305(b) (i.e. the Statewide Water Quality Inventory Report) with the reporting requirements of Section 303(d) (i.e. List of Impaired Waterbodies). In general, Sublist 5 of the Integrated List is associated with Section 303(d) and the other Sublists (1 through 4) are associated with 305(b). Only the Section 303(d) reporting requirements generate regulatory action, i.e. trigger TMDL development; therefore, regulatory requirements identified in Section 303(d), including public participation and USEPA approval and adoption of the Impaired Waterbodies List, apply only to Sublist 5. However, the Department will make the entire Integrated List (Sublists 1 through 5) available for review during the public participation process for informational purposes only.

The Department is required under 40 CFR 130.7(b)(6) to provide a description of the methodology used to develop the list as part of the 303(d) List. This Methods Document lays out the framework for assessing data and determining to which of the sublists the waterbody will be assigned (and will be provided with the Integrated List). The entire Integrated List (Sublists 1 through 5) will be provided during the public process, for informational purposes only.

10.1 Request for Data

The Department provides several avenues for public noticing its intent to seek water quality-related data and information including notices in the New Jersey Register, announcements in Department-generated newsletters, and direct mailings. The public notice of the request for data for the 2006 Integrated Water Quality Monitoring and Assessment Report was published in the New Jersey Register and on the Department's website on January 8, 2005 (http://www.state.nj.us/dep/wmm/sgwqt/wat/2006-datasolicitation.pdf). An article explaining the data solicitation process was published in the Watershed Focus Newsletter (circulation over 3000), the New Jersey Discharger (circulation) and distributed to volunteer monitoring organizations through the Department's Watershed Watch Network and the New Jersey Council of Watershed Associations list serve (over 5000 recipients). The Department actively solicited additional groups and organizations for data they may have knowledge of including local, state, and federal agencies, members of the public, and academic institutions. (See Table 1 for the mailing list.)

The Department also has ongoing efforts to continuously interact with other data collecting organizations and facilitate the exchange of information. The New Jersey Water Monitoring Coordinating Council was established on October 24, 2003 and serves as a statewide body to promote and facilitate the coordination, collaboration and communication of scientifically sound, ambient water quality and quantity information to support effective environmental management. The Council consists of representatives from various Divisions within NJDEP, USEPA Region 2, Delaware River Basin Commission, the Pinelands and Meadowlands Commissions, other interstate agencies (i.e., IEC), county health departments, academia and the volunteer monitoring community and provides the opportunity to exchange information and data.

The Department, through its Volunteer Monitoring Program, has been working to identify which groups collect data and are interested in submitting it for use in Integrated Reports. The Office of Outreach and Education, in the Division of Watershed Management, is responsible for the coordination of the Volunteer Monitoring Program and the Watershed Watch Network. The Watershed Watch Network is a program acting as an umbrella for all of the volunteer monitoring programs within New Jersey. Volunteer Monitoring Program. Managers throughout the State make up the Watershed Watch Network Council. A four-tiered approach has been developed to allow for volunteers to pick their level of involvement based on the purpose of their monitoring program, the intended data use, and the intended data users. The goal of this new program is to provide acceptable protocols and QA/QC requirements for volunteers if they chose to submit their data to the NJDEP, to assist volunteers in designing and building upon their existing programs and assist data users in gathering sound data for their uses. Additional information on the four-tier approach is available at http://www.nj.gov/dep/watershedmgt/volunteer_monitoring.htm.

The time period for submitting data is specified in the public notice and extends for six months. For most of the assessments, the Department uses the most recent 5 years of data. The 2006 assessment will use data from January 1, 2000 to December 31, 2004 as the 5 year period. As such, the 2006 Integrated Report will report the status of New Jersey's waters through 2004. This is consistent with the neighboring States of Delaware and Pennsylvania as well as the Delaware River Basin Commission. A "cut-off" date after which no additional data or information will be considered in the preparation of the 2006 Integrated Report is necessary to allow the timely completion of a draft list that can be distributed for public review and comment. Data packages, which include data collected through December 31, 2004, were accepted until July 15, 2005 for the development of the 2006 Water Quality Limited Segments List. Data collected after December 31, 2004 and data packages submitted after July 15, 2005 will be considered for subsequent Water Quality Limited Segments Lists and/or other Department assessments.

In determining which data are appropriate and readily available, the Department will consider quality assurance/ quality control, monitoring design, age of data, accurate sampling location information, data documentation and use of electronic data management.

A data package should include:

- The approved quality assurance project plan (QAPP). More information on QAPPs my be reviewed at http://www.epa.gov/region2/qa/air_h20_qapp04.pdf and http://www.epa.gov/quality1/qapps.html Data provided in electronic format, preferably STORET (data may also be provided in Excel) on floppy disc, ZIP drive or CD ROM. Electronic data cannot be accepted via e-mail or over the web at this time.

- Station location data should be provided in an ESRI shapefile or compatible format when possible. Station locations identified by latitude and longitude must also be mapped on a USGS Quadrangle Sheet (or copy of section of a sheet with the name of the sheet identified); and,
- A citable report summarizing the data that includes name address, and telephone number of the entity that generated the data set.

Data received through this solicitation may be used to: confirm an existing impairment; list a new impairment; delist an impairment; or identify waterbodies that are unimpaired. Quality assurance considerations are particularly important because the adopted Water Quality Limited Segments List is used to establish priorities for water quality improvement measures, including, as appropriate, TMDL development. Given the importance and long-term ramifications of the Water Quality Limited Segments List, the Department will only use data which meet the following quality assurance requirements for listing purposes:

- Data packages must include a Department-approved Quality Assurance/Quality Control Project Plan (QA/QC/Plan) prepared in accordance with "Guidance for the Development of Quality Assurance Project Plans for Environmental Monitoring" (EPA Region II, May 1, 1999);
- All samples, including replicates, blanks and recovery spikes, shall be collected in conformance with the Department's Field Sampling Procedures Manual (1992) (NJEDL: NJDEP Field Sampling Procedures Manual);
- Sampling locations must be accurately documented to within 200 feet;
- Laboratory samples must be analyzed at a State certified lab; and
- Analytical testing methods shall be by methods for which the laboratory is certified by the Department's Office of Quality Assurance, USEPA or USGS.

The regulations require all existing and readily available data and information be considered but not necessarily used to make an assessment decision during the reporting process. The results of a comprehensive data and information solicitation process can generate data and information that varies in quality. The many entities responding to the State's data and information solicitation may collect and compile data that follows a variety of field, laboratory and analytical protocols. Therefore, it is reasonable to expect that the Department may not consider all data and information in the same manner. The Department will use, in its assessment determinations, all relevant data that are consistent with the Department's quality assurance requirements as outline above. The rational for not using specific data will be described in detail in the Integrated Report.

The Department is working with data-generating organizations to organize their data, provide training in acceptable sampling techniques, and certify laboratories and field measurement protocols. Additional information is available at NJDEP New Jersey Division of Watershed Management - Volunteer Monitoring.

10.2 Public Notification

Public Notice. The Department will publish notice of the availability of the Integrated Water Quality Monitoring and Assessment Methods and Draft Integrated List in the New Jersey Register, on the Department Website, and in newspapers of general circulation throughout the State. Adjacent states, federal and interstate agencies shall also be notified, as necessary. The public notice shall include the following:

- A description of the procedures for comment on the proposed Sublist 5; and
- The name, address and website of the office in the Department from which the proposed Integrated List may be obtained and to which comments may be submitted.

Comment Period. The comment period on a proposed Sublist 5 (303(d)) shall be a minimum of 30 days.

Public Hearings. Within 30 days of the publication of the notice, interested persons may submit a written request to extend the comment period for up to 30 days or request a public hearing. If the Department determines that there are significant environmental issues or that there is a significant degree of public interest, the Department may hold a public hearing and/or the comment period shall be extended. If granted, notice of an extension of the comment period and/or public hearing shall be published promptly on the Department Website.

Final Action. After the close of the public comment period, the Commissioner shall render a decision on Sublist 5B [303(d) List], which will be the final agency action. The Commissioner may:

1. Adopt Sublist 5B as proposed;
2. Adopt Sublist 5B with changes which do not significantly change the public notice regarding the proposed List; or:
3. Re-propose all or portions of Sublist 5B.

When the Commissioner has adopted Sublist 5B, the Department will public notice the adopted list in the New Jersey Register and submit the adopted list to the USEPA for approval in accordance with 40 CFR 130.7.

Availability of Final Documents. The Integrated Report, which will include the Integrated List, monitoring needs and schedules, TMDL needs and schedules, as well as any other information usually included in the 305(b) Report, will be submitted to the USEPA as required by Section 305(b) of the Clean Water Act. The Department will post the availability of the Integrated Report on its web page at that time.

11.0 References

Barbour, M.T., S.K. Gross, R.M. Hughes, J.L. Plafkin, and K.D. Porter. 1989. *Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish*. EPA/444/4-89/001. U.S. Environmental Protection Agency; Office of Water; Washington, D.C.Code of Federal Regulations. 1979. Federal Register. 40 CFR Part 106. Washington, D.C.

Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. *Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition*. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C. (also available on the Internet at http://www.epa.gov/ceisweb1/ceishome/atlas/bioindicators/rapidbioprotocol.html)

Bauder, J, 1998. *When is Water Good Enough for Livestock*. Montana State University. Online. Internet. July 9, 2000.

CFR, 1985. Code of Federal Regulations. Water Quality Planning and Management; Final Rule. 40CFR, Parts 35 and 130. Washington , D.C.

CFR, 1989. Code of Federal Regulations. National Pollutant Discharge Elimination System; Surface Water Toxics Control Program, Final Rule. 40CFR, Parts 122,123 and 130. Federal Register, Volume 54, No. 105. June 2,1989. Pages 23868 to 23899.

CFR, 1992. Code of Federal Regulations. Federal Register, Volume 57, No. 143 July 24, 1992.Pg 33047, Preamble to Section 130.7 TMDLs

DRBC. 1996. *Administrative Manual — Part III Water Quality Regulations*. October, 23, 1996. West Trenton, New Jersey 08628.

FDA. 1981. Food and Drug Administration Correspondence from FDA Commissioner Dr. Arthur Hull Hayes, Jr., to Governor Milliken of Michigan concerning advice on the Public Health Significance of TCDD Contaminant "Levels of Concern" for Finfish in the Great Lakes (8/26/81).

FDA. 1983. Food and Drug Administration Correspondence from John Taylor (Director, Div. Regulatory Guidance) to Thomas Belton (NJDEP) outlining an Advisory Opinion on N.J. Public Health Announcements Concerning TCDD Contamination of Finfish and Crabs (12/5/83).

Follet, R.H. and Soltanpour,P, 1999. *Irrigation Water Quality Criteria.* Colorado State University Cooperative Extension. Online. Internet. July 9, 2000.
National Research Council. 2001. “Assessing the TMDL Approach to Water Quality Management”. National Academy Press. Washington, DC.

NJDEP. 1990. *Assessment of Waters Impaired by Toxic Pollutants - FY90.* Division of Water Resources. Bureau of Water Quality Standards and Analysis. Aug. 1990. Draft.

NJDEP. 1992. New Jersey Department of Environmental Protection and Energy Field Sampling Procedures Manual. May. Trenton, New Jersey 08628.

NJDEP, 1994. Mercury Contamination New Jersey Freshwater Fish, Report of the Toxics in Biota Committee. July 1994.

NJDEP. 1996. Regulations Governing the Certification of Laboratories and Environmental Measurements. (N.J.A.C. 7:18). July 1, 1996. NJDEP Office of Quality Assurance Trenton, NJ.

NJDEP. 1996b. *Ambient Biomonitoring Network Lower Delaware River Drainage Basin: 1995-96 Benthic Macroinvertebrate Data.* Jul, 1996. Water Monitoring Management. Trenton, NJ.

NJDEP. 1997. *1996 Identification and Setting of Priorities for Section 303(d) Water Quality Limited Waters in New Jersey*. Jan, 1997. Office of Environmental Planning. Trenton, NJ.

NJDEP. 1998. *1998 Identification and Setting of Priorities for Section 303(d) Water Quality Limited Waters in New Jersey*. Sept. 15. Office of Environmental Planning. Trenton, NJ.

NJDEP. 1998b. *The New Jersey Department of Environmental Protection's Modernized Ambient Chemical Monitoring Network.* Jan, 1998. Water Monitoring Management. Trenton, NJ.

NJDEP, 1998c. Warmwater Fisheries Management Plan. January 1998. Division of Fish, Game and Wildlife, Bureau of Freshwater Fisheries, Trenton, NJ.

NJDEP. 2000. *Work/ Quality Assurance Project Plan 303(d) Evaluation Monitoring. FY2001- Revised*. Nov. 14,. Water Monitoring Management. Trenton, NJ.

NJDEP, 2001a. *2000 New Jersey Water Quality Inventory Report 305(b).* Water Monitoring and Standards, Trenton, NJ. http://www.state.nj.us/dep/wmm/sgwqt/wat/305(b)/305(b).htm.

NJDEP. 2001b. Bureau of Freshwater and Biological Monitoring, Rapid Bioassessment Protocol. *Internet*: http://www.state.nj.us/dep/watershedmgt/bfbm/rbpinfo.html

NJDEP. 2003. *FY03-FY04 Departmental Quality Management Plan.* Department of Environmental Protection, Office of Quality Assurance. Trenton, New Jersey.

NJDHSS. 2004. “N.J. Sanitary Code Chapter IX Public Recreation Bathing”. March, 2004 Trenton, NJ.

NJ Register. 2001. Solicitation Of Water Quality Related Data To Support The Development Of The 2002 Water Quality Limited Segments List Under Section 303(D) Of The Federal Clean Water Act And Subchapter 6 Of The New Jersey Watershed Management Planning Rules (N.J.A.C. 7:15-6).Department Of Environmental Protection. Division of Science, Research and Technology. Trenton, NJ.

NOAA. 1997. *The 1995 National Shellfish Registry of Classified Growing Waters*, Office of Resources conservation and Assessment, National Ocean Service, National Oceanic and Atmospheric Administration, US Dept. Commerce, July 1997.

USEPA. 1978. “Total maximum Daily Loads Under clean Water Act.” Federal register, Vol. 43, No. 250. Thursday, December 28, 1978. 6 pages.

USEPA. 1980. Clean Lakes Program Guidance Manual. EPA-440/5-81-003. December. Office of Water Regulations and Standards, Washington, DC 20460.

USEPA. 1984. “Guidance for Preparation of Combined Work/Quality Assurance Project Plans for Environmental Monitoring”. May. Office of Water Regulations and Standards, 553, Washington, DC 20460.

USEPA. 1989. “Rapid Bioassessment Protocol for Use in Streams and Rivers benthic Macroinvertebrates and Fish”. EPA/444/4-89-001.Office of Water. Washington, DC.

USEPA. 1991. “Guidance for Water Quality Based Decisions, The TMDL Process” (April 1991). EPA National Policy . . EPA-440/4-91-001 7/91. Office of Water. Washington DC 20460.

USEPA. 1993a. “Guidance Document on Clean Analytical Techniques and Monitoring”, EPA, October 1993

USEPA. 1993b. “Volunteer Estuary Monitoring: A Methods Manual”. EPA 842-B-93-004. December. Office of Wetlands, Oceans, and Watersheds, 4503F, Washington, DC 20460.

USEPA. 1994. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories – Volume II Risk Assessment and Fish Consumption Limits". June, 1994. EPA 823-B-94-004. USEPA Office of Water, Washington, DC.

USEPA. 1996a. “The Volunteer Monitor’s Guide to Quality Assurance Project Plans”. EPA 841-B-96-003. September. Office of Wetlands, Oceans, and Watersheds, 4503F, Washington, DC 20460.

USEPA. 1996b "The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion" (EPA 823-B-96-007) June, 1996.

USEPA. 1997a. National Clarifying Guidance for 1998 State and Territory Clean Water Act Section 303(d) Listing Decisions. August 17, 1997. 11 pages. Office of Water. Washington, DC 20460.

USEPA. 1997b. "Guidelines for the Preparation of the Comprehensive State Water Quality Assessments (305(b) reports) and electronic updates" (EPA –841-B-97-0027). September, 1997. Washington, D.C.

USEPA. 1997a. The Use of Existing and Readily Available Biological and Habitat for Listing Waters on the 1998 303(d) List. December, 1997. Assessment and Watershed Protection Division .Washington, D.C.

USEPA. 1997b. Memorandum from Robert Perciasepe to Regional Administrators. Re: New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs).August 8, 1997

USEPA. 1997c. "Volunteer Stream Monitoring: A Methods Manual". EPA 841-B-97-003. November. Office of Wetlands, Oceans, and Watersheds, 4503F, Washington, DC 20460.

USEPA. 1998. "Guidance on Quality Assurance Project Plans (QA/O-5)." February, 1998. Washington, DC. 20460.

USEPA. 1999a. "EPA Requirements for QA Project Plans (QA/R-5)," Interim Final, November. Washington, DC. 20460.

USEPA. 1999b. "Guidance for the Development of Quality Assurance Project Plans for Environmental Monitoring Programs". USEPA Region II. May 1, 1999. New York, NY.

USEPA. 1999c. "Rapid Bioassessment Protocols for use in Wadeable Streams and Rivers-Periphyton, Benthic, Macroinvertebrates, and Fish.". EPA 841-B-99-002.July. Office of Water. Washington, DC.

USEPA. 2000. "Guidance: Use of Fish and Shellfish Advisories and Classification in 303(d) and 305(b) Listing Decisions". WQSP-00-03. October. Office of Water. Washington, DC. 20460.

USEPA. 2001. Memorandum from Robert H. Wayland III to EPA Regional Water Management Directors, Science and Technology Directors and State, Territory and Authorized Tribe Water Quality Program Directors. Re: 2002 Integrated Water Quality Monitoring and Assessment Report Guidance. November 19, 2001

USEPA. 2002. “Consolidated Assessment and Listing Methodology: Toward a Compendium of Best Practices. First Edition”. July 2002. U.S. Environmental Protection Agency. Office of Wetlands, Oceans, and Watersheds (http://www.epa.gov/owow/monitoring/calm.html)

USEPA. 2003. Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Section 303(d) and 305(b) of the Clean Water Act.” July 21, 2003. . U.S. Environmental Protection Agency. Office of Wetlands, Oceans, and Watersheds. Assessment and Watershed Protection Branch. http://www.epa.gov/owow/tmdl/tmdl0103/index.html

USEPA. 2005. Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Section 303(d) and 305(b) of the Clean Water Act.” July 29, 2005. . U.S. Environmental Protection Agency. Office of Wetlands, Oceans, and Watersheds. Assessment and Watershed Protection Branch. http://www.epa.gov/owow/tmdl/2006IRG/

US Geological Survey, 1998. Water Resources Data, New Jersey Water Year 1997, Volume 1. Surface-Water Data. USGS Water-Data Report NJ-97-1. West Trenton, New Jersey.

US Geological Survey, 1999a. Trends in Water Quality of New Jersey Streams, Water Years 1986-95. US Geological Survey Water-Resources Investigations Report 98-4204. West Trenton, New Jersey.

US Geological Survey, 1999. Water Resources Data, New Jersey Water Year 1998, Volume 3. Water-Quality Data. USGS Water-Data Report NJ-98-1. West Trenton, New Jersey.

US Geological Survey, 2000. Water Resources Data, New Jersey Water Year 1999, Volume 3. Water-Quality Data. USGS Water-Data Report NJ-99-1. West Trenton, New Jersey.

US Geological Survey, 2001. Water Resources Data, New Jersey Water Year 2000, Volume 3. Water-Quality Data. USGS Water-Data Report NJ-00-1. West Trenton, New Jersey.

US Geological Survey,2002. Water Resources Data, New Jersey Water Year 2001, Volume 1. Surface-Water Data. USGS Water-Data Report NJ-95-1. West Trenton, New Jersey.

US Geological Survey, 2003. Water Resources Data, New Jersey Water Year 2002, Volume 1. Surface-Water Data. USGS Water-Data Report NJ-96-1. West Trenton, New Jersey.

Zampella, R.A., et al. 2001. The Mullica River Basin. Pinelands Commission, P.O..Box 7, New Lisbon, NJ. 08064.

Zampella, R.A., et al. 2003. The Rancocas Creek Basin. Pinelands Commission, P.O..Box 7, New Lisbon, NJ. 08064

Appendix H
NJ's Water Monitoring and Assessment Strategy (2005-2014)

(The Table of Contents and Executive Summary are provided as Appendix H. The complete document can be found on the Department's website at www.state.nj.us/dep/wmm/longtermstrategyreport.pdf. For further information on this document, contact Water Monitoring and Standards at 609-292-1623)

NEW JERSEY
WATER MONITORING & ASSESSMENT STRATEGY
(2005-2014)

Water Monitoring and Standards Program
NJ Department of Environmental Protection

Bradley M. Campbell, Commissioner

September 2004

NEW JERSEY WATER MONITORING & ASSESSMENT STRATEGY

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

WATER MONITORING AND STANDARDS PROGRAM

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EXECUTIVE SUMMARY

In March 2003, EPA issued national Guidance which identified the key elements for developing a state Water Quality Monitoring and Assessment Strategy to ensure compliance with Clean Water Act requirements. All states are now required, for receipt of 106 grant funds, to develop a comprehensive, 10 year long-term water monitoring strategy.

As the Guidance details, the monitoring program strategy is to cover all waters of the state (streams, rivers, lakes, reservoirs, estuaries, coastal areas, wetlands and ground water). For each waterbody type, the strategy must include discussions of 9 basic elements: 1. Monitoring objectives, 2. Monitoring design, 3. Core & supplemental water quality indicators, 4. Quality assurance, 5. Data management, 6. Data analysis/assessment, 7. Reporting, 8. Programmatic evaluation, and 9. General support and infrastructure planning.

In development of this strategy for New Jersey, the New Jersey Department of Environmental Protection (NJDEP) has performed an assessment of its ambient water monitoring programs based on the Department's water information needs, the EPA Guidance, and the results of the 1999 EPA audit of New Jersey's (NJ) water programs. The resulting document contains long-term strategies for ambient water monitoring and assessment programs that are in various stages of development – from the existing, well established stream monitoring program to the wetlands monitoring program, which is presently in a research and development stage.

The Strategy document is organized by waterbody type (e.g., rivers and streams, lakes and reservoirs). Within each monitoring area, current ambient monitoring programs are described and each of the 9 elements are discussed, the gaps are identified, as well as the resource and technical support needs to fill these gaps. For programs that cross waterbody types (e.g., Toxics in Fish & Shellfish), a separate program description is included. In developing each of the monitoring program strategies, NJDEP considered the 5 overall assessment-related questions, as well as the Core Indicators contained in the EPA guidance document. Key enhancements and/or opportunities for program efficiencies are also highlighted. Because this document is intended to serve as a 10 year plan for NJ's water monitoring and assessment programs, NJDEP has chosen to present its timelines for addressing these gaps in two 5-year intervals (2005-2009 and 2010-2014) so as to highlight short-term vs. long-term plans and needs. As such, all of the implementation plans, particularly the enhancements, are dependent upon availability of resources and needed technical support. An overall summary table of the key gaps and resource/technical support needs is contained in Appendix 3 of the document.

The main elements of the existing New Jersey water monitoring program include:

For freshwater, New Jersey's program includes quarterly sampling of a 115-station ambient stream network. This stream monitoring is a cooperative program between NJDEP and the United States Geological Survbey (USGS). In 2000, a supplemental ambient network for conventional parameters was initiated to provide monitoring at approximately 90 additional ambient sites. The chemical/physical networks monitor conventional parameters, metals, bacteria, pesticides, volatile organic compounds (VOC's) and sediments. Strategic directions identified for these networks include additions of toxic parameters to the supplemental network sites, continuous temperature monitoring at selected sites, and research to evaluate analytical methods for network use that can achieve lower detection limits for arsenic and mercury. The most significant enhancement, the addition of toxic parameters to supplemental monitoring locations, is being addressed in FY2005.

In 1992, NJDEP reactivated its Ambient Biomonitoring Network (AMNET). The network established sampling stations in every sub-watershed, and has a total of 820 sites. The status of benthic macroinvertebrate communities is evaluated using EPA's Rapid Bioassessment Protocol (RBP). Each of the five major drainage basins is sampled, on a rotational basis, every 5 years. Visual observation, stream habitat assessments and limited physical/chemical data are also collected. In 2000, a second biological monitoring network was initiated and validated for the northern portion of the state, the Fish Index of Biotic Integrity (FIBI). Using EPA's protocol, the biological health of streams is assessed using fish assemblage information. Primary strategic directions for these areas include the need for technical support in calibration of NJ's impairment scores, source identification monitoring for biologically impaired waters, and development of a fish index of biotic integrity sampling in the southern coastal plain section of the state.

In 2004, NJDEP initiated a renewed ambient lake monitoring network designed to provide the water quality data necessary to assess the ecological health of the State's lentic water resources. This program involves the testing of randomly selected lakes from the state's approximately 1100 named lakes. The water quality measurements conducted at each randomly selected lake include parameters such as dissolved oxygen, pH, nutrients, and chlorophyll a. Such testing will assist New Jersey in determining lake water quality, as needed to meet its Clean Water Act requirements and its Total Maximum Daily Load (TMDL)-related water quality assessment obligations. Currently, the lakes program focuses on the status of lake water quality in the state. The primary strategic enhancement identified would be to develop trends monitoring and assessment capability, preferably through a volunteer lakes monitoring program.

For marine waters, NJDEP conducts water quality monitoring to classify approximately 700,000 acres of marine and estuarine shellfish waters. As part of the National Shellfish Sanitation Program (NSSP), NJDEP collects approximately 15,000 ambient water samples per year from a network of more than 2,500 monitoring stations throughout the State's coastal waters. These stations are sampled between five (5) and twelve (12) times per year. The resulting data are analyzed for compliance with federal standards for shellfish sanitation. Waters not in compliance are closed to shellfish harvest. As part of the NSSP, NJDEP also conducts coastal phytoplankton monitoring every summer in New Jersey's bay and near-shore ocean waters. Key strategic directions for NSSP monitoring include enhancement of limited testing of toxics in shellfish tissue and addressing the need for capacity expansion for microbial source trackdown. This laboratory expansion is being addressed in FY2005.

NJDEP also monitors the condition of the State's coastal waters by measuring basic water quality (dissolved oxygen, nutrients and water clarity) at 260 locations on a quarterly basis. EPA provides assistance with this monitoring and with phytoplankton monitoring in the summer months, as well as support for NSSP sampling throughout the year. NJDEP and EPA Region 2 are jointly evaluating the potential use of aircraft remote sensing to significantly enhance phytoplankton monitoring. EPA's National Coastal Assessment (NCA) research program is performed in partnership with NJDEP and includes measurements of sediment chemistry, sediment toxicity and the benthic community annually at about 50 locations in New Jersey's estuarine waters. Strategic enhancements include transitioning the EPA NCA research program into a state monitoring program, development of ecological assessments for estuarine waters, and developing automated monitoring for dissolved oxygen in the state's coastal waters. The state has submitted a grant proposal to NOAA in FY2005 to develop a component of an Integrated Ocean Observing System which, if funded, would assist in addressing the need for continuous DO monitoring. NJDEP is also considering data generated by its outside partners in the NY/NJ Harbor (NJ Harbor Dischargers Group) and in the Delaware (Delaware River Basin Commission – DRBC) watershed as a possible means to address geographical gaps in the State's coastal water monitoring.

For ground water, New Jersey has developed and now maintains a cooperative network (NJDEP & USGS) consisting of 150 wells screened at the water table that are sampled 30 per year on a 5-year cycle. The goals of the network are to determine the status and trends of shallow ground-water quality as a function of land use related to non-point source pollution in New Jersey. Parameters measured include conventionals (pH, turbidity, temperature, DO), nutrients, VOCs, radioactivity, and pesticides. The primary strategic enhancement for this monitoring program would be the integration of all sources of ground water data – the network (described above) as well as data collected as a result of the Private Well Testing Act and site remediation-related data.

In addition to the water monitoring networks described above, NJDEP also conducts targeted physical, chemical and biological water monitoring for needs such as further evaluation of waters previously listed as impaired on NJ's Impaired Waterbodies List, TMDL development/implementation, and in response to environmental spills.

NJDEP has also identified key strategic directions for cross-cutting water monitoring programs, such as toxics in fish and shellfish, TMDL development, wetlands, and volunteer monitoring, as well as for water quality assessment and water quality data management. For water quality assessment and data management, these enhancements include integration of all available, high quality data (both DEP and non-department data) into the department's assessment database for use in preparation of the *Integrated Water Quality Monitoring and Assessment Report* as well as the addition of new external water monitoring data (e.g., volunteer monitoring) to STORET through development of a common data exchange element.

Details of evaluations and suggested directions for all programs are contained in the strategy document and a summary of key enhancements is contained in Appendix 3 of this document. Additional information on the water monitoring activities and networks, described in this strategy document, may also be found on NJDEP Water Monitoring and Standards website (http://www.nj.gov/dep/wmm/).

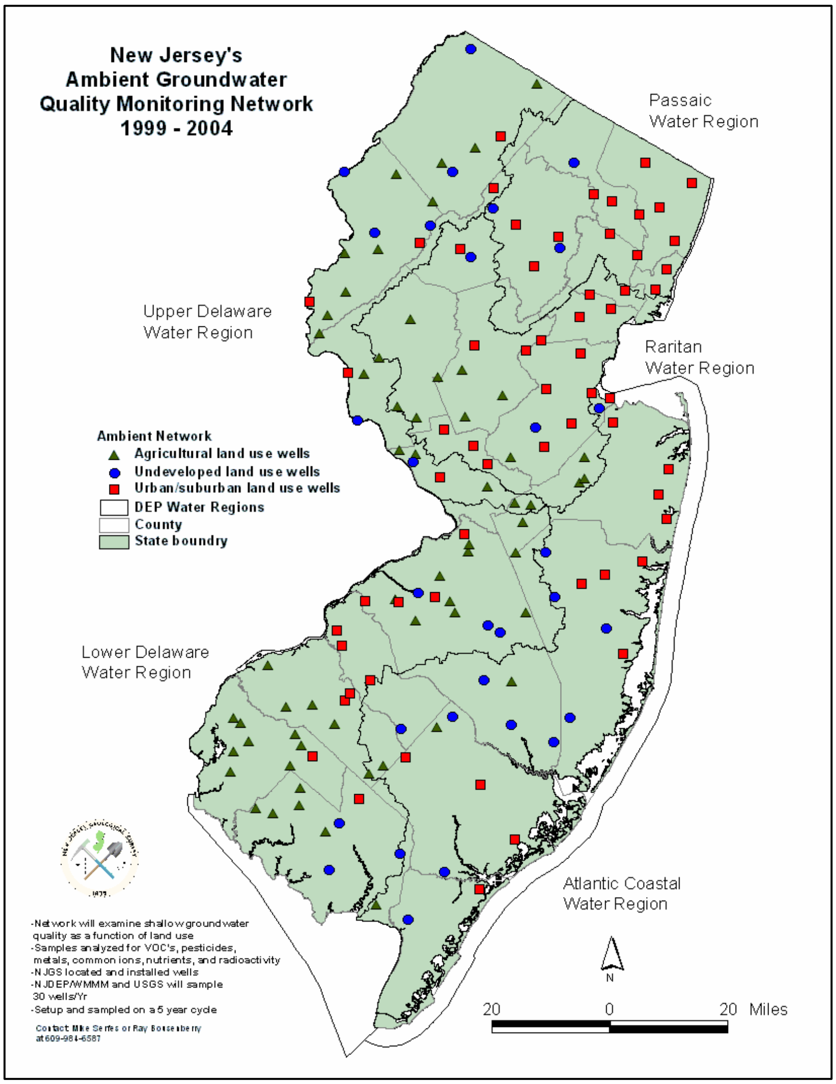
Dam below Batsto Lake, Hammonton, NJ

Appendix I
New Jersey's Ambient Ground Water Quality Monitoring Network

Appendix I: Ambient Ground Water Quality Monitoring Network

As a companion to its surface water monitoring program (see Chapter 2), New Jersey has developed and now maintains a cooperative ambient ground water quality monitoring network with the United States Geological Survey (USGS), consisting of 150 wells screened at the water table. Thirty wells are sampled annually creating a five-year monitoring cycle. The primary goal of the ambient ground water quality monitoring network (AGWQMN) is to characterize shallow ground water quality as a function of land use.

Figure 1: Location And Land Uses Associated With Ambient Network Wells



The water table is the first and most significantly impacted part of the ground water system. Network wells are screened or open just below the water table and therefore samples from them are generally expected to represent relatively young ground water. This is the ground water that interacts with and impacts surface water quality.

Wells sites were located using a stratified-random site selection process as outlined by Scott (1990). The final distribution of wells as a function of land use is 60 in agricultural areas, 60 in urban/suburban areas, and 30 in undeveloped land use areas (see Figure 1). Land use designations were determined using 1986 and 1995 land use coverage's, 1995 aerial photographs and site visits. Well sites were selected using land use designations and estimations of ground water flow directions based on the local geologic framework and site-specific topographic relationships. The 1986 and updated 1995 digital land use data categories were interpreted from 1986 and 1995 color infrared aerial photography. Parameters measured include conventional pollutants (pH, turbidity, temperature, DO), nutrients, metals, minerals, VOCs, radioactivity, and pesticides.

Geology:

The state of New Jersey can be separated in 4 geologically unique regions or Physiographic Provinces each with unique rock types, landforms and hydrogeological settings (see Figure 1).F These geological variables affect natural ground water quality. From north to south the regions are:

1) The Valley and Ridge: mostly of a thick sequence of Paleozoic sedimentary rocks ranging in age from approximately 390 to 540 million years. Sedimentary rock types include dolomite, limestone, sandstone, shale (often metamorphosed to slate) and siltstone.
2) The New England Province (Highlands): ridges of more resistant Middle Proterozoic (~ 940 to 1600 Ma) metamorphosed igneous and sedimentary rocks. These rocks are in fault and unconformable contact with lenses and elongate belts of generally less resistant Paleozoic sedimentary rocks (like 1 above) comprise the valley floors.
3) The Piedmont: intersects and it mostly underlain by the Newark Basin, which is mainly comprised of lower Mesozoic aged (~230 to 190 Ma) red, gray and black (organic rich) shale and sandstone that are inter-layered with basic igneous intrusions.
4) The Coastal Plain (Southern New Jersey): a southeasterly dipping and thickening wedge of stratified unconsolidated sand, silt, clay and gravel sediments that vary in age from Cretaceous ~ 144-66 million years ago (Ma) to Tertiary (~ 1.6 Ma).

Three glaciations have occurred within the last 2 million years. North of the maximum extent of the last glaciation (~ 20,000 years ago), the landscape is draped by unstratified and stratified unconsolidated glacial materials of various thicknesses.

Ground Water Quality:

Ground water is mainly recharged by precipitation that percolates downward through the unsaturated zone into the zone of saturation. Ground water quality is a reflection of: 1) the starting composition of precipitation; 2) the solubility and composition of the materials that the precipitation contacts on the land surface, in the unsaturated zone and in the saturated zone; and 3) the duration of that contact. Natural geologic materials impart a geochemical character to the water contacting it that is unique to those materials. Anthropogenic contaminants or pollutants in the form of dissolved gases, chemical constituents and possibly colloids and other particles can impact ground water quality.

Sources of ground water pollution can be separated into two general types: 1) point source pollution and 2) nonpoint source pollution. Point sources of pollution can be tracked back to a single identifiable source, such as a chemical spill, leaking underground storage tank or an infiltration lagoon. In the AGWQMN, efforts were made to select wells that are not impacted by pollutants from known point sources.

Nonpoint source pollution is from diffuse sources that do not have a single identifiable point of origin. This type of pollution can adversely affect the quality of water in the hydrologic cycle over large areas. For example, the release of emissions to the atmosphere from the burning of fossil fuels, such as sulfur that produces acid rain, can alter the quality of precipitation that can in turn have a regional impact on surface and ground water quality. In addition, once precipitation contacts the land surface it can be further altered by dissolving nonpoint source pollutants associated with agricultural and urban land use activities; thereby impacting water quality on a regional scale.

Data summaries of samples collected and analyzed from the 150 AGWQMN wells between 1999 and 2004 are presented and discussed below. Samples from these wells were collected by the Department of Environmental Protection's (Department's) Bureau of Fresh Water and Biological Monitoring and USGS' New Jersey Water Science Center, and analyzed at the USGS National Water Quality Laboratories in Denver, Colorado. VOCs and pesticides were analyzed using USGS methods O-3127-94 (Rose and Schroeder, 1995) and O-4127-96 (Zaugg and others, 1995), respectively. Data for water years 1999 to 2004 are reported in their respective USGS Water Resources Data Reports for New Jersey (DeLuca and others, 2000 – 2005).

AGWQMN wells in undeveloped areas yield ground water with a more natural quality than those in agricultural and urban areas and therefore provide a reference for water quality that is little affected by man's activities. Shallow ground water chemistry in undeveloped areas in the Coastal Plain (southern New Jersey) is different from that in the northern portion of NJ that is underlain by bedrock (northern New Jersey). For example, the median pH and total dissolved concentration (TDS) is much lower in southern than northern New Jersey (see Table 1). Minerals comprising the northern aquifers are generally more reactive than those in the south because they are more soluble. For example, many of the northern aquifers contain the soluble mineral calcite ($CaCO_3$) that imparts alkalinity to ground water upon dissolution. That reaction yields circum-neutral pH waters with Ca and bicarbonate as major ions. The quartz rich less-reactive sands in southern New Jersey are generally devoid of highly soluble minerals yielding little if any alkalinity and ground water is more dilute and acidic, similar to the rainwater that recharged it. Because the natural shallow ground water quality is clearly different in the Coastal Plain in southern New Jersey than in the Physiographic Provinces to the north, the data in this report are separated into Northern and Southern.

Water Quality Parameters:

The water quality parameters or constituents such as temperature, dissolved oxygen, pH, and total dissolved solid (TDS) concentration values yield information about the general character of shallow ground water as a function of geology and land use (Table 1). Lower pH and TDS values in the south reflect the difference in geologic makeup. In addition, it is generally cooler in northern New Jersey, which is reflected in the cooler shallow ground water temperatures relative to the south. The lower dissolved oxygen concentration in urban areas in both the north and south, may result from the large percentage of heat absorbing impervious surface area and resulting poorer exchange with atmospheric oxygen, and the higher temperature surface effects on the density of air. Increased total dissolved solids concentrations in agricultural and urban areas are due to the road salt and agrochemical applications. Many wells in agricultural land use areas are also near roads and therefore their water quality can also be impacted by road salt.

Table 1: Ground Water Characteristics And Constituents

Characteristic or Constituent	Agricultural			Urban			Undeveloped		
	Min.	Med.	Max.	Min.	Med.	Max.	Min.	Med.	Max.
Northern New Jersey									
Temp. °C	10.3	13.3	23	6.8	12.8	18.3	10	12	14
DO mg/l	<0.2	4.3	11	<0.2	2.9	6.9	<0.2	4.2	6.7
pH	6.5	7.4	8.1	5.2	6.9	8.4	5.8	7	8.1
TDS mg/l	167	269	938	208	550	2200	22	119	387
Southern New Jersey									
Temp. °C	12	16	22.5	15	18.2	29	12	14.5	18
DO mg/l	<0.2	6.4	10.5	<0.2	2.1	10	<0.2	4.6	9.3
pH	4	5.1	7.9	3.8	4.9	7.8	3.7	4.7	6
TDS mg/l	35	194	690	57	161	816	15	27	152

<u>Trace elements</u>
Trace elements concentrations are those that have New Jersey Ground and/or Drinking Water Quality Standards with at least one value exceeding a standard. Comparison of the frequency and concentration of detectable trace elements in undeveloped land use areas with those in agricultural and urban areas yields clues to a natural versus anthropogenic source. In northern New Jersey, Sb, As, Cd, Pb and Mn appear to be mostly natural in origin. Fe and Be have an urban association. Dissolved Fe concentrations and frequency of occurrence in urban areas may be due to the lower dissolved oxygen concentrations found there. In a more chemically reducing environment, soluble ferrous iron (Fe^{2+}) would be more stable than less soluble ferric iron (Fe^{3+}). Beryllium emissions from the burning of coal, fuel oil and municipal waste can increase the Be concentration in soil, water and air (ATSDR, 2002). In Southern New Jersey, Al, Sb, and Fe appear to by mostly natural in origin. Two urban wells sampled during the year 2000 contained 112 ug/L and 42 ug/L As. Both are associated with low dissolved oxygen concentrations of

less than 0.5 mg/L, relatively high dissolved organic carbon concentrations of 4.4 and 3.5 mg/L and high Fe concentrations of 29.4 and 22.5 mg/L respectively. Therefore, the elevated As concentrations are likely related to the unusually high degree of iron-oxide dissolution although the ultimate source of the As is unknown. Be, Cd and Pb have higher occurrence and concentrations in the agricultural and urban areas. Metal cations are more mobile in acidic ground water which is common in southern New Jersey than in alkaline water that is more common in the north. The application of fertilizers and other agricultural and lawn care products can either be sources or mobilizing agents of some trace metals.

<u>Nutrients</u>
Nutrient concentrations are dominated by nitrate and the frequency and concentration by land use in both Northern and Southern New Jersey are: agricultural > urban > undeveloped (figure 4). . The use of nitrogen-based fertilizers in agricultural and urban areas and possibly septic system and sewer system leakage in urban areas are considered the major sources. No sample had an orthophosphorous concentration greater than 0.2 mg/L.

<u>VOCs (29 compounds analyzed)</u>
The total number of detections of one or more VOCs from individual well water samples from the entire network as a function of land use are: urban (87) > agricultural (34) > undeveloped (17, or 34 when normalized to 60 wells). Most of the VOCs detected are at very low concentrations. Thirty-eight out of 148 network wells sampled for VOCs had detectable levels of methyl tertiary-butyl ether (MTBE), with a maximum value of 47 ug/L. It must be noted that the well exhibiting 47 ug/L was within 1000 feet of a Bureau of Underground Storage Tank (BUST) site remediation case. The percentages of detectable levels of MTBE as a function of land use are: 47 percent of urban, 13 percent of agricultural and 6 percent of undeveloped wells. This distribution is not surprising since gasoline, in which MTBE is an additive, is used most in urban areas.

Low concentrations of chloroform and MTBE have been measured in the atmosphere and related to concentrations in shallow ground water by Baehr and others, 1999. Trichloromethane or chloroform was also frequently detected in 34 percent of undeveloped, 32 percent of urban and 12 percent of agricultural network wells. Nonpoint sources of chloroform include housing developments using individual septic systems, leaking sewers in urban areas, and the use of chlorinated drinking water for watering lawns and gardens and filling swimming pools. Southern New Jersey has a greater percent of VOC detects than northern New Jersey and a higher percentage of agricultural and undeveloped area wells with deects, however, the variety of compounds detected was greater in the north. The lower adsorptive capability of the aquifer materials in the south coupled with the greater number of urban wells in the north may explain these observations. In addition, the general west to east weather pattern would carry the most ubiquitous volatile contaminants, such as MTBE and chloroform, from the Philadelphia/Camden urban area over the less developed land use areas near the western boarder of southern New Jersey. In the north, the urban centers are mostly in the eastern part of the state.

Pesticides

The frequency of pesticide detection in the north and the south combined are agricultural (146) > urban (57) > undeveloped (three, or six when normalized to 60 wells). However, the concentration of pesticides is very low in all land use categories. Atrazine, Deethylatrazine, Metolachlor, Prometon and Simazine were the most frequently detected compounds (figure 6). They are all herbicides used to control grasses and broadleaf plants, except for Deethylatrazine which is the major metabolite of Atrazine. It must be noted the degradation by-products of these pesticides, except for Deethylatrazine, are not measured and may be at much higher concentrations than the parent compounds (personal communication; Roy Meyer, NJDEP/Pesticide Control Program).

Radionuclides

Gross alpha particle activity was analyzed within 48 hours after sample collection. This ensures that the radioactive decay of short-lived radium-224 (half-life of 3.64 days) is measured along with the other alpha emitters. The Federal and New Jersey drinking water standard of 15 pCi/L gross alpha particle activity still applies even though the shorter holding time results in increased activity if significant radium-224 is present. Generally, higher activity is found in southern versus northern New Jersey in all land use settings. This is most likely due to the greater abundance of radium-224 in southern New Jersey and the low pH of the ground water, which would increase its mobility. In both the north and the south, the highest activity is associated with agricultural and urban land use areas. The application of agricultural and lawn chemical products can compete with naturally occurring radium for adsorption sites thereby mobilizing more of it than normal into the ground water system.

Conclusion:

Total dissolved solids concentrations, as well as the concentration, frequency, and variety of trace elements, nutrients, volatile organic hydrocarbons (VOC) and pesticides are found at significantly higher levels in wells located in agricultural and urban areas than from wells in undeveloped areas. Shallow ground water in agricultural land use areas have the highest frequency of pesticide detection's, highest median nitrate concentrations (maximum up to 56 mg/L in this network) and gross alpha particle activity. These concentrations are likely related to the application of agricultural chemicals. In Urban areas, there are generally lower dissolved oxygen and higher total dissolved solids, dissolved iron, chloride, and VOC (such as MTBE) concentrations found in the ground water. These contaminants have the potential to impact potable wells and surface water.

References:

Agency for Toxic Substances and Disease Registry (ATSDR), 2002, Toxicological profile for beryllium. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Baehr, A.L., Stackelberg, P.E., and Baker, R.J., 1999, Evaluation of the atmosphere as a source of volatile organic compounds in shallow ground water, Water Resources Research, vol. 35, no. 1, p. 127-136.

DeLuca, M.J., Romanok, K.M., Riskin, M.L., Mattes, G.L., Thomas, A.M., and Gray, B.J., 2000, Water-resources data for New Jersey-water year 1999, Volume 3. Water-quality data: U.S. Geological Survey Water-Data Report NJ-99-3, 517 p.

DeLuca, M.J., Mattes, G.L., Burns, H.L., 2001, Water resources data for New Jersey-water year 2000, Volume 3. Water-quality data: U.S. Geological Survey Water-Data Report NJ-00-3, 618 p.

DeLuca, M.J., Hoppe, H.L., Doyle, H.A., Gray, B.J., 2002, Water resources data for New Jersey-water year 2001, Volume 3. Water-quality data: U.S. Geological Survey Water-Data Report NJ-01-3, 580 p.

NJDEP, 2000, 1995/97 Land use/Land cover Update by Watershed Management Area.

Rose, D.L., and Schroeder, M.P., 1995, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory--Determination of volatile organic compounds in water by purge and trap capillary gas chromatography/mass spectrometry: U.S. Geological Survey Open-File Report 94-708, 26 p.

Scott, J.C., 1990, Computerized Stratified Random Site-Selection Approaches for Design of a Ground-Water-Quality Sampling Network, U.S. Geological Survey, Water-Resources Investigations Report 90-4101.

Serfes, M.S., 1998, History, Goals and Redesign of New Jersey's Ambient Ground Water Quality Network, Proceedings of the NWQMC National Monitoring Conference on July 7-9, 1998 in Reno, NV, p. III-235.

Stackelberg, P.E., Hopple, J.A., and Kauffman, L.J., 1997, Occurrence of Nitrate, Pesticides and Volatile Organic Compounds in the Kirkwood-Cohansey Aquifer System, Southern New Jersey: WRIR 97-4241.

Szabo, Z., Kozinski, J., and Zapecza, O.S., Natural Radioactivity in, and Inorganic Chemistry of, Ground Water in the Kirkwood-Cohansey Aquifer System, Southern New Jersey, 1983-89, United States Geological Survey WRIR 92-4144.

Zapecza, O.S., 1984, Hydrologic framework of the New Jersey Coastal Plain: U.S. Geological Survey Open-File Report 84-730, 61 p.

Zaugg, S.D., Sandstrom, M.W., Smith, S.G., and Fehlberg, K.M., 1995, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory--Determination of pesticides in water by C-18 solid-phase extraction and capillary-column gas chromatography/mass spectrometry with selected-ion monitoring: U.S. Geological Survey Open-File Report 95-181, 60 p.

Appendix J

Surface Water Quality Standards NJAC 7:9B

This is a courtesy copy of this rule. All of the Department's rules are compiled in Title 7 of the New Jersey Administrative Code.

Surface Water Quality Standards

N. J. A. C. 7:9B

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

June 2005

STATE OF NEW JERSEY

Richard J. Codey, Acting Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bradley M. Campbell, Commissioner

SURFACE WATER QUALITY STANDARDS

Authority
N.J.S.A. 58:10A-1 et seq., 58:11A-1 et seq., and 13:1D-1 et seq.

Effective Date
April 17, 1998 (see 30 N.J.R. 1778(a))

Amendments - May 18, 1998 (see 30 N.J.R. 1778(a))

Amendments - January 22, 2002 (see 34 N.J.R. 537(a))

Amendments - May 19, 2003 (see 35 N.J.R. 2264(b))

Amendments - November 3, 2003 (see 35 N.J.R. 5086(a))

Amendments - August 2, 2004 (see 36 N.J.R. 3565(c))

Amendments - June 20, 2005 (see 37 N.J.R. 2251(a))

Executive Order No. 66 (1978) Expiration Date
Chapter 9B, Surface Water Quality Standards, expires on August 17, 2005

This document can be found at
http://www.state.nj.us/dep/wmm/sgwqt/swqsdocs.html

Subchapter 1. SURFACE WATER QUALITY STANDARDS

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CHAPTER 9B SURFACE WATER QUALITY STANDARDS

SUBCHAPTER 1. SURFACE WATER QUALITY STANDARDS

7:9B-1.1 Scope of subchapter

Unless otherwise provided by rule or statute, this subchapter shall constitute the rules of the Department of Environmental Protection governing matters of policy with respect to the protection and enhancement of surface water resources, class definitions and quality criteria, use designation and quality criteria for the mainstem of the Delaware River including the Delaware Bay, the classification of surface waters of the State, procedures for establishing water quality-based effluent limitations, modification of water quality-based effluent limitations, procedures for reclassifying specific segments for less restrictive uses and procedures for reclassifying specific segments for more restrictive uses pursuant to N.J.S.A. 13:1D-1 et seq., the New Jersey Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., and the Water Quality Planning Act, N.J.S.A. 58:11A-1 et seq.

7:9B-1.2 Construction

This subchapter shall be liberally construed to permit the Department and its various divisions to discharge their statutory functions.

7:9B-1.3 Severability

If any subchapter, section, subsection, provision, clause, or portion of this chapter, or the application thereof to any person, is adjudged unconstitutional or invalid by a court of competent jurisdiction, such judgment shall be confined in its operation to the subchapter, section, subsection, clause, portion, or application directly involved in the controversy in which such judgment shall have been rendered and it shall not affect or impair the remainder of this chapter or the application thereof to other persons.

7:9B-1.4 Definitions

The following words and terms, when used in this subchapter, shall have the following meanings, unless the context clearly indicates otherwise.

"Acute toxicity" means a lethal or severe adverse sublethal effect (for example, immobilization of daphnids) to an organism exposed to a toxic substance for a relatively short period of time. Acute toxicity is measured by short-term bioassays, generally of 48 or 96 hour duration.

"Agricultural water supply" means water used for field crops, livestock, horticulture, and silviculture.

"Ambient temperature" means the temperature of a waterbody beyond the portion of the waterbody that is affected by the localized heated waste discharge or discharge complex; or the temperature of a waterbody that would exist without addition of heated discharges.

"Anadromous fish" means fish that spend most of their life in saline waters and migrate to fresh waters to spawn.

"Aquatic substrata" means soil material and associated biota underlying the water.

"Bioaccumulation" means the increase of the concentration of a substance within the tissues of an organism, to levels in excess of that substance's ambient environmental concentration, directly from the water or through the ingestion of food (usually other organisms).

"Bioconcentration" means the net accumulation of a substance by an aquatic organism, as a result of uptake directly from the ambient water, through the gill membrane or other external body surfaces.

"Bioassay" means a toxicity test using aquatic organisms to determine the concentration or amount of a toxic substance causing a specified response in the test organisms under stated test conditions.

"Biota" means the animal and plant life of an ecosystem; flora and fauna collectively.

"Calculable changes" means changes to water quality characteristics as demonstrated by any acceptable mathematical, predictive method.

"C1" means Category One waters.

"C2" means Category Two waters.

"Category one waters" means those waters designated in the tables in N.J.A.C. 7:9B-1.15(c) through (h), for purposes of implementing the antidegradation policies set forth at N.J.A.C. 7:9B-1.5(d), for protection from measurable changes in water quality characteristics because of their clarity, color, scenic setting, other characteristics of aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resource(s). These waters may include, but are not limited to:

1. Waters originating wholly within Federal, interstate, State, county, or municipal parks, forests, fish and wildlife lands, and other special holdings that have not been designated as FW1 at N.J.A.C. 7:9B-1.15(h) Table 6;
2. Waters classified at N.J.A.C. 7:9B-1.15(c) through (g) as FW2 trout production waters and their tributaries;

3. Surface waters classified in this subchapter as FW2 trout maintenance or FW2 nontrout that are upstream of waters classified in this subchapter as FW2 trout production;
4. Shellfish waters of exceptional resource value; or
5. Other waters and their tributaries that flow through, or border, Federal, State, county, or municipal parks, forests, fish and wildlife lands, and other special holdings.

"Category two waters" means those waters not designated as Outstanding National Resource Waters or Category One at N.J.A.C. 7:9B-1.15 for purposes of implementing the antidegradation policies set forth at N.J.A.C. 7:9B-1.5(d).

"Chlorine produced oxidants" means the sum of free and combined chlorine and bromine as measured by the methods approved under N.J.A.C. 7:18. In fresh waters the oxidants measured are comprised predominantly of hypochlorous acid (HOCl), hypochlorite ion (OCl^-), monochloramine and dichloramine. In saline waters the oxidants measured are comprised predominantly of the oxidants listed for fresh waters plus hypobromous acid (HOBr), hypobromite ion (OBr^-) and bromamines.

"Chronic toxicity" means death or other adverse impacts that affect the growth, survival, or reproductive success of an organism or its progeny after a relatively long exposure period to toxic substances. Chronic toxicity is measured using intermediate-term or long-term bioassays.

“Complete mix” means a twenty five percent (25%) or less variation in concentration across the transect of the water body.

"Criteria" means those elements of the Surface Water Quality Standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use. When the criteria are met, water quality will generally protect the designated use.

"Department" means the New Jersey Department of Environmental Protection.

"Designated use" means those surface water or ground water uses, both existing and potential, that have been established by the Department for waters of the State.

"Diadromous fish" means fish that spend most of their life in one type of water, either fresh or saline, and migrate to the other type to spawn.

"Disinfection" means the removal, destruction, or inactivation of pathogenic and indicator organisms.

“Dissolved metal” means the concentration of metal that passes through a 0.45 μm membrane filter (as defined in “Methods for Chemical Analysis of Water and Wastes,” EPA-600/4-79-020, March 1979).

"DRBC" means Delaware River Basin Commission.

"EC50" means the median effective concentration of a toxic substance expressed as a statistical estimate of the concentration that has a specified adverse effect on 50 percent of the test organisms under specified test conditions, based on the results of an acute bioassay.

"Epilimnion" means the freely circulating upper region of a thermally stratified waterbody extending from the surface to the thermocline.

"Existing uses" means those uses actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the Surface Water Quality Standards.

"Federal Act" means the "Federal Water Pollution Control Act" (33 U.S.C. § 1251 et seq.), commonly referred to as the Clean Water Act, including all subsequent supplements and amendments.

"Flow-through bioassay" means a toxicity test in which the test solutions flow into and out of the test chambers on a once-through basis for the duration of the test, in accordance with N.J.A.C. 7:18.

"Fresh water(s)" means all nontidal and tidal waters generally having a salinity, due to natural sources, of less than or equal to 3.5 parts per thousand at mean high tide.

"FW" means the general surface water classification applied to fresh waters.

"FW1" means those fresh waters, as designated in N.J.A.C. 7:9B-1.15(h) Table 6, that are to be maintained in their natural state of quality (set aside for posterity) and not subjected to any man-made wastewater discharges or increases in runoff from anthropogenic activities. These waters are set aside for posterity because of their clarity, color, scenic setting, other characteristic of aesthetic value, unique ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resource(s).

"FW2" means the general surface water classification applied to those fresh waters that are not designated as FW1 or Pinelands Waters.

"Groundwater" means that portion of water beneath the land surface that is within the zone of saturation (below the water table) where pore spaces are filled with water.

"Heat dissipation area" means a mixing zone, as may be designated by the Department, into which thermal effluents may be discharged for the purpose of mixing, dispersing, or dissipating such effluents without creating nuisances, hazardous conditions, or violating the provisions of this chapter, the Surface Water Quality Standards.

"Hypolimnion" means the lower region of a stratified waterbody that extends from the thermocline to the bottom of the waterbody, and is isolated from circulation with the upper waters, thereby receiving little or no oxygen from the atmosphere.

"Important species" means species that are commercially valuable (for example, within the top 10 species landed, by dollar value); recreationally valuable; threatened or endangered; critical to the organization and/or maintenance of the ecosystem; or other species necessary in the food web for the well-being of the species identified in this definition.

"Industrial water supply" means water used for processing or cooling.

"Intermittent stream" means a stream with a MA7CD10 flow of less than one-tenth (0.1) cubic foot per second.

"Lake, pond, or reservoir" means any impoundment, whether naturally occurring or created in whole or in part by the building of structures for the retention of surface water, excluding sedimentation control and stormwater retention/detention basins and ponds designed for treatment of wastewater. Lakes, ponds, and reservoirs are characterized by a long term or permanent downgradient restriction of surface water flow from the impoundment and areas of quiescent water within the body of the impoundment. Lakes, ponds, and reservoirs are frequently characterized by greater water depths within the impoundment than either the upgradient or downgradient surface water flow and by shallow water lateral edges containing emergent or submerged plant species. For regulatory purposes, the upgradient boundary of a lake, pond, impoundment, or reservoir shall be considered to be the point at which areas of greater depth and relatively quiescent water can be differentiated from the upgradient surface water input into the impoundment under average flow conditions.

"LC50" means the median lethal concentration of a toxic substance, expressed as a statistical estimate of the concentration that kills 50 percent of the test organisms under specified test conditions, based on the results of an acute bioassay.

"Limiting nutrient" means a nutrient whose absence or scarcity exerts a restraining influence upon an aquatic biological population.

“Load allocation” means the portion of a receiving water’s total maximum daily load (TMDL) for a specific pollutant that is allocated to existing or future nonpoint sources of pollution.

"MA1CD10" means the minimum average one day flow with a statistical recurrence interval of 10 years.

"MA7CD10" means the minimum average seven consecutive day flow with a statistical recurrence interval of 10 years.

"MA30CD10" means the minimum average 30 consecutive day flow with a statistical recurrence interval of ten years.

"Measurable changes" means changes measured or determined by a biological, chemical, physical, or analytical method, conducted in accordance with USEPA approved methods as identified in 40 C.F.R. 136 or other analytical methods (for example, mathematical models, ecological indices) approved by the Department, that might adversely impact a water use (including, but not limited to, aesthetics).

"Natural flow" means the water flow that would exist in a waterway without the addition of flow of artificial origin.

"Natural water quality" means the water quality that would exist in a waterway or a waterbody without the addition of water or waterborne substances from artificial origin.

"NJPDES" means New Jersey Pollutant Discharge Elimination System.

"Nondegradation waters" means those waters set aside for posterity because of their clarity, color, scenic setting, other characteristic of aesthetic value, unique ecological significance, exceptional recreational significance, or exceptional water supply significance. These waters include all waters designated as FW1 in this subchapter.

"Nonpersistent" means degrading relatively quickly, generally having a half-life of less than 96 hours.

"Nonpoint source" or "NPS" means:

1. Any man-made or man-induced activity, factor, or condition, other than a point source, from which pollutants are or may be discharged;
2. Any man-made or man-induced activity, factor, or condition, other than a point source, that may temporarily or permanently change any chemical, physical, biological, or radiological characteristic of waters of the State from what was or is the natural, pristine condition of such waters, or that may increase the degree of such change; or
3. Any activity, factor, or condition, other than a point source, that contributes or may contribute to water pollution.

"Nontrout waters" means fresh waters that have not been designated in N.J.A.C. 7:9B-1.15(b) through (h) as trout production or trout maintenance. These waters are generally not suitable for trout because of their physical, chemical, or biological characteristics, but are suitable for a wide variety of other fish species.

"NPDES" means National Pollutant Discharge Elimination System.

"NT" means nontrout waters.

"Nutrient" means a chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the growth and development of organisms.

"Outstanding National Resource Waters" or "ONRW" means high quality waters that constitute an outstanding national resource (for example, waters of National/State Parks and Wildlife Refuges and waters of exceptional recreational or ecological significance). Waters classified as FW1 waters and Pinelands waters are Outstanding National Resource Waters.

"Persistent" means relatively resistant to degradation, generally having a half life of over 96 hours.

"Pinelands waters" means all waters within the boundaries of the Pinelands Area, except those waters designated as FW1 in N.J.A.C. 7:9B-1.15(h) Table 6, as established in the Pinelands Protection Act (N.J.S.A. 13:18A-1 et seq.) and shown on Plate 1 of the "Comprehensive Management Plan" adopted by the New Jersey Pinelands Commission in November 1980.

"PL" means the general surface water classification applied to Pinelands Waters.

"Point source" or "PS" means any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture.

"Pollutant" means any dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, medical wastes, radioactive substance (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. § 2011 et. seq.)), thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, agricultural and construction waste or runoff or other residue discharged directly or indirectly to the land, ground waters or surface waters of the State, or to a domestic treatment works as defined at N.J.A.C. 7:14A-1.2. "Pollutant" includes both hazardous and nonhazardous pollutants.

“Potable surface water intake” means any structure or apparatus used to withdraw surface waters directly or indirectly that is conveyed to a potable treatment plant or is used for other potable purposes.

"Primary contact recreation" means water related recreational activities that involve significant ingestion risks and includes, but is not limited to, wading, swimming, diving, surfing, and water skiing.

"Public hearing" means a legislative type hearing before a representative or representatives of the Department providing the opportunity for public comment, but does not include cross-examination.

“Regulatory mixing zones” means areas of surface waters established pursuant to this chapter for the purpose of initial mixing, dispersion, or dissipation of wastewater effluent at or near the discharge point. Regulatory mixing zones may be established for applicable criteria.

"River mile" or "R.M." means the distance, measured in statute miles, between two locations on a stream, with the first location designated as mile zero. For example, mile zero for the Delaware River is located at the intersection of the center line of the navigation channel and a line between the Cape May Light, New Jersey, and the tip of Cape Henlopen, Delaware.

"Saline waters" means waters having salinities generally greater than 3.5 parts per thousand at mean high tide.

"SC" means the general surface water classification applied to coastal saline waters.

"SE" means the general surface water classification applied to saline waters of estuaries.

"Secondary contact recreation" means recreational activities where the probability of water ingestion is minimal and includes, but is not limited to, boating and fishing.

"Shellfish" means those mollusks commonly known as clams, oysters, or mussels.

"Shellfish waters" means waters classified as Approved, Seasonally Approved, Special Restricted, Seasonally Special Restricted or Condemned that support or possess the potential to support shellfish which are within the Coastal Area Facility Review Act (C.A.F.R.A.) zone as delineated in 1973, (excluding: 1 - The Cohansey River upstream of Brown's Run; 2 - The Maurice River upstream of Route 548; 3 - The Great Egg Harbor River upstream of Powell Creek; 4 - The Tuckahoe River upstream of Route 50; 5 - The Mullica River upstream of the Garden State Parkway) plus the adjacent areas between Route 35 (from its juncture with the C.A.F.R.A. zone just north of Red Bank to its juncture with the C.A.F.R.A. zone just south of Keyport) and the C.A.F.R.A. zone and the area from the C.A.F.R.A. zone on the south northwesterly along Route 35 to the northern shore of the Raritan River, then easterly along the northern shore of the Raritan River to the southeast point of Perth Amboy, then due east to the New Jersey jurisdictional limit, and seaward along the jurisdictional limit to the Atlantic Ocean.

“State Act” means the New Jersey “Water Pollution Control Act,” N.J.S.A. 58:10A-1 et seq., as amended.

"Stream temperature" means the temperature of a stream outside of a designated heat dissipation area.

"Surface water classifications" means names assigned by the Department as set forth at N.J.A.C. 7:9B-1.15(b) through (h) to waters having the same designated uses and water quality criteria (for example, FW1, PL, FW2-NT, SE1, SC, Zone 1C).

"Surface Water Quality Standards" (SWQS) means the rules, in this chapter, N.J.A.C. 7:9B, which set forth, designated uses, use classifications, and water quality criteria for the State's waters based upon such uses, and the Department's policies concerning these uses, classifications and criteria.

"Surface waters" means water at or above the land's surface which is neither groundwater nor contained within the unsaturated zone, including, but not limited to, the ocean and its tributaries, all springs, streams, rivers, lakes, ponds, wetlands, and artificial waterbodies.

"Thermal alterations" means the increase or decrease in the temperature of surface waters, above or below the natural temperature, that may be caused by the activities of man.

"Thermocline" means the plane of maximum rate of change in temperature with respect to depth.

"Tidal waters" means fresh or saline water under tidal influence, up to the head of tide.

"TM" means trout maintenance.

"Total maximum daily load" or "TMDL" means a total maximum daily load formally established pursuant to Section 7 of the Water Quality Planning Act (N.J.S.A. 58:11A-7) and Section 303(d) of the Clean Water Act, 33 U.S.C. §§1251 et seq. A TMDL is the sum of individual wasteload allocations for point sources, load allocations for nonpoint sources of pollution, other sources such as tributaries, or adjacent segments, and allocations to a reserve or margin of safety for an individual pollutant.

"Total recoverable metal" means the concentration of metal in an unfiltered sample following treatment with hot dilute mineral acid (as defined in "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1979, incorporated herein by reference).

"Toxic substance" or "toxic pollutant" means any pollutant identified pursuant to the Federal Act, or any pollutant or combination of pollutants, including disease causing agents, which after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly or indirectly by ingestion through food chains, may, on the basis of the information available to the Department, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions, including malfunctions in reproduction, or physical deformation, in such organisms or their offspring. Toxic pollutants shall, include but not be limited, to those pollutants identified pursuant to Section 307 of the Federal Act or Section 4 of the State Act, or in the case of “sludge use or disposal practices,” any pollutant identified pursuant to Section 405(d) of the Federal Act.

"TP" means trout production.

"Trout maintenance waters" means waters designated at N.J.A.C. 7:9B-1.15(b) through (g) for the support of trout throughout the year.

"Trout production waters" means waters designated at N.J.A.C. 7:9B-1.15(b) through (g) for use by trout for spawning or nursery purposes during their first summer.

"Unsaturated zone" means the subsurface volume between the land's surface and the top of the saturated zone (water table), where moisture does not fill all the pore spaces in the formation or soil.

"USEPA" means the United States Environmental Protection Agency.

"Wasteload allocation" or "WLA" means the portion of a receiving water's total maximum daily load for a specific pollutant that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation.

"Water quality-based effluent limitations" means effluent limitations established so that the quality of the waters receiving a discharge will meet the surface water quality criteria and policies of this chapter after the introduction of the effluent.

“Waters of the State” means the ocean and its estuaries, all springs, streams, wetlands, and bodies of surface or ground water, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction.

"Wetlands" means those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation. The Department shall evaluate the parameters of hydrology, soils, and vegetation to determine the presence and extent of wetlands.

"Zone" means the general surface water classification applied to the mainstem Delaware River and Delaware Bay.

7:9B-1.5 Statements of policy

(a) General policies are as follows:

1. These Surface Water Quality Standards apply to all surface waters of the State.

2. Water is vital to life and comprises an invaluable natural resource which is not to be abused by any segment of the State's population or economy. It is the policy of the State to restore, maintain and enhance the chemical, physical and biological integrity of its waters, to protect the public health, to safeguard the aquatic biota, protect scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial, agricultural and other reasonable uses of the State's waters.

3. The restoration, maintenance and preservation of the quality of the waters of the State for the protection and preservation of public water supplies is a paramount interest of the citizens of New Jersey. In order to provide adequate, clean supplies of potable water, it is the policy of the State that all fresh waters be protected as potential sources of public water supply. Therefore, point and nonpoint sources of pollutants shall be regulated to attain compliance with the Surface Water Quality Standards human health criteria outside of regulatory mixing zones.

4. Toxic substances in waters of the State shall not be at levels that are toxic to humans or the aquatic biota, or that bioaccumulate in the aquatic biota so as to render them unfit for human consumption.

5. The introduction of carcinogenic, mutagenic, or teratogenic substances into the environment is of particular concern to the Department. Human health-based ambient criteria have been established for carcinogenic substances at levels which would result in no greater than a one-in-one-million lifetime excess cancer risk for Group A and B carcinogens, under exposure assumptions appropriate for the designated uses of the waterbody. Criteria for Group C carcinogens, for which reference doses are not available, have been established at levels which would result in no greater than a one-in-one-hundred thousand lifetime excess cancer risk.

6. Existing uses shall be maintained and protected. Designated uses shall, as soon as technically and economically feasible, be attained wherever these uses are not precluded by natural conditions. Where existing criteria are inadequate to support the existing or designated uses, the criteria shall be changed to support the existing uses.

7. The restoration of saline waters to levels which permit unrestricted shellfish harvesting is an objective of the Department.

(b) Interstate waters policies are as follows:

1. The designated uses and water quality criteria for the fresh and saline waters under the jurisdiction of the Delaware River Basin Commission shall be as established in accordance with N.J.A.C. 7:9B-1.13, 1.14(c), and 1.14(d).

2. The designated uses and water quality criteria for waters under the jurisdiction of the Interstate Sanitation Commission in the New Jersey/New York metropolitan area shall be as established in this subchapter, or in accordance with the prevailing Water Quality Regulations of the Interstate Sanitation Commission, including all amendments and future supplements thereto, whichever are more stringent.

(c) General technical policies are as follows:

1. The natural water quality shall be used in place of the promulgated water quality criteria of N.J.A.C. 7:9B-1.14 for all water quality characteristics that do not meet the promulgated water quality criteria as a result of natural causes.

2. Water quality criteria are expected to be maintained during periods when nontidal or small tidal stream flows are at or greater than the appropriate design flow. For carcinogenic effect-based human health criteria, toxic substances with a bioaccumulation or bioconcentration factor greater than 200 Liters/kilogram (L/kg) (as listed at 1.5(c)2i below) and for bromodichloromethane (BDCM), the design flow shall be the flow which is exceeded 75 percent of the time for the appropriate "period of record" as determined by the United States Geological Survey (USGS). For acute aquatic life protection criteria, the design flow shall be the MA1CD10 flow. For chronic aquatic life protection criteria for ammonia, the design flow shall be the MA30CD10 flow. The design flow for all other criteria shall be the MA7CD10 flow.

i. Toxic substances having carcinogenic effect-based human health criteria and with a bioaccumulation or bioconcentration factor greater than 200 L/kg are as follows:

(1) Aldrin;
(2) Chlordane;
(3) 4,4'-DDD (p,p'-TDE);
(4) 4,4'-DDE;
(5) 4,4'-DDT;
(6) 3,3'-Dichlorobenzidene;
(7) Dieldrin;
(8) Heptachlor;
(9) Heptachlor epoxide;
(10) Hexachlorobenzene;

(11) Polychlorinated biphenyls (PCBs);
(12) 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD); and
(13) Toxaphene.

3. Water quality criteria are expected to be maintained in intermittent streams during all natural flow conditions. When an intermittent stream does not contain natural flow of sufficient magnitude to determine water quality, the criteria to be maintained in the intermittent stream will be those pertaining to the measurable natural flow immediately downstream of the intermittent stream.

4. All analytical data to be incorporated by the Department in water quality monitoring or other activities shall be from laboratories approved or certified by the Department for the analysis of those specific parameters. If certification is not offered for the specific parameter, the laboratory performing the analysis shall, at a minimum, hold certification in the category of certification covering that type of parameter.

5. The Department shall utilize the parameter specific criteria contained in N.J.A.C. 7:9B-1.14 in the development of chemical specific water quality-based effluent limitations for point source discharges. Whenever parameter specific criteria have not been adopted, the Department will utilize the best available scientific information in the development of chemical specific water quality-based effluent limitations for point source discharges. Ambient criteria published by the United States Environmental Protection Agency pursuant to section 304(a) of the Federal Clean Water Act represent the minimum acceptable best scientific information to be used in the development of water quality-based effluent limitations for point source discharges.

6. Unless a metal translator is developed based on a site-specific water quality study or approved by USEPA as part of a watershed study or TMDL, the following metal translators shall be used for developing effluent limitations or expressing aquatic life criteria in the equivalent total recoverable form:

	Name of the Metal	**Freshwater Acute**	**Freshwater Chronic**	**Saline Acute**	**Saline Chronic**
i.	Arsenic	1.0	1.0	1.0	1.0
ii.	Cadmium	0.944*	0.909*	0.994	0.994
iii.	Chromium III	0.316	0.860	N/A	N/A
iv.	Chromium VI	0.982	0.962	0.993	0.993
v.	Copper	0.960	0.960	0.83	0.83
vi.	Lead	0.791*	0.791*	0.951	0.951

vii.	Mercury	0.85	N/A	0.85	N/A
viii.	Nickel	0.998	0.997	0.990	0.990
ix.	Selenium	N/A	N/A	0.998	0.998
x.	Silver	0.85	N/A	0.85	N/A
xi.	Zinc	0.978	0.986	0.946	0.946

* Conversion factors for cadmium and lead are hardness dependent. Values shown are at a hardness of 100 mg/L of calcium carbonate.

Cadmium Acute Metal Translator = 1.136672-[ln(hardness)(0.041838)]

Cadmium Chronic Metal Translator = 1.101672-[ln(hardness)(0.041838)]

Lead Acute and Chronic Metal Translator = 1.46203-[ln(hardness)(0.145712)]

N/A Not applicable

(d) Antidegradation policies are as follows:

1. These antidegradation policies apply to all surface waters of the State.

2. Existing uses shall be maintained and protected. Designated uses shall be maintained or, as soon as technically and economically feasible, be attained wherever these uses are not precluded by natural conditions.

3. No irreversible changes may be made to existing water quality that would impair or preclude attainment of the designated uses of a waterway.

4. No changes shall be allowed in waters which constitute an outstanding National or State resource or in waters that may affect these outstanding resource waters.

5. Where water quality exceeds levels necessary to support the designated uses, including but not limited to, propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the Department finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the Department's continuing planning process as set forth in the Statewide Water Quality Management Plan (see N.J.A.C. 7:15), which includes, but is not limited to, the NJPDES Regulations (N.J.A.C. 7:14A), that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.

6. These antidegradation policies shall be applied as follows:

   i. The quality of nondegradation waters shall be maintained in their natural state (set aside for posterity) and shall not be subject to any manmade wastewater discharges. The Department shall not approve any activity which, alone or in combination with any other activities, might cause changes, other than toward natural water quality, in the existing surface water quality characteristics.

ii. For Pinelands waters, the Department shall not approve any activity which alone or in combination with any other activities, might cause changes, other than toward natural water quality, in the existing surface water quality characteristics. This policy shall apply as follows:

(1) This policy is not intended to interfere with water control in the operation of cranberry bogs or blueberry production.

(2) Dischargers holding valid NJPDES permits as of May 20, 1985, shall be allowed to continue discharging under the terms of their existing NJPDES permits provided that the discharge is not creating any water quality problems and that the designated uses are being attained. If a water quality problem has been created or the designated uses are not being attained, the NJPDES permit shall be modified to eliminate the water quality problem or attain the designated uses.

(3) Existing dischargers shall be subject to all the provisions of this subchapter when they apply for modification or expansion of their existing discharge.

iii. Category One Waters shall be protected from any measurable changes (including calculable or predicted changes) to the existing water quality. Water quality characteristics that are generally worse than the water quality criteria, except as due to natural conditions, shall be improved to maintain or provide for the designated uses where this can be accomplished without adverse impacts on organisms, communities or ecosystems of concern.

iv. For Category Two Waters, water quality characteristics that are generally better than, or equal to, the water quality standards shall be maintained within a range of quality that shall protect the existing/designated uses, as determined by studies acceptable to the Department, relating existing/designated uses to water quality. Where such studies are not available or are inconclusive, water quality shall be protected from changes that might be detrimental to the attainment of the designated uses or maintenance of the existing uses. Water quality characteristics that are generally worse than the water quality criteria shall be improved to meet the water quality criteria.

7. Where a lower classification of water (including the different antidegradation waters) may impinge upon a higher classification of water the Department shall ensure that the quality and uses of the higher classification water are protected.

8. A waterway or waterbody from which raw water is transferred to another waterway or waterbody shall be treated as a tributary to the waterway or waterbody receiving the transferred water.

9. Modifications of water quality-based effluent limitations established to implement this antidegradation policy may be granted pursuant to N.J.A.C. 7:9B-1.8 and 1.9.

(e) Water quality-based effluent limitation policies are as follows:

1. Water quality-based effluent limitations may be established so as to minimize total expenditures, subject to social and environmental constraints, so that the provisions of the water quality standards (which includes the antidegradation policies) are met. This policy may result in the assignment of different levels of treatment to different dischargers where this proves more beneficial on a study area basis.

2. Modifications of water quality-based effluent limitations established to implement the water quality standards (which includes the antidegradation policies) granted pursuant to N.J.A.C. 7:9B-1.8 and 1.9 , shall provide for effluent limits at least as stringent as those required pursuant to sections 301, 306, and 307 of the Federal Clean Water Act or the minimum BOD5 effluent standards at N.J.A.C. 7:14A-12.4, where applicable, whichever are more stringent.

3. Water quality-based effluent limitations developed in accordance with N.J.A.C. 7:14A-13.6 shall not interfere with the attainment of the Surface Water Quality Standards, including the antidegradation policies.

4. When a discharge is made to a tidal waterway in the reach where the salinity varies from less than 3.5 ppt. to greater than 3.5 ppt., or the salinity data are inconclusive, the Department shall establish as water quality-based effluent limitations the more stringent of the limitations, on a parameter specific basis, required for the upstream, FW, waters or the downstream, SE, waters.

5. Where the effluent limitations developed pursuant to N.J.A.C. 7:14A-13.6 are below the level of detectability of the procedures in N.J.A.C. 7:18 the Department will use an effluent limitation of nondetectable in any NJPDES permit.

6. Compliance schedules may be issued in accordance with N.J.A.C. 7:14A-6.4 when it is demonstrated by a discharger that new or revised water quality-based effluent limitations, based on ambient criteria adopted or revised after July 1, 1977, cannot be consistently met with the facility's existing treatment process. No schedule of compliance may be allowed for parameter specific water quality-based effluent limitations where the parameter specific ambient water quality criterion, which was the basis for developing that limitation, was adopted prior to July 1, 1977, and has not been revised since adoption.

(f) Bioassay and biomonitoring policies are as follows:

1. Bioassay test species selection criteria follow:

   i. The objective of the Department is to use test species for toxicity testing bioassays that are representative of the more sensitive aquatic biota from the different trophic levels of the waters in question.

   ii. Test species need not be indigenous to, nor occur in the waters in question.

   iii. When the bioassay test protocol being utilized falls under the scope of N.J.A.C. 7:18 the Department shall designate the approved representative species considered to be the most sensitive to the discharge.

2. Acute definitive bioassay tests, in accordance with N.J.A.C. 7:18, will normally be utilized in determining the toxicity of a discharge to the aquatic biota.

3. The Department, in order to further characterize the toxicity of a discharge, may allow or require the use of other procedures including, but not limited to:

   i. Bioaccumulation testing;

   ii. Mutagenicity testing; and

   iii. Measures of the structure and function of the aquatic community in the receiving waters.

4. Parameter specific water quality criteria for toxic substances in a waterbody may be established by the Department when adequate data, from appropriate bioassays or scientific literature, are available as follows:

i. Appropriate bioassays, for purposes of this policy, shall include both acute definitive and chronic definitive bioassays; and

ii. The amount of bioassay data or scientific literature needed to support adoption of a parameter specific criterion in a given waterbody will be determined by the Department on a case-by-case basis.

(g) Nutrient policies are as follows:

1. These policies apply to all FW waters of the State.

2. Except as due to natural conditions, nutrients shall not be allowed in concentrations that cause objectionable algal densities, nuisance aquatic vegetation, abnormal diurnal fluctuations in dissolved oxygen or pH, changes to the composition of aquatic ecosystems, or otherwise render the waters unsuitable for the designated uses.

3. The Department may establish watershed or site-specific water quality criteria for nutrients in lakes, ponds, reservoirs or streams, in addition to or in place of the criteria in N.J.A.C. 7:9B-1.14, when necessary to protect existing or designated uses. Such criteria shall become part of these Water Quality Standards.

4. The Department shall establish water quality-based effluent limits for nutrients, in addition to or more stringent than, the effluent standard in N.J.A.C. 7:9-5.7, as necessary to meet the quality criteria.

5. Activities resulting in the non-point discharge of nutrients shall implement the best management practices determined by the Department to be necessary to protect the existing or designated uses.

6. The Department may allow or require the use of algal biostimulation assays, to determine the limiting nutrient in a lake, pond, reservoir or stream.

(h) A permittee may request that a regulatory mixing zone be established by the Department for applicable criteria except as otherwise provided in this section. Regulatory mixing zones may be evaluated as part of the development of water quality-based effluent limitation(s) to provide for the initial dispersion of the effluent in the receiving water body at or near the discharge point.

1. The following are the general conditions for establishing regulatory mixing zones:

i. Regulatory mixing zones shall be established in accordance with this subsection;

ii. Water quality criteria may be exceeded within the regulatory mixing zone; however, surface water quality criteria must be met at the edge of the regulatory mixing zone;

iii. The regulatory mixing zone shall be no larger than that portion of the receiving water where complete mixing occurs;

iv. Regulatory mixing zones shall not be used for, or considered as a substitute for, minimum treatment technology required by the Federal and State Acts or other applicable Federal or State laws or regulations;

v. Regulatory mixing zones shall be established to assure that significant mortality does not occur to free swimming or drifting organisms;

(1) In individual regulatory mixing zones, discharges which meet acute effluent toxicity of $LC_{50} \geq 50\%$ shall be deemed to comply with this requirement.

(2) In cases of extended regulatory mixing zones resulting from multiple, conjoined individual regulatory mixing zones, site-specific studies to demonstrate no significant mortality shall be required, taking into account factors including, time of travel, concentration, and the toxicity of the parameters in question;

vi. The existing and designated uses outside the regulatory mixing zone shall not be adversely affected;

vii. The total area and volume of a waterbody assigned to a regulatory mixing zone shall be limited to that which will not adversely affect beneficial uses or interfere with biological communities or populations of important species (for example, commercially or recreationally significant species; or threatened or endangered species);

viii. Regulatory mixing zones, including those for shore hugging plumes, shall not extend into recreational areas, potable surface water intakes (1,500 feet upstream and 500 feet downstream or to the farthest point of backwatering due to the intake, whichever is more protective), shellfish harvesting areas, threatened or endangered species habitat, and other important biological or natural resource areas;

ix. The regulatory mixing zone shall not inhibit or impede the passage of aquatic biota; and

x. Overlapping regulatory mixing zones shall not inhibit or impede the passage of aquatic biota.

2. Spatial limitations for regulatory mixing zones delineate the maximum area in which the initial mixing may occur. A site-specific study performed in accordance with (h)3 below will be used to determine dilution in tidal water bodies and in nontidal water bodies where mixing is not shown to be rapid and complete. A maximum area shall be applied in any one of the following four situations:

   i. Heat dissipation areas as provided at N.J.A.C. 7:9B-1.14(c)11.ii or a variance issued pursuant to Section 316(a) of the Clean Water Act, 33 U.S.C. э1326(a).

   ii. For discharges to tidal water bodies:

      (1) Regulatory mixing zones for chronic and human health criteria are limited to one fourth of the distance between the discharge port closest to the shoreline and the shoreline during average tidal conditions, or 100 meters, whichever is greater; and

      (2) Regulatory mixing zones for acute criteria are limited by the distances calculated in accordance with the USEPA “Technical Support Document For Water Quality-Based Toxics Control” USEPA, EPA/505/2-90-001, March 1991, incorporated herein by reference. In no case shall a regulatory mixing zone for acute criteria extend more than 100 meters from the discharge point or include more than five percent of the total surface area of a water body based on critical ambient tidal conditions during low slack, astronomical spring tide for the applicable exposure period.

   iii. For discharges to non-tidal water bodies:

      (1) Regulatory mixing zones for chronic and human health criteria shall be based on the design flows at (c)2 above. If rapid, complete mix is demonstrated, the entire available design flow may be used in dilution calculations. If rapid, complete mix is not demonstrated, only that portion of the design flow that can be demonstrated to mix with the effluent within 100 meters from the discharge point may be used in dilution calculations; and

      (2) Regulatory mixing zones for acute criteria shall be based on the MA1CD10 design flow. If rapid, complete mix is demonstrated, the entire available design flow may be used in dilution

calculations. If rapid, complete mix is not demonstrated, only that portion of the design flow that can be demonstrated to mix with the effluent within a downstream distance calculated in accordance with the USEPA “Technical Support Document For Water Quality-Based Toxics Control” USEPA, EPA/505/2-90-001, March 1991 may be used. In no case shall a regulatory mixing zone for acute criteria extend more than 100 meters from the discharge point or include more than five percent of the total surface area of a water body based on the design flow.

iv. Site-specific spatial dimensions of the regulatory mixing zone for an approved multiport diffuser shall be determined by the Department. The dimensions of the site-specific regulatory mixing zone and the allowable dilution at the edge of the regulatory mixing zone may be established using appropriate diffuser models (for example, CORMIX, PLUMES), tracer studies, or other field studies approved by the Department in accordance with (h)3 below.

3. A regulatory mixing zone study shall be conducted in accordance with a workplan pre-approved by the Department. General protocols for conducting mixing zone studies are described in the USEPA “Technical Support Document For Water Quality-Based Toxics Control” USEPA, EPA/505/2-90-001, March 1991. In addition, the following principles apply:

i. The design flows to be used in calculating available dilution in nontidal waters shall be based on the design flows specified at (c)2 above; and

ii. In tidal waters, the regulatory mixing zone for an acute criteria shall be based on critical ambient tidal conditions during low slack, astronomical spring tide for the applicable exposure period. Regulatory mixing zones for chronic and human health criteria shall be based on average conditions during a normal tidal cycle.

4. In order to determine waste load allocations and NJPDES/DSW permit effluent limitations that will comply with the regulatory mixing zone requirements, instream pollutant concentrations at the boundary of the regulatory mixing zone shall be determined as follows:

i. The instream concentrations shall be determined using either a general mass balance equation or a mathematical model, if available; or the information generated during the course of a study as described at (h)2 above.

ii. If the regulatory mixing zone is based upon the guidance and procedures in the USEPA “Technical Support Document For Water Quality-Based Toxics Control” USEPA, EPA/505/2-90-001, March 1991, the Technical Support Document will also be used to determine instream concentrations at the boundary of the regulatory mixing zone.

5. Regulatory mixing zones are prohibited as follows:

i. For indicators of pathogenic quality, including fecal coliform and enterococci;

ii. In intermittent streams;

iii. For new or increased discharges to lakes, ponds, and reservoirs;

iv. For discharges to areas of waters with documented occurrences of any threatened or endangered species listed pursuant to the Federal or State Threatened and Endangered Species Acts (Endangered Species Act of 1973, 16 U.S.C. э1531 et seq.; New Jersey Endangered and Non Game Species Conservation Act of 1973, N.J.S.A. 23:2A-1 et seq.; Endangered Plant Species List Act, N.J.S.A. 13:1B-15.151 et seq.), if those discharges would likely have an adverse effect on the species or its associated habitat;

v. For heat dissipation areas in FW2-TP waters;

vi. For heat dissipation areas within 1,500 feet of the shoreline in SC waters;

vii. For new discharges of the following pollutants:

(1) alpha-BHC (alpha-HCH);
(2) beta-BHC (beta-HCH);
(3) gamma-BHC (gamma HCH / Lindane);
(4) Chlordane;
(5) 4,4'-DDD (p,p'-TDE);
(6) 4,4'-DDE;
(7) 4,4'-DDT;
(8) Dieldrin;
(9) Hexachlorobenzene;
(10) Hexachlorobutadiene;
(11) Mercury;
(12) Mirex;
(13) Pentachlorobenzene;
(14) Polychlorinated biphenyls (PCBs);

(15) 1,2,4,5-Tetrachlorobenzene;
(16) 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD); and
(17) Toxaphene; and

viii. For new or expanded discharges, within 1,500 feet upstream of a potable surface water intake (including any reservoir) and 500 feet downstream or to the farthest point of backwatering due to the intake, whichever is more protective.

7:9B-1.6 Establishment of water quality-based effluent limitations

(a) For Category One waters, as defined in N.J.A.C. 7:9B-1.4, water quality-based effluent limitations shall be assigned to a point source discharge so as to protect the existing water quality from any measurable or calculable changes. The Department shall establish water quality-based effluent limitations, as appropriate, for those parameters contained in N.J.A.C. 7:9B-1.14, as well as any other parameters the Department believes may have a detrimental effect on the designated or existing uses.

(b) For Category Two waters, as defined in N.J.A.C. 7:9B-1.4, draft water quality-based effluent limitations shall be assigned to a point source discharge so as to:

1. Maintain water quality characteristics that are generally better than or equal to the water quality standards at a level that will protect the existing and designated uses; and

2. Bring water quality characteristics that are generally worse than the water quality criteria, except as due to natural conditions, up to the water quality criteria or to levels corresponding with wasteload allocations established pursuant to N.J.A.C. 7:15-7.6.

(c) Water quality-based effluent limits for chlorine produced oxidants based on the criteria in N.J.A.C. 7:9B-1.14(c)14 are not applicable where:

1. The aquatic community of a waterbody is exposed to one or more point source discharges of non-contact cooling water that is intermittently chlorinated to control condenser biofouling;

2. The total period of such exposure to chlorinated wastewater is two hours per day or less; and

3. The maximum concentration of chlorine produced oxidants in the effluents of such discharges shall not exceed 200 μg/L.

7:9B-1.7 Waterway loadings in areawide water quality management plans

Any total maximum daily load, wasteload allocation, or load allocation established as an amendment to an areawide water quality management plan under N.J.A.C. 7:15-3.4 shall be consistent with all of the provisions of this subchapter.

7:9B-1.8 Procedures for modifying water quality-based effluent limitations for individual dischargers to Category One waters

(a) An applicant requesting modification of a water quality-based effluent limitation, established on a case-by-case basis, must demonstrate, to the satisfaction of the Department, after public notice (including notice to affected municipalities) and a public hearing (where sufficient public interest exists), that:

1. Some change in ambient water quality should be allowed because of necessary and justifiable social or economic development;

2. Alternative effluent limitations, at least as stringent as the technology-based effluent limitations required by either sections 301, 306, and 307 of the Federal Clean Water Act, or the effluent limitations resulting from application of the minimum BOD5 effluent standards in N.J.A.C. 7:14A-12.4 (where applicable), whichever are more stringent, will not interfere nor be injurious to the existing or designated uses; and

3. Where the requested modified effluent limitations would result in contravention of the water quality criteria or the degradation of the natural water quality, whichever is less stringent:

i. The water quality criteria are not attainable because of natural background; or

ii. The water quality criteria are not attainable because of irretrievable man-induced conditions; or

iii. Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or

iv. Controls more stringent than those required by Sections 301(b) and 306 of the Federal Clean Water Act would result in substantial and widespread adverse social and economic impact.

(b) It is the responsibility of the applicant to provide the Department with all the information needed to evaluate the requested modification(s).

(c) In no case shall changes to water quality be allowed in Outstanding National Resource Waters.

(d) Modified effluent limitations may be granted for a time period not to exceed three years or the time period of the permit in which the modified effluent limitations appear, whichever is shorter.

(e) Modified effluent limitations may be renewed if the discharger demonstrates, to the Department's satisfaction, after public notice (including notice to affected municipalities) and a public hearing (where sufficient interest exists), that the basis for issuing the modification still exists and there have been no adverse impacts on the existing uses.

(f) Where water quality criteria are not currently met the Department shall not grant a modification, as set forth in this section, establishing an effluent limitation less stringent than the limitation(s) in the existing permit, unless the criteria are not met because of natural conditions.

7:9B-1.9 Procedures for modifying water quality-based effluent limitations for individual dischargers to Category Two waters.

(a) The criteria for modifying water quality-based effluent limitations established on a case-by-case basis are:

1. The applicant for modification of effluent limitations for parameters that are currently better than the water quality criteria must demonstrate, to the satisfaction of the Department, after public notice (including notice to affected municipalities) and a public hearing (where sufficient public interest exists), that:

    i. Some degradation of water quality parameters currently better than the water quality criteria should be allowed because of necessary and justifiable social or economic development; and

    ii. Alternative effluent limitations, at least as stringent as the technology-based effluent limitations required by either sections 301, 306, and 307 of the Federal Clean Water Act, or the effluent limitations resulting from application of the effluent standards (where applicable) in N.J.A.C. 7:14A-12, whichever are more stringent, will not interfere with nor be injurious to the existing or designated uses.

2. The applicant for modification of effluent limitations for parameters that are currently equal to or currently do not meet the water quality criteria in this subchapter must demonstrate, to the satisfaction of the Department, after public notice (including notice to affected municipalities) and a public hearing (where sufficient public interest exists), that:

i. The water quality criteria are not attainable because of natural background; or

ii. The water quality criteria are not attainable because of irretrievable man-induced conditions; or

iii. Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the water quality criteria, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or

iv. Controls more stringent than those required by Section 301(b) and 306 of the Federal Clean Water Act would result in substantial and widespread adverse social and economic impact.

(b) Where water quality criteria are not currently met the Department shall not grant a modification, as set forth in this section, establishing an effluent limitation less stringent than the limitation(s) in the existing permit, unless the criteria are not met because of natural conditions.

(c) Modified effluent limitations may be granted for a time period not to exceed three years or the time period of the permit in which the modified effluent limitations appear, whichever is shorter.

(d) Modified effluent limitations may be renewed if the discharger demonstrates, to the satisfaction of the Department, after public notice (including notice to affected municipalities) and a public hearing (where sufficient interest exists), that the basis for issuing the modification still exists and there have been no adverse impacts on the existing uses.

7:9B-1.10 Procedures for reclassifying specific segments for less restrictive uses

(a) The Department will entertain petitions, for reclassification of specific segments to less restrictive uses, or may decide to initiate reclassification proceedings on its own, at any time.

(b) Any reclassification proceedings will include full documentation of the items contained in (d) and (e) below. The documentation will be prepared by either the Department (where the Department has initiated the reclassification on its own) or the petitioner for the reclassification.

(c) The Department shall issue public notice to all interested parties (including affected municipalities) and shall hold public hearing(s) as part of any reclassification proceeding.

(d) The Department or the petitioner, as indicated in (b) above, shall include in the reclassification documentation appropriate water quality studies and analyses, biological studies and analyses, environmental, social, and economic studies as are necessary to demonstrate the satisfaction of (e) 1 and 2 below, in addition to at least one of the remaining criteria in (e) below.

(e) The Department may establish less restrictive uses than the designated uses only after it has been demonstrated to the satisfaction of the Department that:

1. None of the uses being removed are existing uses; and

2. The uses to be removed will not be attained by implementing effluent limits required by Sections 301(b) and 306 of the Federal Clean Water Act in conjunction with implementation of cost-effective and reasonable best management requirements for nonpoint source pollution control; and

3. The existing designated use is not attainable because of natural background; or

4. The existing designated use is not attainable because of irretrievable man-induced conditions; or

5. Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or

6. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or

7. Controls more stringent than those required by Sections 301(b) and 306 of the Federal Clean Water Act would result in substantial and widespread adverse social and economic impact.

(f) Any reclassification for less restrictive uses, established pursuant to this section shall be reviewed during each review of water quality standards pursuant to Section 303 of the Federal Clean Water Act (at least once every three years). Either the Department or the original petitioner, as indicated in (b) above, shall be responsible for supplying documentation showing that the bases for the reclassification still exist.

(g) In those cases in which a thermal discharge is involved, the procedures for reclassifying segments for less restrictive use shall be consistent with section 316 of the Federal Clean Water Act.

7:9B-1.11 Procedures for reclassifying specific segments for more restrictive uses

(a) The Department will entertain petitions, for reclassification of specific segments, pursuant to (e) below, or may decide to initiate reclassification proceedings on its own, at any time.

(b) The Department may entertain petitions for reclassification of specific segments, pursuant to (f) below, at any time.

(c) Documentation supporting the petition for reclassification for more restrictive use(s) shall be prepared by the petitioner for such reclassification, where one exists, or by the Department, where it decides to initiate such reclassification on its own.

(d) The Department shall issue public notice to all interested parties (including affected municipalities and dischargers) and shall hold public hearing(s) as part of any reclassification proceeding.

(e) A reclassification for more restrictive uses shall be made whenever:

1. It is demonstrated to the satisfaction of the Department that there are existing uses of the specific segment that are not included in the designated uses; or

2. Where a reclassification for less restrictive uses has been granted pursuant to N.J.A.C. 7:9B-1.10, the bases for the reclassification no longer exist; or

3. It is demonstrated to the satisfaction of the Department that any uses in Section 101 (a) (2) of the Federal Clean Water Act, protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, which are not included in the designated uses listed in this subchapter are attainable.

(f) A reclassification for more restrictive uses may be made when:

1. It is demonstrated to the satisfaction of the Department that the waters should be set aside to represent the natural aquatic environment and its associated biota; or

2. It is demonstrated to the satisfaction of the Department that a more restrictive use is necessary to protect a unique ecological system or threatened/endangered species.

(g) In those cases in which a thermal discharge is involved, the procedures for reclassifying segments for more restrictive uses shall be consistent with section 316 of the Federal Clean Water Act.

7:9B-1.12 Designated uses of FW1, PL, FW2, SE1, SE2, SE3, and SC waters

(a) In all FW1 waters the designated uses are:

1. Set aside for posterity to represent the natural aquatic environment and its associated biota;
2. Primary and secondary contact recreation;
3. Maintenance, migration and propagation of the natural and established aquatic biota; and
4. Any other reasonable uses.

(b) In all PL waters the designated uses are:

1. Cranberry bog water supply and other agricultural uses;
2. Maintenance, migration and propagation of the natural and established biota indigenous to this unique ecological system;
3. Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection;
4. Primary and secondary contact recreation; and
5. Any other reasonable uses.

(c) In all FW2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;
2. Primary and secondary contact recreation;
3. Industrial and agricultural water supply;
4. Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection; and
5. Any other reasonable uses.

(d) In all SE1 waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;
2. Maintenance, migration and propagation of the natural and established biota;
3. Primary and secondary contact recreation; and
4. Any other reasonable uses.

(e) In all SE2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;
2. Migration of diadromous fish;
3. Maintenance of wildlife;
4. Secondary contact recreation; and
5. Any other reasonable uses.

(f) In all SE3 waters the designated uses are:

1. Secondary contact recreation;
2 Maintenance and migration of fish populations;
3 Migration of diadromous fish;
4. Maintenance of wildlife; and
5. Any other reasonable uses.

(g) In all SC waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;
2. Primary and secondary contact recreation;
3. Maintenance, migration and propagation of the natural and established biota; and
4. Any other reasonable uses.

7:9B-1.13 Designated uses of mainstem Delaware River and Delaware Bay

(a) The designated uses for the mainstem Delaware River and Delaware Bay are those contained in "Delaware River Basin Commission, Water Quality Regulations, Administrative Manual - Part III," Article 3, dated October 23, 1996, including all amendments and future supplements thereto.

(b) The designated uses for other waters under the jurisdiction of the DRBC are as set forth at N.J.A.C. 7:9B-1.15(d).

7:9B-1.14 Surface water quality criteria

(a) Surface water quality criteria for FW1 waters shall be maintained as to quality in their natural state.

(b) Surface water quality criteria for PL waters are as follows:

1. These waters shall be maintained as to quality in their existing state or that quality necessary to attain or protect the designated uses, whichever is more stringent.

   i. For Nitrate-Nitrogen a level of 2 mg/L shall be maintained in the surface waters unless it is shown that a lower level must be maintained to protect the existing surface water quality.

   ii. A pH level between 3.5 and 5.5 shall be maintained unless it is demonstrated that a pH level outside of that range is necessary to protect the existing/ designated uses.

2. The water quality criteria for existing discharges are the water quality criteria contained in "Surface Water Quality Standards" as adopted in March 1981, except that:

   i. The criteria for Nitrate-Nitrogen and pH promulgated in N.J.A.C. 7:9B-1.14(b)1 for PL waters apply instead of the 1981 criteria, and;

   ii. The criteria for phosphorous and toxic substances promulgated in N.J.A.C. 7:9B-1.14(c) apply instead of the 1981 criteria, as though the freshwater portions of the PL waters were classified as FW2 and the saline portions were classified as SE1.

(c) Surface Water Quality Criteria for FW2, SE and SC Waters:

7:9B-1.14(c) Surface Water Quality Criteria for FW2, SE and SC Waters

(Expressed as maximum concentrations unless otherwise noted)

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance		Criteria	Classifications
1. Bacterial quality (Counts/100 ml)	i.	Bacterial Indicators shall not exceed, in all shellfish waters, the standard for approved shellfish waters as established by the National Shellfish Sanitation Program as set forth in its current manual of operations.	Shellfish Waters
	ii.	Fecal Coliforms:	
		(1) Fecal coliform levels shall not exceed a geometric average of 50/100 ml.	Within 1500 feet of shoreline in SC waters.
		(2) Fecal coliform levels shall not exceed a geometric average of 200/100 ml nor should more than 10 percent of the total samples taken during any 30-day period exceed 400/100 ml.	FW2 , SE1, and SC 1500 feet to 3 miles from the shoreline.
		(3) Fecal coliform levels shall not exceed a geometric average of 770/100 ml.	SE2
		(4) Fecal coliform levels shall not exceed a geometric average of 1500/100ml.	SE3

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
		iii.	Enterococci:	
			(1) Enterococci levels shall not exceed a geometric mean of 33/100 ml, nor shall any single sample exceed 61/100 ml.	FW2
			(2) Enterococci levels shall not exceed a geometric mean of 35/100 ml, nor shall any single sample exceed 104/100 ml.	SE1 and SC
		iv.	Samples shall be obtained at sufficient frequencies and at locations during periods which will permit valid interpretation of laboratory analyses. As a guideline and for the purpose of these regulations, a minimum of five samples as equally spaced over a 30-day period, as feasible, should be collected; however, the number of samples, frequencies and locations will be determined by the Department or other appropriate agency in any particular case.	All Classifications
2.	Dissolved oxygen (mg/L)	i.	Not less than 7.0 at any time;	FW2-TP
		ii.	24 hour average not less than 6.0. Not less than 5.0 at any time (see paragraph viii below);	FW2-TM

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
		iii.	24 hour average not less than 5.0, but not less than 4.0 at any time (see paragraph viii below);	FW2-NT (except as in iv below), SE1
		iv.	Not less than 4.0 at any time;	Tidal portions of FW2-NT tributaries to the Delaware River, between Rancocas Creek and Big Timber Creek inclusive.
		v.	Not less than 5.0 at any time;	SC
		vi.	Not less than 4.0 at any time;	SE2
		vii.	Not less than 3.0 at any time; and	SE3
		viii.	Supersaturated dissolved oxygen values shall be expressed as their corresponding 100 percent saturation values for purposes of calculating 24 hour averages.	FW2-TM, FW2-NT, SE1
3.	Floating, colloidal, color and settleable solids; petroleum hydrocarbons and other oils and grease	i.	None noticeable in the water or deposited along the shore or on the aquatic substrata in quantities detrimental to the natural biota. None which would render the waters unsuitable for the designated uses; and	All Classifications

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
		ii.	For "Petroleum Hydrocarbons" the goal is none detectable utilizing the Federal EPA Environmental Monitoring and Support Laboratory Method (Freon Extractable - Silica Gel Adsorption - Infrared Measurement); the present criteria, however, are those of paragraph i above.	All Classifications
4.	pH (Standard Units)	i.	6.5-8.5	FW2, All SE
		ii.	Natural pH conditions shall prevail.	SC
5.	Phosphorus, Total (mg/L)	i.	Lakes: Phosphorus as total P shall not exceed 0.05 in any lake, pond or reservoir, or in a tributary at the point where it enters such bodies of water, except where watershed or site-specific criteria are developed pursuant to N.J.A.C. 7:9B-1.5(g)3.	FW2
		ii.	Streams: Except as necessary to satisfy the more stringent criteria in paragraph i above or where watershed or site-specific criteria are developed pursuant to N.J.A.C 7:9B-1.5(g)3, phosphorus as total P shall not exceed 0.1 in any stream, unless it can be demonstrated that total P is not a limiting nutrient and will not otherwise render the waters unsuitable for the designated uses.	FW2

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
6.	Radioactivity	i.	Prevailing regulations including all amendments and future supplements thereto adopted by the U.S. Environmental Protection Agency pursuant to Sections 1412, 1445, and 1450 of the Public Health Services Act, as amended by the Safe Drinking Water Act (PL 93-523)	All Classifications
7.	Solids, Suspended (mg/L) (Non-filterable residue)	i.	25.0	FW2-TP, FW2-TM
		ii.	40.0	FW2-NT
		iii.	None which would render the waters unsuitable for the designated uses.	All SE, SC
8.	Solids, Total Dissolved (mg/L) (Filterable Residue)	i.	No increase in background which may adversely affect the survival, growth or propagation of the aquatic biota. Compliance with water quality-based WET limitations or $LC_{50} \geq 50$ percent, whichever is more stringent, shall be deemed to meet this requirement.	FW2
		ii.	No increase in background which would interfere with the designated or existing uses, or 500 mg/L, whichever is more stringent.	FW2
		iii.	None which would render the water unsuitable for the designated uses.	All SE

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
9.	Sulfate (mg/L)	i.	250	FW2
10.	Taste and odor producing substances	i.	None offensive to humans or which would produce offensive taste or odors in water supplies and biota used for human consumption. None which would render the water unsuitable for the designated uses.	All Classifications
11.	Temperature and Heat Dissipation Areas	i.	Thermal Alterations (Temperatures shall be measured outside of heat dissipation areas)	
			(1) Streams	
			(i) No thermal alterations which would cause changes in ambient temperatures except where properly treated wastewater effluents are discharged. Where such discharges occur, temperatures shall not deviate more than 0.6°C (1°F) from ambient temperature.	FW2-TP
			(ii) No thermal alterations which would cause temperatures to exceed ambient by more than 1.1°C (2°F) at any time or which would cause temperatures in excess of 20°C (68°F).	FW2-TM

Substance	Criteria	Classifications
	(iii) No thermal deviations which would cause temperatures to deviate more than 2.8°C (5°F) at any time from ambient temperatures. No heat may be added which would cause temperatures to exceed 27.8°C (82°F) for small mouth bass or yellow perch waters, or 30°C (86°F) for other nontrout waters.	FW2-NT
	(iv) No thermal alterations which would cause temperatures to deviate from ambient by more than 2.2°C (4°F), from September through May, nor more than 0.8°C (1.5°F) from June through August, nor cause temperatures to exceed 29.4°C (85°F).	All SE
	(2) Lakes, Ponds or Reservoirs	
	(i) No thermal alterations except where it can be shown to be beneficial to the designated and existing uses.	FW2-TM, FW2-TP

Substance	Criteria	Classifications
	(ii) No thermal alterations of more than 1.7°C (3°F) in the epilimnion of lakes and other standing waters. No discharges of heated effluent into the hypolimnion nor pumping of water from the hypolimnion (for discharge back into the same water body) shall be permitted unless it is demonstrated, to the satisfaction of the Department, that such practices will be beneficial to the existing and designated uses.	FW2-NT
	(3) Saline Bays - No thermal alterations which would cause temperatures to deviate from ambient by more than 2.2°C (4°F), from September through May, nor more than 0.8°C (1.5°F) from June through August, nor cause temperatures to exceed 29.4°C (85°F).	All SE

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance	Criteria	Classifications
	(4) Coastal Waters - No direct heat additions within 1,500 feet of the shoreline. No thermal alterations which would cause temperatures to deviate from ambient temperatures by more than 2.2°C (4°F) from September through May, nor more than 0.8°C (1.5°F) from June through August, nor which would cause temperatures to exceed 26.7°C (80°F).	SC
	ii. Heat Dissipation Areas	
	(1) Streams	FW2-TM, FW2-NT, All SE
	(i) Not more than one-quarter (1/4) of the cross section and/or volume of the water body at any time;	
	(ii) Not more than two-thirds (2/3) of the surface from shore to shore at any time; and	

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance		Criteria	Classifications
		(iii) These limits may be exceeded by special permission, on a case-by-case basis, when a discharger can demonstrate that a larger heat dissipation area meets the tests for a waiver under Section 316 of the Federal Clean Water Act.	
		(2) Lakes, Ponds, Reservoirs, Bays or Coastal Waters: Heat dissipation areas will be developed on a case-by-case basis.	All Classifications
12. Toxic Substances (general)	i.	None, either alone or in combination with other substances, in such concentrations as to affect humans or be detrimental to the natural aquatic biota, produce undesirable aquatic life, or which would render the waters unsuitable for the designated uses.	All Classifications
	ii.	None which would cause standards for drinking water to be exceeded after appropriate treatment.	FW2

Substance		Criteria	Classifications
	iii.	Toxic substances shall not be present in concentrations that cause acute or chronic toxicity to aquatic biota, or bioaccumulate within an organism to concentrations that exert a toxic effect on that organism or render it unfit for consumption.	All Classifications
	iv.	The concentrations of nonpersistent toxic substances in the State's waters shall not exceed one-twentieth (0.05) of the acute definitive LC_{50} or EC_{50} value, as determined by appropriate bioassays conducted in accordance with N.J.A.C. 7:18.	All Classifications
	v.	The concentration of persistent toxic substances in the State's waters shall not exceed one-hundredeth (0.01) of the acute definitive LC_{50} or EC_{50} value, as determined by appropriate bioassays conducted in accordance with N.J.A.C. 7:18.	All Classifications

13. Toxic Substances (μg/L):

NOTE: Except as noted, aquatic life criteria followed by an (a) represent acute aquatic life protection criteria as a one-hour average (three-hour for ammonia, six-hour for lead) and aquatic life criteria followed by (c) represent chronic aquatic life protection criteria as a four-day average (30-day for ammonia). No exceedance of aquatic life criteria shall be permitted at or above the design flows specified in section N.J.A.C. 7:9B-1.5(c)2. Criteria followed by an (h) are noncarcinogenic

Substance		Criteria		Classifications

effect-based human health criteria as a 30-day average with no frequency of exceedance at or above the design flows specified in section N.J.A.C. 7:9B-1.5(c)2. Criteria followed by an (hc) are carcinogenic effect-based human health criteria as a 70-year average with no frequency of exceedance at or above the design flows specified in section N.J.A.C. 7:9B-1.5(c)2 and are based on a risk level of one-in-one-million. Criteria followed by an (hcc) are for toxic substances considered to be possible human carcinogens as a 70-year average with no frequency of exceedance at or above the design flows specified in section N.J.A.C. 7:9B-1.5(c)2 and are based on a risk level of one-in-one hundred thousand. Criteria followed by an (OL) are organoleptic effect-based criteria and are maximum concentrations.

i.	Acenaphthylene		Reserved.	
ii.	Acrolein	(1)	320(h)	All FW2
		(2)	780(h)	All SE, SC
iii.	Acrylonitrile	(1)	0.0591(hc)	All FW2
		(2)	0.665(hc)	All SE, SC
iv.	Aldrin	(1)	3.0(a); 0.000135(hc)	All FW2
		(2)	1.3(a); 0.000144(hc)	All SE, SC
v.	Aluminum (Total recoverable)		Reserved.	

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
vi.	Ammonia, un-ionized (mg NH_3-N/L)	(1)	at pH < 8.30 $0.179*10^{0.026(Temp-20) + 0.41 (pH-7.80)}$(a) $0.046*10^{0.026(Temp-20) + 0.41 (pH-7.80)}$(c) at pH ≥ 8.30 $0.179*10^{0.026(Temp-20) + 0.20}$(a) $0.046*10^{0.026(Temp-20) + 0.20}$(c)	FW2-TP, FW2-TM
		(2)	at pH < 8.30 $0.201*10^{0.026(Temp-20) + 0.41 (pH-7.80)}$(a) (Summer[1]) $0.054*10^{0.026(Temp-20) + 0.41 (pH-7.80)}$(c) (Summer[1]) $0.232*10^{0.026(Temp-20) + 0.41 (pH-7.80)}$(a) (Winter[2]) $0.060*10^{0.026(Temp-20) + 0.41 (pH-7.80)}$(c) (Winter[2]) at pH ≥ 8.30 $0.201*10^{0.026(Temp-20) + 0.20}$(a) (Summer[1]) $0.054*10^{0.026(Temp-20) + 0.20}$(c) (Summer[1]) $0.232*10^{0.026(Temp-20) + 0.20}$(a) (Winter[2]) $0.060*10^{0.026(Temp-20) + 0.20}$(c) (Winter[2])	FW2-NT

1 Summer spawning period from March 1st through October 31st.
2 Winter non-spawning period from November 1st through February 28/29th.

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
		(3)	at pH < 8.30 $0.238*10^{0.026(Temp-20) + 0.41 (pH-7.80)}$(a) $0.061*10^{0.026(Temp-20) + 0.41 (pH-7.80)}$(c) at pH ≥ 8.30 $0.238*10^{0.026(Temp-20) + 0.20}$(a) $0.061*10^{0.026(Temp-20) + 0.20}$(c)	PL
		(4)	0.115(a) 0.030(c)	All SE
		(5)	0.094(a) 0.024(c)	SC
vii.	Anthracene	(1) (2)	9,570(h) 108,000(h)	All FW2 All SE, SC
viii.	Antimony (Total recoverable)	(1) (2)	12.2(h) 4,300(h)	All FW2 All SE, SC
ix.	Arsenic (Total recoverable)	(1) (2)	0.0170(hc) 0.136(hc)	All FW2 All SE, SC
x.	Asbestos	(1)	7 million fibers/L (h) (fibers longer than 10 micrometers)	All FW2

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
xi.	Barium (Total recoverable)	(1)	2,000(h)	All FW2
xii.	Benz(a)anthracene	(1)	0.0028(hc)	All FW2
		(2)	0.031(hc)	All SE, SC
xiii.	Benzene	(1)	0.150(hc)	All FW2
		(2)	71(hc)	All SE, SC
xiv.	Benzidine	(1)	0.000118(hc)	All FW2
		(2)	0.000535(hc)	All SE, SC
xv.	3,4-Benzofluoranthene	(1)	0.0028(hc)	All FW2
	(Benzo(b)fluoranthene)	(2)	0.031(hc)	All SE, SC
xvi.	Benzo(a)pyrene (BaP)	(1)	0.0028(hc)	All FW2
		(2)	0.031(hc)	All SE, SC
xvii.	Benzo(ghi)perylene		Reserved.	
xviii.	Benzo(k)fluoranthene	(1)	0.0028(hc)	All FW2
		(2)	0.031(hc)	All SE, SC
xix.	Beryllium (Total recoverable)		Reserved.	
xx.	alpha-BHC (alpha-HCH)	(1)	0.00391(hc)	All FW2
		(2)	0.0131(hc)	All SE, SC

7:9B-1.14(c) Surface Water Quality Criteria for FW2, SE and SC Waters
(Expressed as maximum concentrations unless otherwise noted)

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance		Criteria		Classifications
xxi.	beta-BHC (beta-HCH)	(1)	0.137(hcc)	All FW2
		(2)	0.460(hcc)	All SE, SC
xxii.	gamma-BHC (gamma-HCH/Lindane)	(1)	2.0(a); 0.080(c)	All FW2
		(2)	0.16(a)	All SE, SC
xxiii.	Bis(2-chloroethyl) ether	(1)	0.0311(hc)	All FW2
		(2)	1.4(hc)	All SE, SC
xxiv.	Bis(2-chloroisopropyl) ether	(1)	1,250(h)	All FW2
		(2)	170,000(h)	All SE, SC
xxv.	Bis(2-ethylhexyl) phthalate	(1)	1.76(hc)	All FW2
		(2)	5.92(hc)	All SE, SC
xxvi.	Bromodichloromethane (Dichlorobromomethane)	(1)	0.266(hc)	All FW2
		(2)	22(hc)	All SE, SC
xxvii.	Bromoform	(1)	4.38(hc)	All FW2
		(2)	360(hc)	All SE, SC
xxviii.	Butyl benzyl phthalate	(1)	239(h)	All FW2
		(2)	416(h)	All SE, SC
xxix.	Cadmium (Total recoverable)	(1)	10(h)	All FW2
xxx.	Carbon tetrachloride	(1)	0.363(hc)	All FW2
		(2)	6.31(hc)	All SE, SC

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance		Criteria	Classifications
xxxi. Chlordane	(1)	2.4(a); 0.0043(c); 0.000277(hc)	All FW2
	(2)	0.09(a); 0.0040(c); 0.000283(hc)	All SE, SC
xxxii. Chloride	(1)	250,000 (ol); 860,000(a); 230,000(c)	All FW2
xxxiii. Chlorine Produced Oxidants	(1)	19(a); 11(c)	All FW2
(CPO)	(2)	13(a); 7.5(c)	All SE, SC
xxxiv. Chlorobenzene	(1)	22.0(h)	All FW2
	(2)	21,000(h)	All SE, SC
xxxv. Chloroform	(1)	5.67(hc)	All FW2
	(2)	470(hc)	All SE, SC
xxxvi. 2-Chlorophenol	(1)	122(h)	All FW2
	(2)	402(h)	All SE, SC
xxxvii. Chlorpyrifos	(1)	0.083(a); 0.041(c)	All FW2
	(2)	0.011(a); 0.0056(c)	All SE, SC
xxxviii. Chromium (Total recoverable)	(1)	160(h)	All FW2
	(2)	3,230(h)	All SE, SC
xxxix. Chrysene	(1)	0.0028(hc)	All FW2
	(2)	0.031(hc)	All SE, SC

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
xl.	Copper (Dissolved)	(1)	Reserved.	
		(2)	Reserved.	
		(3)	7.9(a); 5.6(c)	New York/New Jersey Harbor Estuary*
xli.	Cyanide	(1)	22(a); 5.2(c); 768(h)	All FW2
		(2)	1.0(a); 1.0(c); 220,000(h)	All SE, SC
xlii.	4,4'-DDD (p,p'-TDE)	(1)	0.000832(hc)	All FW2
		(2)	0.000837(hc)	All SE, SC
xliii.	4,4'-DDE	(1)	0.000588(hc)	All FW2
		(2)	0.000591(hc)	All SE, SC
xliv.	4,4'-DDT	(1)	1.1(a); 0.0010(c); 0.000588(hc)	All FW2
		(2)	0.13(a); 0.0010(c); 0.000591(hc)	All SE, SC
xlv.	Demeton	(1)	0.1(c)	All FW2, SE, and SC
xlvi.	Dibenz(a,h)anthracene	(1)	0.0028(hc)	All FW2
		(2)	0.031(hc)	All SE, SC
xlvii.	Dibromochloromethane (Chlorodibromomethane)	(1)	72.6(h)	All FW2

* Waters which include Newark Bay, the New Jersey portions of Raritan Bay, Upper New York Bay, Lower New York Bay, Arthur Kill, Kill Van Kull, saline portions of the Passaic, Hackensak, and Hudson Rivers and saline portions of tributaries to all of these waters.

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance		Criteria		Classifications
xlviii.	Di-n-butyl phthalate	(1)	3,530(h)	All FW2
		(2)	15,700(h)	All SE, SC
xlix.	1,2-Dichlorobenzene	(1)	2,520(h)	All FW2
		(2)	16,500(h)	All SE, SC
l.	1,3-Dichlorobenzene	(1)	2,620(h)	All FW2
		(2)	22,200(h)	All SE, SC
li.	1,4-Dichlorobenzene	(1)	343(h)	All FW2
		(2)	3,159(h)	All SE, SC
lii.	3,3'-Dichlorobenzidine	(1)	0.0386(hc)	All FW2
		(2)	0.0767(hc)	All SE, SC
liii.	1,2-Dichloroethane	(1)	0.291(hc)	All FW2
		(2)	99(hc)	All SE, SC
liv.	1,1-Dichloroethylene	(1)	4.81(h)	All FW2
lv.	trans-1,2-Dichloroethylene	(1)	592(h)	All FW2
lvi.	2,4-Dichlorophenol	(1)	92.7(h)	All FW2
		(2)	794(h)	All SE, SC
lvii.	1,3-Dichloropropene	(1)	0.193(hc)	All FW2
		(2)	1,700(h)	All SE, SC

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance		Criteria		Classifications
lviii.	Dieldrin	(1)	2.5(a); 0.0019(c); 0.000135(hc)	All FW2
		(2)	0.71(a); 0.0019(c); 0.000144(hc)	All SE, SC
lix.	Diethyl phthalate	(1)	21,200(h)	All FW2
		(2)	111,000(h)	All SE, SC
lx.	Dimethyl phthalate	(1)	313,000(h)	All FW2
		(2)	2,900,000(h)	All SE, SC
lxi.	4,6-Dinitro-o-cresol	(1)	13.4(h)	All FW2
		(2)	765(h)	All SE, SC
lxii.	2,4-Dinitrophenol	(1)	69.7(h)	All FW2
		(2)	14,000(h)	All SE, SC
lxiii.	2,4-Dinitrotoluene	(1)	0.11(hc)	All FW2
		(2)	9.1(hc)	All SE, SC
lxiv.	1,2-Diphenylhydrazine	(1)	0.0405(hc)	All FW2
		(2)	0.541(hc)	All SE, SC
lxv.	Endosulfans (alpha and beta)	(1)	0.22(a); 0.056(c); 0.932(h)	All FW2
		(2)	0.034(a); 0.0087(c); 1.99(h)	All SE, SC
lxvi.	Endosulfan sulfate	(1)	0.93(h)	All FW2
		(2)	2.0(h)	All SE, SC

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
lxvii.	Endrin	(1)	0.18(a); 0.0023(c); 0.629(h)	All FW2
		(2)	0.037(a); 0.0023(c); 0.678(h)	All SE, SC
lxviii.	Endrin aldehyde	(1)	0.76(h)	All FW2
		(2)	0.81(h)	All SE, SC
lxix.	Ethylbenzene	(1)	3,030(h)	All FW2
		(2)	27,900(h)	All SE, SC
lxx.	Fluoranthene	(1)	310(h)	All FW2
		(2)	393(h)	All SE, SC
lxxi.	Fluorene	(1)	1,340(h)	All FW2
lxxii.	Guthion	(1)	0.01(c)	All FW2, SE and SC
lxxiii.	Heptachlor	(1)	0.52(a); 0.0038(c); 0.000208(hc)	All FW2
		(2)	0.053(a); 0.0036(c); 0.000214(hc)	All SE, SC
lxxiv.	Heptachlor epoxide	(1)	0.52(a); 0.0038(c); 0.000103(hc)	All FW2
		(2)	0.053(a); 0.0036(c); 0.000106(hc)	All SE, SC
lxxv.	Hexachlorobenzene	(1)	0.000748(hc)	All FW2
		(2)	0.000775(hc)	All SE, SC
lxxvi.	Hexachlorobutadiene	(1)	6.94(h)	All FW2

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance		Criteria	Classifications
lxxvii. Hexachlorocyclopentadiene	(1)	245(h)	All FW2
	(2)	17,000(h)	All SE, SC
lxxviii. Hexachloroethane	(1)	2.73(h)	All FW2
	(2)	12.4(h)	All SE, SC
lxxix. Indeno(1,2,3-cd)pyrene	(1)	0.0028(hc)	All FW2
	(2)	0.031(hc)	All SE, SC
lxxx. Iron (Total recoverable)		Reserved.	
lxxxi. Isophorone	(1)	552(h)	All FW2
lxxxii. Lead	(1)	38(a); 5.4(c) (Dissolved); 5(h) (Total recoverable)	All FW2
	(2)	210(a); 24(c) (Dissolved)	All SE, SC
lxxxiii. Malathion	(1)	0.1(c)	All FW2, SE and SC
lxxxiv. Manganese (Total recoverable)	(1)	100(h)	All SE, SC
lxxxv. Mercury (Total recoverable)	(1)	0.144(h)	All FW2
	(2)	0.146(h)	All SE, SC
lxxxvi. Methoxychlor	(1)	0.03(c); 40(h)	All FW2
	(2)	0.03(c)	All SE, SC

7:9B-1.14(c) Surface Water Quality Criteria for FW2, SE and SC Waters

(Expressed as maximum concentrations unless otherwise noted)

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
lxxxvii.	Methyl bromide	(1)	48.4(h)	All FW2
	(Bromomethane)	(2)	4,000(h)	All SE, SC
lxxxviii.	Methyl chloride		Reserved.	
	(Chloromethane)			
lxxxix.	Methylene chloride	(1)	2.49(hc)	All FW2
		(2)	1,600(hc)	All SE, SC
xc.	Mirex	(1)	0.001(c)	All FW2, SE and SC
xci.	Nickel (Total recoverable)	(1)	516(h)	All FW2
		(2)	3,900(h)	All SE, SC
xcii.	Nitrate (as N)	(1)	10,000(h)	All FW2
xciii.	Nitrobenzene	(1)	16.0(h)	All FW2
		(2)	1,900(h)	All SE, SC
xciv.	N-Nitrosodi-n-butylamine	(1)	0.00641(hc)	All FW2
xcv.	N-Nitrosodiethylamine	(1)	0.000233(hc)	All FW2
xcvi.	N-Nitrosodimethylamine	(1)	0.000686(hc)	All FW2
		(2)	8.1(hc)	All SE, SC
xcvii.	N-Nitrosodiphenylamine	(1)	4.95(hc)	All FW2
		(2)	16.2(hc)	All SE, SC

7:9B-1.14(c) Surface Water Quality Criteria for FW2, SE and SC Waters

(Expressed as maximum concentrations unless otherwise noted)

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
xcviii.	N-Nitrosopyrrolidine	(1)	0.0167(hc)	All FW2
xcix.	Parathion	(1)	0.065(a); 0.013(c)	All FW2
c.	Pentachlorobenzene	(1)	3.67(h)	All FW2
		(2)	4.21(h)	All SE, SC
ci.	Pentachlorophenol	(1)	$e^{(1.005(pH)-4.830)}$(a); $e^{(1.005(pH)-5.290)}$(c); 0.282(hc)	All FW2
		(2)	13(a); 7.9(c); 8.2(hc)	All SE, SC
cii.	Phenanthrene		Reserved.	
ciii.	Phenol	(1)	20,900(h)	All FW2
		(2)	4,600,000(h)	All SE, SC
civ.	Phosphorous (yellow)	(1)	0.1(c)	All SE, SC
cv.	Polychlorinated biphenyls (PCBs)	(1)	0.014(c); 0.00017(hc)	All FW2
		(2)	0.030(c); 0.00017(hc)	All SE, SC
cvi.	Pyrene	(1)	797(h)	All FW2
		(2)	8,970(h)	All SE, SC
cvii.	Selenium (Total recoverable)	(1)	10(h)	All FW2
cviii.	Silver (Total recoverable)	(1)	164(h)	All FW2

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance			Criteria	Classifications
cix.	Sulfide-hydrogen sulfide (undissociated)	(1)	2(c)	All FW2, SE and SC
cx.	1,2,4,5-Tetrachlorobenzene	(1)	2.56(h)	All FW2
		(2)	3.25(h)	All SE, SC
cxi.	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	(1)	0.000000013(hc)	All FW2
		(2)	0.000000014(hc)	All SE, SC
cxii.	1,1,2,2-Tetrachloroethane	(1)	1.72(hcc)	All FW2
cxiii.	Tetrachloroethylene	(1)	0.388(hc)	All FW2
		(2)	4.29(hc)	All SE, SC
cxiv.	Thallium (Total recoverable)	(1)	1.70(h)	All FW2
		(2)	6.22(h)	All SE, SC
cxv.	Toluene	(1)	7,440(h)	All FW2
		(2)	200,000(h)	All SE, SC
cxvi.	Toxaphene	(1)	0.73(a); 0.0002(c); 0.000730(hc)	All FW2
		(2)	0.21(a); 0.0002(c); 0.000747(hc)	All SE, SC
cxvii.	1,2,4-Trichlorobenzene	(1)	30.6(h)	All FW2
		(2)	113(h)	All SE, SC
cxviii.	1,1,1-Trichloroethane	(1)	127(h)	All FW2

NOTE: The criteria promulgated for the Delaware River are not included in this Table

Substance		Criteria		Classifications
cxix.	1,1,2-Trichloroethane	(1)	13.5(h)	All FW2
cxx.	Trichloroethylene	(1) (2)	1.09(hc) 81(hc)	All FW2 All SE, SC
cxxi.	2,4,5-Trichlorophenol	(1) (2)	2,580(h) 9,790(h)	All FW2 All SE, SC
cxxii.	2,4,6-Trichlorophenol	(1) (2)	2.14(hc) 6.53(hc)	All FW2 All SE, SC
cxxiii.	Vinyl chloride	(1) (2)	0.0830(hc) 525(hc)	All FW2 All SE, SC
cxxiv.	Zinc (Total recoverable)		Reserved.	
14.	Turbidity (Nephelometric Turbidity Unit-NTU)	i.	Maximum 30-day average of 15 NTU, a maximum of 50 NTU at any time.	FW2, SE3
		ii.	Maximum 30-day average of 10 NTU, a maximum of 30 NTU at any time.	SE1, SE2
		iii.	Levels shall not exceed 10.0 NTU.	SC

(d) Surface water quality criteria for waters under the jurisdiction of the DRBC:

1. Mainstem Delaware River and Delaware Bay:

   i. For parameters with criteria in "Delaware River Basin Commission, Administrative Manual - Part III, Water Quality Regulations," Article 3, dated October 23, 1996, including all amendments and future supplements thereto, the criteria contained therein are the applicable criteria.

   ii. For parameters without criteria in "Delaware River Basin Commission, Administrative Manual - Part III, Water Quality Regulations," Article 3, dated October 23, 1996, including all amendments and future supplements thereto, the criteria at (c) above are the applicable criteria and shall be applied as follows:

      (1) Criteria applicable to FW2-NT waters apply where salinities are less than or equal to 3.5 parts per thousand (ppt) at mean high tide;

      (2) Criteria applicable to SE waters apply where salinities are greater than 3.5 ppt at mean high tide; and

      (3) Where salinities vary from 3.5 ppt or less, to greater than 3.5 ppt, at mean high tide, the more stringent of the FW2-NT or SE criteria apply.

2. Tributaries to the mainstem Delaware River and Delaware Bay:

   i. The applicable criteria are those contained in "Delaware River Basin Commission, Administrative Manual - Part III, Water Quality Regulations," Article 3, dated October 23, 1996, including all amendments and supplements thereto; or

   ii. The criteria at (c) above, whichever are more stringent.

3. For all waters under the jurisdiction of the DRBC where criteria are not established in "Delaware River Basin Commission, Administrative Manual - Part III, Water Quality Regulations," Article 3, dated October 23, 1996, including all amendments and future supplements thereto, or at (c) above, the Department shall use criteria based upon the best available scientific information, in accordance with (d)1ii above and N.J.A.C. 7:9B-1.5(c)5, to establish water quality-based effluent limitations.

7:9B-1.15 Surface water classifications for the waters of the State of New Jersey

(a) This section contains the surface water classifications for the waters of the State of New Jersey. Surface water classifications are presented in tabular form. Subsections (c) through (g) contain surface water classifications by major drainage basin. Subsection (h) lists FW1 waters by tract within basins and subsection (i) identifies the Outstanding National Resource Waters of the State.

(b) The following are instructions for the use of Tables 1 through 5 found in N.J.A.C. 7:9B-1.15(c) through (g) respectively:

1. The surface water classification tables give the surface water classifications for waters of the State. Surface waters of the State and their classification are listed in the table covering the major drainage basin in which they are located. The major drainage basins are:
   i. The Atlantic Coastal drainage basin which contains the surface waters listed in Table 1 in (c) below;
   ii. The Delaware River drainage basin which contains the surface waters listed in Table 2 in (d) below;
   iii. The Passaic River, Hudson River and New York Harbor Complex drainage basin which contains the surface waters listed in Table 3 in (e) below;
   iv. The Raritan River and Raritan Bay drainage basin which contains the surface waters listed in Table 4 in (f) below; and
   v. The Wallkill River drainage basin which contains the surface waters listed in Table 5 in (g) below.

2. Within each basin the waters are listed alphabetically and segment descriptions begin at the headwaters and proceed downstream.

3. To find a stream:
   i. Determine which major drainage basin the stream is in;
   ii. Look for the name of the stream in the appropriate table and find the classification;
   iii. For unnamed or unlisted streams, find the stream or other waterbody that the stream of interest flows into and look for the classification of that stream or waterbody. The classification of the stream of interest may then be determined by referring to (b)5 below. If the second stream or waterbody is also unlisted, repeat the process until a listed stream or waterbody is found. Use (b)5iv below to classify streams entering unlisted lakes.

4. To find a lake or other non-stream waterbody:
   i. Determine which major drainage basin the waterbody is in;
   ii. Look for the waterbody name in the appropriate table;
   iii. If the waterbody is not listed, use (b)5ii, 5iii, 5vi, and 5vii below to determine the appropriate classification.

5. To find unnamed waterways or waterbodies or named waterways or waterbodies which do not appear in the listing, use the following instructions:
   i. Unnamed or unlisted freshwater streams that flow into streams classified as FW2-TP, FW2-TM, or FW2-NT take the classification of the classified stream they enter, unless the unlisted stream is a PL water which is covered in (b)5vii below. If the stream could be a C1 water, see (b)5vi below.
   ii. All freshwater lakes, ponds and reservoirs that are five or more acres in surface area, that are not located entirely within the Pinelands Area boundaries (see (b)5vii below) and that are not specifically listed as FW2-TP or FW2-TM are classified as FW2-NT. This includes lakes, ponds and reservoirs on segments of streams which are classified as FW2-TM or FW2-TP such as Saxton Lake on the Musconetcong River. If the waterbody could be a C1 water, also check (b)5vi below.
   iii. All freshwater lakes, ponds and reservoirs, that are less than five acres in surface area, upstream of and contiguous with FW2-TP or FW2-TM streams, and which are not located entirely within the Pinelands Area boundaries (see(b)5vii below) are classified as FW2-TM. All other freshwater lakes, ponds and reservoirs that are not otherwise classified in this subsection or the following tables are classified as FW2-NT. If the waterbody could be a C1 water, also check (b)5vi below.
   iv. Unnamed or unlisted streams that enter FW2 lakes, ponds and reservoirs take the classification of either the listed tributary stream flowing into the lake with the highest classification or the listed tributary stream leaving the lake with the highest classification, whichever has the highest classification, or, if there are no listed tributary or outlet streams to the lake, the first listed stream downstream of the lake. If the stream is located within the boundaries of the Pinelands Area, see (b)5.vii. below; if it could be a C1 water, also see (b)5vi below.
   v. Unnamed or unlisted saline waterways and waterbodies are classified as SE1 in the Atlantic Coastal Basin. Unnamed or unlisted saline waterways which enter SE2 or SE3 waters in the Passaic, Hackensack and New York Harbor Complex basin are classified as SE2 unless otherwise classified within Table 3 in (e) below. Freshwater portions of unnamed or unlisted streams entering SE1, SE2, or SE3 waters are classified as FW2-NT. This only applies to waters that are not PL waters (see (b)5vii below). If the waterbody or waterway could be a C1 water, also see (b)5vi below.
   vi. If the waterway or waterbody of interest flows through or is entirely located within State parks, forests or fish and game lands, Federal wildlife refuges, other special holdings, or is a State shellfish water as defined in this subchapter, the Department's maps should be checked to determine if the waterbody of interest is mapped as a C1 water. If the waterway or waterbody does not appear on the United States Geological Survey quadrangle that the Department used as a base map in its designation of the C1 waters, the Department will determine on a case-by-case basis whether the waterway or waterbody should be designated as C1.
   vii. All waterways or waterbodies, or portions of waterways or waterbodies, that are located within the boundaries of the Pinelands Area established at N.J.S.A. 13:18A-11a are classified as PL unless they are listed as FW1

waters in Table 6 in (h) below. A tributary entering a PL stream is classified as PL only for those portions of the tributary that are within the Pinelands Area. Lakes are classified as PL only if they are located entirely within the Pinelands Area.

6. The following 10 classifications are used for the sole purpose of identifying the water quality classification of the waters listed in the tables in (c) through (h) below:
   i. "FW1" means those fresh waters, as designated in N.J.A.C. 7:9B-1.15(h) Table 6, and as defined at N.J.A.C. 7:9B-1.4.
   ii. "FW2-TP" means FW2 trout production.
   iii. "FW2-TM" means FW2 trout maintenance.
   iv. "FW2-NT" means FW2 non trout.
   v. "PL" means Pinelands Waters.
   vi. "SE1" means saline estuarine waters whose designated uses are listed in N.J.A.C. 7:9B-1.12(d).
   vii. "SE2" means saline estuarine waters whose designated uses are listed in N.J.A.C. 7:9B-1.12(e).
   viii. "SE3" means saline estuarine waters whose designated uses are listed in N.J.A.C. 7:9B-1.12(f).
   ix. "SC" means the general surface water classification applied to saline coastal waters.
   x. FW2-NT/SE1 (or a similar designation that combines two classifications) means a waterway in which there may be a salt water/fresh water interface. The exact point of demarcation between the fresh and saline waters must be determined by salinity measurements and is that point where the salinity reaches 3.5 parts per thousand at mean high tide. The stream is classified as FW2-NT in the fresh portions (salinity less than or equal to 3.5 parts per thousand at mean high tide) and SE1 in the saline portions.

7. The following water quality designations are used in Tables 1 through 5 in (c) through (g), respectively, below:
   i. "(C1)" means Category One waters;
   ii. "(tp)" indicates trout production in waters which are classified as FW1. This is for information only and does not affect the water quality criteria for those waters;
   iii. "(tm)" indicates trout maintenance in waters which are classified as PL or FW1. For FW1 waters this is for information only and does not affect the water quality criteria for those waters.

(c) The surface water classifications in Table 1 are for waters of the Atlantic Coastal Basin:

TABLE 1

Waterbody	Classification
ABRAMS CREEK	
(Marmora) - Entire length, except portion outside the boundaries of the MacNamara Wildlife Management Area	FW2-NT/SE1(C1)
(Griscom) - Portions of the Creek and tributaries outside of the MacNamara Wildlife Management Area	FW2-NT/SE1
ABSECON BAY (Absecon) - All waters within Absecon Wildlife Management Area	SE1(C1)
ABSECON CREEK	
(Egg Harbor) - North and South Branches from their origins downstream to the boundary of the Pinelands Protection and Preservation Area	PL
(Absecon) - Entire length, except portions described above	FW2-NT/SE1
ARNOLD POND (Barnegat)	FW2-NT/SE1(C1)
ATLANTIC OCEAN	
(Offshore) - Waters from the shoreline out to the three mile limit, except areas described below	SC
(Beach Haven) - Waters of the Atlantic Ocean out to the State's three mile limit from Beach Haven Inlet to Cape May Point, excluding the following waters:	SC(C1)
1. (Atlantic City) - All of the Ocean waters inshore of a line that begins at the center of Convention Hall, Atlantic City bearing approximately 153 degrees T (True North) and extends 2.0 nautical miles to a point with coordinates of latitude 39 degrees 19.4 minutes N., longitude 74 degrees 25.1 minutes W., from this point, approximately 2 nautical miles offshore, the line runs parallel to the shoreline in a southwesterly direction for approximately 2.1 nautical miles to a point with coordinates of latitude 39 degrees 18.4 minutes N., longitude 74 degrees 27.5 minutes W., then bearing approximately 333 degrees T (reciprocal 153 degrees T) for approximately 1.9	

nautical miles to the outermost tip of the Ventnor City Fishing Pier located at the Boardwalk and South Cambridge Ave., City of Ventnor, then along that pier to the shore and terminating.

2. (Ocean City) - All of the ocean waters inshore of a line which begins at the City of Ocean City's Beach Patrol, First Aid and Rest Room building located on the beach at 34th Street, with coordinates of latitude 39 degrees 15.0 minutes N., longitude 74 degrees 36.6 minutes W., and bears approximately 126 degrees T (True North) for approximately 1.5 nautical miles from the shoreline to a point with coordinates of latitude 39 degrees 14.1 minutes N., longitude 74 degrees 35.0 minutes W., then bears approximately 216 degrees T along the shoreline in a southwesterly direction 1.5 nautical miles offshore, for approximately 2.3 nautical miles to a point with coordinates of latitude 39 degrees 12.3 minutes N., longitude 74 degrees 36.7 minutes W., then bears approximately 306 degrees T for approximately 1.4 nautical miles to the outermost tip of Anglers Fishing Club's Pier, 5825 Central Ave., Ocean City, then along that pier to the shoreline.
3. Seven mile beach outfall exclusion
4. Wildwood outfall exclusion

TRIBUTARIES, ATLANTIC OCEAN

(New Jersey Coast) - All those streams or segments of streams that flow directly into the Atlantic Ocean or into back bays of the Ocean which are not included elsewhere in this list, are not within the boundaries of the Pinelands Protection or Preservation Areas and are not mapped as C1 waters by the Department FW2-NT/SE1

(Pinelands) - All streams or segments of streams which flow directly into the Atlantic Ocean or into back bays of the Ocean, are within the boundaries of the Pinelands Protection and Preservation Areas and are not classified as FW1 in this Table PL

(New Jersey Coast) - All streams or segments ofstreams which flow directly into the Atlantic Ocean or into back bays of the Ocean, are mapped as C1 waters by the Department, are

not trout maintenance waters, and are not classified as FW1 in this Table	FW2-NT/SE1(C1)
BABCOCK CREEK (Marmora) - Entire length	FW2-NT/SE1(C1)
BALLANGER CREEK	
(New Gretna) - Source to Pollys Ditch	FW2-NT/SE1
(New Gretna) - Pollys Ditch to Bay	SE1(C1)
BANKS CREEK (Marmora) - Entire length	SE1(C1)
BARNEGAT BAY	
(Barnegat National Wildlife Refuge) - All waters within the boundaries of the Barnegat National Wildlife Refuge	SE1(C1)
(Barnegat Light) - All other waters of the Bay	SE1(C1)
(Island Beach State Park) - All freshwater ponds within the boundaries of Island Beach State Park	FW1
(Island Beach State Park) - All waters in the Park, not classified as FW1 above	FW2-NT/SE1/SC(C1)
BARNEGAT BAY TRIBUTARIES - See ATLANTIC OCEAN, TRIBUTARIES	
BASS RIVER	
(Oswego Lake) - Source to Pineland Protection and Preservation Area boundary at the Garden State Parkway, except those branches described separately below	PL
(New Gretna) - Pineland Protection and Preservation Area boundary to the boundary of shellfish waters	FW2-NT/SE1
(New Gretna) - Boundary of shellfish waters to Mullica River	SE1(C1)
(Bass River State Forest) - Tommy's Branch from its headwaters to the Bass River State Forest Recreation Area service road	FW1
(Bass River State Forest) - Falkenburg Branch of Lake Absegami from its headwaters to the Lake	FW1
BATSTO RIVER	
(Browns Mills) - Entire length, except waters described separately below	PL
(Wharton) - Skit Branch and tributaries from their headwaters to the confluence with Robert's Branch	FW1
(Wharton) - The easterly branches of the Batsto River from Batsto Village upstream to the confluence with Skits Branch	FW1
BEACH THOROFARE (Margate) - Entire length	SE1(C1)
BEAR SWAMP BROOK	
(Howell)- Entire Length	FW2-NT(C1)
BIG ELDER CREEK	

(Sea Isle City) - Segment within the boundaries of Marmora Wildlife Management Area	SE1(C1)
(Sea Isle City) - Segment outside the boundaries of Marmora Wildlife Management Area	SE1
BIG GRAVELING CREEK (Great Bay) - Entire length	SE1(C1)
BIG GREAVES CREEK	
(MacNamara) - Segment of the Creek outside the boundaries of MacNamara Wildlife Management Area	SE1
(MacNamara) - Creek and tributaries within the boundaries of MacNamara Wildlife Management Area	SE1(C1)
BIG THOROFARE	
(Tuckerton) - Source to boundary of Great Bay Blvd. Wildlife Management Area	SE1
(Tuckerton) - Segment within the boundaries of Great Bay Blvd. Wildlife Management Area	SE1(C1)
BLUEFISH BROTHERS (Stone Harbor) - Entire length	SE1(C1)
BLUEFISH CREEK (Stone Harbor) - Entire length	SE1(C1)
BOG BRANCH CREEK (Middletown) - Entire length	SE1(C1)
BRIGANTINE (Brigantine National Wildlife Refuge) - All waters within the boundaries of the Brigantine National Wildlife Refuge	FW2-NT/SE1(C1)
BRISBANE LAKE	
(Allaire State Park) - The Lake and its tributaries	FW2-NT(C1)
BROAD CREEK (New Gretna) - Entire length	SE1(C1)
BROAD THOROFARE	
(Longport) - South of Rt. 152	SE1
(Longport) - North of Rt. 152	SE1(C1)
BROTHERS CREEK (Burleigh) - Entire length	SE1(C1)
CABBAGE THOROFARE (Great Bay) - Entire length	SE1(C1)
CEDAR BRIDGE BRANCH (Lakewood) - Entire length	FW2-NT
CEDAR CREEK	
(Manahawkin) - Source to boundaries of the Manahawkin Wildlife Management Area	FW2-NT/SE1
(Manahawkin) - Creek and tributaries within the boundaries of the Manahawkin Wildlife Management Area	FW2-NT/SE1(C1)
CEDAR CREEK	
(Cedar Crest) - Source to the boundaries of the Pinelands Protection and Preservation Area at the Garden State Parkway, except branches described separately below	PL
(Berkeley) - Garden State Parkway to Barnegat Bay	FW2-NT/SE1
(Greenwood Forest) - Webbs Mill Branch and tributaries located entirely within the boundaries of Greenwood Forest Wildlife Management Area	FW1

(Greenwood Forest) - Chamberlain's Branch from its origins to a point 1000 feet west of Route 539	FW1
(Greenwood Forest) - Those portions of the tributaries to Chamberlain's Branch originating and wholly contained within the boundaries of the Greenwood Forest Wildlife Management Area	FW1
CEDAR HAMMOCKS CREEK (English Creek Landing) - Entire length	SE1(C1)
CEDAR RUN	
(Stafford) - Source to the boundaries of the Pinelands Protection and Preservation Area at the Garden State Parkway	PL
(Cedar Run) - Garden State Parkway to the boundaries of the Barnegat National Wildlife Refuge	FW2-NT/SE1
(Barnegat) - National Wildlife Refuge boundaries to Barnegat Bay	FW2-NT/SE1(C1)
CEDAR SWAMP CREEK	
(Cedar Spring) - Entire length, except segment described separately below	FW2-NT/SE1
(Marmora) - Creek and tributaries within the boundaries of the MacNamara Wildlife Management Area	FW2-NT/SE1(C1)
CHAMBERLAIN BRANCH - See CEDAR CREEK	
CHANNEL CREEK (Barnegat Bay) - Entire length	SE1(C1)
CHARLEY CREEK (Marmora) - Entire length	FW2-NT/SE1(C1)
CLEAR STREAM (JACKSON) - Entire length	FW2-TM(C1)
COLLINS TIDE PONDS (Barnegat)	FW2-NT/SE1(C1)
COMMANDO CREEK (Marmora) - Entire length	SE1(C1)
CRANBERRY BROOK (Monmouth) - Entire length	FW2-NT/SE1
DAVENPORT BROOK	
(Berkeley) - Source to the boundaries of the Pinelands Protection and Preservation Area at the Penn Central railroad tracks	PL
(Toms River) - Railroad tracks to confluence with Wrangel Brook	FW2-NT
DEEP CREEK (Herbertsville) - Entire length	FW2-NT
DEEP RUN (Wharton) - Run and tributaries from their sources to Springer's Brook	FW1
DICKS BROOK (Larrabee's Crossing) - Entire length	FW2-NT(C1)
DINNER POINT CREEK (Staffordsville) - Entire length	SE1(C1)
DOCK THOROFARE (Northfield) - Entire length	SE1(C1)
DOUGHTY RESERVOIR (Atlantic city)	FW2-NT(C1)
DOVE MILL BRANCH - See TOMS RIVER	
EDWARD CREEK	
(Ocean City) - Source to the boundary of Marmora Wildlife Management Area	SE1

(Ocean City) - Boundary of Marmora Wildlife Management Area to Horn Creek	SE1(C1)
FALKENBURG BRANCH - See BASS RIVER	
FLAT CREEK (Marmora) - Entire length	FW2-NT/SE1(C1)
FLATTERAS CREEK (Beach Haven Heights) - Entire length	SE1(C1)
FORKED RIVER	
(Lacey) - River and branches from their sources to the boundaries of the Pinelands Protection and Preservation Area at the Garden State Parkway	PL
(Forked River) - Garden State Parkway to Barnegat Bay	FW2-NT/SE1
FORTESCUE (Fortescue) - All waters within the Fortescue Wildlife Management Area	FW2-NT/SE1(C1)
GIBSON CREEK	
(Gibson Landing) - Entire length, except segment described below	PL
(Marmora) - Segment and tributaries within the MacNamara Wildlife Management Area	FW2-NT/SE1(C1)
GLENDOLA RESERVOIR (Glendola)	FW2-NT(C1)
GO THROUGH CREEK	
(Burleigh) - Entire length, except segment described below	SE1
(Burleigh) - Segment within the boundaries of the Marmora Wildlife Management Area	SE1(C1)
GOING THROUGH CREEK (English Creek Landing)	SE1(C1)
GREAT BAY (Brigantine) - All waters of the Bay and all natural waterways which are tributary to the Bay and all waters, including both natural and manmade channels and ponds within the boundaries of the Brigantine National Wildlife Refuge and the Great Bay Wildlife Management Area	FW2-NT/SE1(C1)
GREAT EGG HARBOR RIVER	
(Berlin) - Source to confluence with Tinker Branch	FW2-NT
(Berlin) - Tinker Branch, the River from its confluence with Tinker Branch, and all tributaries within the Pinelands Protection and Preservation Area, downstream to the boundary at the Rt. 40 bridge in Mays Landing	PL
(Winslow) - All tributaries or segments of tributaries outside of the boundaries of the Pinelands Protection and Preservation Area,downstream to Rt. 40 at Mays Landing	FW2-NT
(Mays Landing) - Rt. 40 bridge to Great Egg Harbor, except those tributaries described separately below	FW2-NT/SE1

(Mays Landing) - All tributaries or segments of tributaries within the boundaries of the Pinelands Protection and Preservation Areas	PL
(Egg Harbor) - Tributaries and all other waters within MacNamara Wildlife Management Area, except tributary described below	FW2-NT/SE1(C1)
(Tuckahoe) - Hawkins Creek and the stream adjacent to and north of Hawkin's Creek, and their tributaries, from their origins to the point where the influence of impoundment begins	FW1
GREAT SOUND (Avalon) - All waters within Great Sound State Park	SE1(C1)
GREAT THOROFARE	
(Ventnor) - West of Rt. 40	SE1(C1)
(Ventnor) - East of Rt. 40	SE1
GRISCOM CREEK (Gibson Landing) - Entire length	FW2-NT/SE1(C1)
GUNNING RIVER	
(Barnegat) - Entire length, except segment described below	FW2-NT/SE1
(Barnegat) - Stream and tributaries within the boundaries of Barnegat National Wildlife Refuge	FW2-NT/SE1(C1)
HALFWAY CREEK	
(Middletown) - Source to the boundary of the MacNamara Wildlife Management Area	FW2-NT/SE1
(MacNamara) - Creek and tributaries within the boundaries of the MacNamara Wildlife Management Area	SE1(C1)
HARRY POND (Barnegat)	FW2-NT/SE1(C1)
HATFIELD CREEK (Beach Haven Heights) - Entire length	SE1(C1)
HAWKINS CREEK	
(Tuckahoe) - Source to the point where the influence of impoundment begins	FW1
(Tuckahoe) - Downstream of the influence of impoundment	SE1(C1)
HAY STACK BROOK (Howell) - Entire length	FW2-NT(C1)
HOSPITALITY CREEK (Longport) - Entire length	SE1(C1)
JACOVY CREEK (Stone Harbor) - Entire length	SE1(C1)
JAKES BRANCH	
(Berkeley) - Source to the boundaries of the Pinelands Protection and Preservation Area at the Garden State Parkway	PL
(Beachwood) - Garden State Parkway to Toms River	FW2-NT/SE1
JAY CREEK	SE1(C1)
JIMMIES CREEK	
(Great Bay) - Source to the boundary of Great Bay Wildlife Management Area	SE1(C1)

(Parkers Landing) - Segments of the Creek outside the boundaries of Great Bay Wildlife Management Area	SE1
JOSH CREEK (Stone Harbor) - Entire length	SE1(C1)
JUDIES CREEK	
(Great Bay) - Source to widening of creek	SE1
(Great Bay) - Widening of creek to mouth	SE1(C1)
JUMPING BROOK (Neptune) - Entire length	FW2-NT/SE1
KNOLL POND (Barnegat)	FW2-NT/SE1(C1)
LAKES BAY (Ventnor)	SE1(C1)
LAKES CHANNEL (Ventnor) - Entire length	SE1(C1)
LITTLE GREAVES CREEK (MacNamara) - Entire length	SE1(C1)
LITTLE SCOTCH BONNET	
(Stone Harbor) - Entire length, except segment described below	SE1
(Stone Harbor) - Segment within the boundaries of Marmora Wildlife Management Area	SE1(C1)
LITTLE THOROFARE (Tuckerton) - Entire length	SE1(C1)
LONG BROOK (JACKSON) - Entire length	PL
LONG POINT CREEK (Marmora) - Entire length	FW2-NT/SE1(C1)
LONG SWAMP BROOK	
(Squankum) - Entire length	FW2-NT(C1)
LOWER LONG REACH (Stone Harbor) - Entire length	SE1(C1)
LUDLAM CREEK (Marmora) - Entire length	SE1(C1)
MAIN MARSH CREEK (Brigantine) - Entire length	SE1(C1)
MANAHAWKIN CREEK	
(Manahawkin) - Source to the boundaries of Manahawkin Wildlife Management Area	FW2-NT/SE1
(Manahawkin) - Within the boundaries of the Wildlife Management Area	FW2-NT/SE1(C1)
MANASQUAN RESERVOIR (Oak Glen)	FW2-NT(C1)
TRIBUTARIES	
(Oak Glen) -All tributaries upstream of Manasquan Reservoir from source to the Reservoir	FW2-NT(C1)
MANASQUAN RIVER	
MAIN STEM	
(Freehold) - Source to Rt. 9 bridge, except tributaries described separately under Tributaries, below	FW2-NT
(Howell) - Rt. 9 bridge to the West Farms Road Bridge in Howell Township, except tributaries described separately under Tributaries, below	FW2-TM
(Howell) - West Farms Road Bridge in HowellTownship to the downstream boundary of Manasquan River Wildlife Management Area, except tributaries described separately	FW2-TM(C1)
(Brick) - Downstream boundary of Manasquan River Wildlife Management Area to surf waters	SE1
TRIBUTARIES, MANASQUAN RIVER	

(Adelphia) - Entire length	FW2-NT
(Allaire) - Those portions of the first and second southerly tributaries west of the Hospital Rd. which are located entirely within the boundaries of Allaire State Park	FW1(tm)
(Mill Run) - Entire length of Mill Run, including Brisbane Lake and its tributaries, except easterly tributary to Mill Run described as FW1 below	FW2-NT(C1)
(Allaire State Park) - The easterly tributary to Mill Run upstream of Brisbane Lake, located entirely within the Allaire State Park boundaries	FW1
(Freehold) - Tributaries within the boundaries of Turkey Swamp Wildlife Management Area	FW2-NT(C1)
MARMORA WILDLIFE MANAGEMENT AREA	
(Strathmere) - All waters within the boundaries of Marmora Wildlife Management Area	FW2-NT/SE1(C1)
MARSH BOG BROOK	
(Farmingdale) - Entire length	FW2-NT(C1)
MASONS CREEK (Marmora) - Entire length	SE1(C1)
MCNEALS BRANCH - See TUCKAHOE RIVER	
METEDECONK RIVER	
SOUTH BRANCH	
(Lakewood) - Entire length, including all tributaries	FW2-NT(C1)
NORTH BRANCH METEDECONK RIVER	
(Freehold) - Source to Aldrich Rd., including all tributaries	FW2-NT(C1)
(Lakewood) - Aldrich Rd. to Lanes Mills, except Haystack Brook listed separately	FW2-TM(C1)
(Brick) - Lanes Mills to confluence with Metedeconk River, South Branch, including the westerly tributary	FW2-NT(C1)
MAIN STEM METEDECONK RIVER	
(Brick) - Confluence of North and South branches to Forge Pond	FW2-NT(C1)
(Brick) - Forge Pond to Barnegat Bay	FW2-NT/SE1
MIDDLE RIVER	
(Tuckahoe) - Entire length, except the segment described below	FW2-NT/SE1
(Middletown) - Segment within the boundaries of MacNamara Wildlife Management Area	FW2-NT/SE1(C1)
MILE THOROFARE (Brigantine) - Entire length	SE1(C1)
MILL RUN (Allaire) - See BRISBANE LAKE	
MINGAMAHONE BROOK	
MAINSTEM	
(Farmingdale) - Entire length, except East Branch described separately below	FW2-TM(C1)
EAST BRANCH	

(Farmingdale) - Source to confluence with mainstem north of Farmingdale	FW2-NT(C1)
MIRY RUN (MacNamara) - Entire length	FW2-NT/SE1(C1)
MOTT CREEK (Brigantine) - Entire length	SE1(C1)
MUD CREEK (MacNamara) - Entire length	SE1(C1)
MUDDY FORD BROOK (Larrabee's Crossing) - Entire length	FW2-TM(C1)
MULBERRY THOROFARE (Northfield) - Entire length	SE1(C1)
MULLICA RIVER	
(Berlin) - Source to Pinelands Protection and Preservation Area boundaries at the Garden State Parkway, except branches and tributaries described below	PL
(Wharton) - Stream in the southeasterly corner of the Wharton State Forest located between Ridge Rd. and Seaf Weeks Rd., downstream to the boundaries of the Wharton State Forest	FW1
(Wharton) - Gun Branch from its headwaters to US Rt. 206	FW1
(New Gretna) - River and tributaries from the Pinelands Protection and Preservation Area boundary to Great Bay	SE1(C1)
(Wharton) - Brooks and tributaries between and immediately to the west of Tylertown and Crowleytown, from their headwaters to the head of tide at mean high water	FW1
NARROWS CREEK (Middletown) - Entire length	SE1(C1)
NORTH CHANNEL POND (Stone Harbor)	FW2-NT/SE1(C1)
OLDMAN CREEK (Stone Harbor) - Entire length	SE1(C1)
OTTER CREEK (Middletown) - Entire length	SE1(C1)
OYSTER CREEK	
(Brookville) - Source to the boundaries of the Pinelands Protection and Preservation Area at the Garden State Parkway	PL
(Forked River) - Garden State Parkway to Barnegat Bay	FW2-NT/SE1
OYSTER CREEK (Great Bay) - Entire length	SE1(C1)
REEVY BRANCH - See SHARK RIVER	
RING ISLAND CREEK (Stone Harbor) - Entire length	SE1(C1)
RISLEY CHANNEL (Margate) - Entire length	SE1(C1)
ROUNDABOUT CREEK (New Gretna) - Entire length	SE1(C1)
SALT CREEK (Stone Harbor) - Entire length	SE1(C1)
SCULL BAY (Linwood)	SE1(C1)
SEDGE CREEK (MacNamara) - Entire length	SE1(C1)
SHARK CREEK (Stone Harbor) - Entire length	SE1(C1)
SHARK RIVER (See also SHARK RIVER BROOK)	
(Glendola) - Remsen Mill Road t to Atlantic Ocean	SE1
SHARK RIVER BROOK (See also SHARK RIVER)	
(Colts Neck) - Source to Rt. 33	FW2-NT(C1)

(Neptune) - Rt. 33 to Remsen Mill Road, including all unnamed tributaries	FW2-TM(C1)
TRIBUTARIES	
REEVY BRANCH (Reevytown) - Source to confluence with Shark River Brook	FW2-NT(C1)
ROBINS SWAMP BROOK (Neptune) - Source to confluence with Shark River Brook	FW2-TM(C1)
SARAH GREEN BROOK (Neptune) - Source to confluence with Shark River Brook	FW2-TM(C1)
SOUTH BROOK (Wall) - Source to confluence with Shark River Brook	FW2-TM(C1)
WEBLYS BROOK (Wall) - Source to confluence with Shark River Brook	FW2-NT(C1)
SHELL THOROFARE (Wildwood Gables) - Entire length	SE1(C1)
SHELTER ISLAND BAY (Margate)	SE1(C1)
SHELTER ISLAND WATERS (Margate) - Entire length	SE1(C1)
SKIT BRANCH - See BATSTO RIVER	
SOD THOROFARE (Linwood) - Entire length	SE1(C1)
SOUTHEAST CREEK (Stone Harbor) - Entire length	SE1(C1)
SQUANKUM BROOK	
(Squankum) - Entire length	FW2-NT(C1)
STEELMAN BAY (Somers Point)	SE1(C1)
SWAN POND (Marmora)	FW2-NT/SE1(C1)
SWAN POND RACE (Marmora) - Entire length	FW2-NT/SE1(C1)
TAUGH CREEK	
(Whitesboro) - Entire length, except segment described below	SE1(C1)
(Whitesboro) - Portions outside the boundaries of Marmora Wildlife Management Area	SE1
TIMBER SWAMP BROOK	
(Oak Glen) - Manasquan Reservoir dam to its confluence with the Manasquan River	FW2-NT(C1)
TINKER BRANCH - See GREAT EGG HARBOR RIVER	
TITMOUSE BROOK (Howell) - Entire length	FW2-TM(C1)
TOMMYS BRANCH - See BASS RIVER	
TOMS RIVER	
MAIN STEM	
(Holmeson) - Source to Rt. 528 bridge, Cassville except those tributaries described separately under Tributaries below	FW2-NT
(Van Hiseville) - Rt. 528 bridge to Rt. 547 bridge in Whitesville, except tributaries described separately, under Tributaries below	PL(tm)
(Whitesville) - Rt. 547 bridge to Pinelands Protection and Preservation Area boundaries at the NJ Central Railroad tracks, except tributaries described separately, under Tributaries below	PL(tm)

(Manchester) - NJ Central Railroad tracks to Rt. 571 bridge, except tributaries described separately, under Tributaries below	FW2-TM
(Toms River) - Rt. 571 bridge to Barnegat Bay, except tributaries described separately, under Tributaries below	FW2-NT/SE1
TRIBUTARIES, TOMS RIVER	
(Holmeson) - Tributaries within the boundaries of the Pinelands Protection and Preservation Area	PL
(Van Hiseville) - All tributaries outside the boundaries of the Pinelands Protection and Preservation Area which enter the River between the Rt. 528 bridge, Cassville, and the Rt. 547 bridge, Whitesville, except Dove's Mill Branch described separately below	FW2-TM
(Toms River) - All tributaries within the boundaries of the Pinelands Protection and Preservation Area	PL
(Archer's Corners) - All tributaries outside the boundaries of the Pinelands Protection Area and within the boundaries of Colliers Mills Wildlife Management Area	FW2-NT(C1)
DOVE'S MILL BRANCH	
(Van Hiseville) - Entire length, except the segment described separately below	FW2-NT
(Holmansville) - Stream and tributaries within Butterfly Bogs Wildlife Management Area	FW2-NT(C1)
MAPLE ROOT BRANCH (Jackson) - Source to confluence with Toms River	PL
TUCKAHOE LAKE (Tuckahoe)	FW2-NT(C1)
TUCKAHOE RIVER	
(Milmay) - Source to Pinelands Protection and Preservation Area boundary at Rt. 49	PL
(Head of River) - McNeals Branch and the River within the boundaries of the Peaselee Wildlife Management Area, except tributaries within the boundaries of the Pinelands Protection and Preservation Area, described separately below	FW2-NT/SE1(C1)
(Head of River) - Tributaries within the Pinelands Protection and Preservation Area boundaries	PL
(Tuckahoe) - Edge of Fish and Wildlife Management Area at confluence with Warners Mill Stream to Great Egg Harbor, except segment described separately below	FW2-NT/SE1(C1)
(Tuckahoe) - River, tributaries and all other waters within boundaries of the MacNamara Wildlife Management Area	FW2-NT/SE1(C1)
TULPEHOCKEN CREEK	

(Wharton) - Creek and tributaries from their origin to the confluence with Featherbed Branch	FW1
(Wharton) - The westerly tributaries and those natural ponds within the lands bounded by Hawkins (Bulltown-Hawkins) Rd., Hampton Gate (Tuckerton) Rd., and Sandy Ridge Rd.	FW1
TURTLE GROUND CREEK (Jeffers Landing) - Entire length	SE1(C1)
TURTLE GUT (Ventnor) - Entire length	SE1(C1)
WADING RIVER	
(Chatsworth) - Entire length, except tributaries described separately below	PL
(Greenwood Forest) - Westerly tributary to Howardsville Cranberry Bog Reservoir and other tributaries located entirely within the boundaries of the Greenwood Forest Wildlife Management Area	FW1
WARNERS MILL STREAM	
(Head of River) - Source to Pinelands Protection and Preservation Area boundary at Aetna Dr.	PL
(Head of River) - Aetna Dr. to boundary of the Peaselee Wildlife Management Area	FW2-NT/SE1
(Head of River) - Within the boundaries of the Peaselee Wildlife Management Area to the Tuckahoe River	FW2-NT/SE1(C1)
WEBBS MILL BRANCH - See CEDAR CREEK	
WIGWAM CREEK	
(Great Bay) - Source to Rt. 9	FW2-NT/SE1
(Great Bay) - Rt. 9 to Mott Creek	SE1(C1)
WINTER CREEK (New Gretna) - Entire length	SE1(C1)
WHIRLPOOL CHANNEL (Margate) - Entire length	SE1(C1)
WORLDS END CREEK (New Gretna) - Entire length	SE1(C1)
WRANGLE BROOK	
(Keswick Grove) - Entire length, except segment described below	FW2-NT/SE1
(Whiting) - Brook and tributaries within Whiting Wildlife Management Area	FW2-NT(C1)
WRANGLE CREEK (Forked River) - Entire length and all waters within Forked River Game Farm	FW2-NT/SE1(C1)
WRECK POND BROOK (Wall) - Entire length	FW2-NT

(d) The surface water classifications in Table 2 are for waters of the Delaware River Basin:

TABLE 2

Waterbody	Classification
ALEXAUKEN CREEK (Lambertville) - Entire length, including all tributaries	FW2-TM(C1)
ALLAMUCHY CREEK (Allamuchy) - Entire length	FW2-NT(C1)
ALLAMUCHY POND (Allamuchy)	FW2-NT(C1)
ALLAMUCHY POND TRIBUTARIES (Allamuchy) - All tributaries that are located entirely within the boundaries of Allamuchy State Park and that flow into Allamuchy Pond	FW1
ALLOWAY CREEK (Alloways) - Entire length	FW2-NT/SE1
ALMS HOUSE BROOK	
(Hampton) - Source to, but not including, County Farm Pond	FW2-TM
(Frankford) - County Farm Pond to Paulins Kill	FW2-NT
ANDOVER JUNCTION BROOK (Andover) - Entire length	FW2-TM
ASHROE LAKE (Stokes State Forest)	FW2-NT(C1)
ASHROE LAKE TRIBUTARIES	
(Stokes State Forest) -Tributary to the Lake from Deer Lake and portion of southernmost tributary to Ashroe Lake outside of the Stokes State Forest boundary	FW2-TP(C1)
(Stokes State Forest) - Southernmost tributary to the Lake from its source to the Stokes State Forest boundary	FW1(tp)
ASSISCUNK CREEK	
(Columbus) - Headwaters to confluence with Barkers Brook, including all tributaries	FW2-NT(C1)
(Burlington) - Confluence with Barkers Brook to the Delaware River	FW2-NT
ASSUNPINK CREEK	
(Trenton) - Source to confluence with the Delaware River, except segments described separately below	FW2-NT
(Roosevelt) - Creek and those tributaries within the boundaries of the Assunpink Wildlife Management Area	FW2-NT(C1)
(Quaker Bridge) - Portions of the creek within the boundaries of Van Ness Refuge	FW2-NT(C1)
BALDRIDGE CREEK	

(Salem Creek) - Entire length, except segments described below	FW2-NT/SE1(C1)
(Salem Creek) - Segments outside the boundaries of the Supawna National Wildlife Refuge	FW2-NT/SE1
BARKERS MILL BROOK (Independence) - Entire length	FW2-TP(C1)
BAY PONDS (Egg Island)	FW2-NT/SE1(C1)
BEADONS CREEK (Fortescue) - Entire length	SE1(C1)
BEAR BROOK (Johnsonburg) - Entire length	FW2-TP(C1)
BEAR CREEK	
(Johnsonburg) - Mud Pond to the Erie-Lackawanna Railroad trestle north of Johnsonburg	FW1(tm)
(Frelinghuysen) - Erie-Lackawanna Railroad trestle to confluence with Pequest River	FW2-TM
BEATTY'S BROOK (Penwell) - Entire length	FW2-TP(C1)
BEAVER BROOK (Hope) - Entire length	FW2-NT
BEAVER BROOK (Jefferson) - Source to, but not including, Lake Shawnee	FW2-NT
BEAVERDAM BRANCH	
(Glassboro) - Source to boundary of the Glassboro Wildlife Management Area	FW2-NT
(Glassboro) - Within the boundaries of Glassboro Wildlife Management Area	FW2-NT(C1)
BEERSKILL	
(High Point State Park) - Source to boundary of High Point State Park at 41°15'48" N, 74°45'49" W	FW1(tp)
(Shaytown) - Boundary of High Point State Park to confluence with Little Flat Brook	FW2-TP(C1)
BIG FLAT BROOK	
(Montague) - Sawmill Pond to confluence with Parker Brook, except segments described under the listing for Flat Brook, below	FW2-NT(C1)
(Sandyston) - Confluence with Parker Brook, through the Blewitt Tract, to the confluence with Flat Brook, except tributaries described under the listing for Flat Brook, below	FW2-TP(C1)
(Tuttles Corner) - Outlet stream from Lake Ashroe to its confluence with Big Flat Brook	FW2-TP(C1)
BIG TIMBER CREEK (Westville) - Entire length	FW2-NT
BLACKBIRD GUT (Newport) - Entire length	SE1(C1)
BLACKS CREEK (Bordentown) - Entire length	FW2-NT
BLAIR CREEK	
(Hardwick) - Source to Bass Lake	FW2-NT
(Hardwick Center) - Bass Lake outlet to Paulins Kill	FW2-TM
BOILER DITCH (Egg Island) - Entire length	FW2-NT/SE1(C1)
BOWERS BROOK (Hackettstown) - Source downstream to Rt. 517	FW2-TP(C1)
BRASS CASTLE CREEK (Brass Castle) - Entire length	FW2-TP(C1)
BROOKALOO SWAMP (Hope) - Entire length	FW2-TM

BUCKHORN CREEK (Hutchinson) - Entire length	FW2-TP(C1)
BUCKS DITCH (Mad Horse Creek) - Entire length	SE1(C1)
BUCKSHUTEM CREEK	
(Centre Grove) - Entire length, except segments described separately below	FW2-NT
(Edward G. Bevan) - Creek and tributaries within the boundaries of Edward G. Bevan Wildlife Management Area, except those tributaries described separately below	FW2-NT(C1)
(Edward G. Bevan) - Joshua and Pine Branches to their confluence with Buckshutem Creek	FW1
CAT GUT (Mad Horse Creek) - Entire length	SE1(C1)
CEDAR BRANCH (Manumuskin River) - Source to Manumuskin River	FW1
CEDAR BRANCH (Edward G. Bevan) - Entire length	FW1
CEDAR BRANCH (Edward G. Bevan) - See NANTUXENT CREEK	
CEDAR CREEK	
(Dividing Creek Station) - Entire length, except portions described separately below	FW2-NT
(Edward G. Bevan) - Those tributaries to Cedar Creek that originate in and are located entirely within the boundaries of Edward G. Bevan Wildlife Management Area	FW1
CEDARVILLE POND (Cedarville)	FW2-NT(C1)
CHERRY TREE CREEK (Mad Horse Creek) - Entire length	SE1(C1)
CLARKS POND (Bridgeton)	FW2-NT(C1)
CLEARVIEW CREEK (Hampton) - Source to Alms House Brook	FW2-NT
CLINT MILLPOND (Beaver Swamp)	FW2-NT(C1)
CLOVE (MILL) BROOK	
(Montague) - Lake Marcia outlet to State line, except tributaries described below	FW2-TP(C1)
(High Point State Park) - The second and third northerly tributaries to Clove Brook, the tributaries to Steeny Kill Lake, and those tributaries downstream of Steeny Kill Lake that originate in High Point State Park downstream to their confluence with Clove Brook or to the High Point State Park Boundaries	FW1(tp)
(High Point State Park) - Those northerly tributaries to Mill Brook that are located due west of Steeny Kill Lake, within the boundaries of High Point State Park	FW1(tp)
COHANSEY RIVER (Bridgeton) - Entire length	FW2-NT/SE1
COOPER BRANCH - See RANCOCAS CREEK	
COOPER RIVER (Camden) - Entire length	FW2-NT
COOPERMINE BROOK (Pahaquarry) - Entire length	FW1
COURTENY PONDS (Egg Island)	FW2-NT/SE1(C1)
CRANBERRY LAKE (Byram)	FW2-TM(C1)

CRANBERRY LAKE OUTLET STREAM	
(Byram) - Entire length within Cranberry Lake State Park	FW2-NT(C1)
(Byram) - Stream outside of Cranberry Lake State Park	FW2-NT
CRISS BROOK (Stokes State Forest) - Entire length within the boundaries of Stokes State Forest	FW1(tp)
CROSSWICKS CREEK (Bordentown) - Entire length	FW2-NT
CROW CREEK (S. Dennis) - Entire length	FW2-NT/SE1(C1)
CULVER'S CREEK (Frankford) - Entire length	FW2-TM
CULVER'S LAKE (Frankford)	FW2-TM
DEER LAKE (Sandyston)	FW2-NT(C1)
DEER PARK BRANCH - See RANCOCAS CREEK	
DEER PARK POND	
(Allamuchy) - Pond and tributaries to the pond within Allamuchy State Park, except those tributaries classified as FW1, below	FW2-NT(C1)
(Allamuchy) - All tributaries to the Pond and to its outlet stream that are located entirely with the boundaries of Allamuchy State Park	FW1
(Allamuchy) - Deer Park Pond outlet stream downstream to Musconetcong River	FW2-TM(C1)
DELAWANNA CREEK	
(Delaware) - Source downstream to, but not including, Delaware Lake	FW2-TM
(Delaware) – Delaware Lake dam downstream to Delaware River, including tributaries	FW2-TP(C1)
DELAWARE AND RARITAN CANAL (Lambertville) - Entire length	FW2-NT
DELAWARE RIVER	
MAIN STEM (Interstate Waters - Classifications from Delaware River Basin Commission (DRBC)) (State Line) - That portion of DRBC's Zone 1C from the New York-New Jersey state line to the proposed axis of the Tocks Island Dam at River Mile 217.0	Zone 1C
(Tocks Island) - Proposed axis of Tocks Island Dam at River Mile 217.0 to the mouth of the Lehigh River at Easton, Pennsylvania, at River Mile 183.66	Zone 1D
(Easton, Pa.) - Mouth of the Lehigh River at River Mile 183.66, to the head of tide at the Trenton-Morrisville Toll Bridge, Trenton at River Mile 133.4	Zone 1E
(Trenton) - Head of tide at the Trenton-Morrisville Bridge, Trenton, River Mile 133.4 to below the mouth of Pennypack Creek, Pennsylvania at River Mile 108.4	Zone 2

(Philadelphia) - River Mile 108.4 to below the mouth of Big Timber Creek, New Jersey, at River Mile 95.0	Zone 3
(Gloucester) - River Mile 95.0 to the Pennsylvania-Delaware state line at River Mile 78.8	Zone 4
(Marcus Hook) - Pennsylvania-Delaware state line at River Mile 78.8 to Liston Pt., Delaware at River Mile 48.2	Zone 5
(Liston Point) - Delaware Bay from Liston Point, Delaware at River Mile 48.2 to River Mile 0.0 at the intersection of the centerline of the navigation channel and a line between Cape May Light and the tip of Cape Henlopen, Delaware	Zone 6(C1)
TRIBUTARIES, DELAWARE RIVER	
(Holland) - Entire length	FW2-TP(C1)
(Port Jervis) - Unnamed or unlisted direct tributaries that are north of Big Timber Creek, are outside of the Pinelands Protection and Preservation Areas, and are not mapped as C1 waters by the Department	FW2-NT
(Knowlton) - Source, north of Hope-Delaware Road, to confluence with the Delaware River 0.5 mile south of Ramseysburg	FW2-TP(C1)
(Titusville) - Unnamed tributaries through Washington Crossing State Park	FW2-NT(C1)
(Brooklawn) - Unnamed or unlisted direct tributaries, south of Big Timber Creek and north of Oldmans Creek, that are outside of the Pinelands Protection and Preservation Areas and are not mapped as C1 waters by the Department	FW2-NT/SE2
(Penns Grove) - Unnamed or unlisted direct tributaries, south of and including Oldmans Creek, that are outside of the Pinelands Protection and Preservation Areas and are not mapped as C1 waters by the Department	FW2-NT/SE1
(Pinelands) - All streams or segments of streams which flow directly into the Delaware River, are within the boundaries of the Pinelands Area and are not classified FW1 waters in this Table	PL
DENNIS CREEK	
(South Dennis) - Entire length, except segments described below	FW2-NT/SE1
(Woodbine) - All tributaries within the boundaries of the Pinelands Protection and Preservation Areas	PL
(Dennis Creek) - Segment of the Creek, all tributaries, and all other surface waters within the	

boundaries of the Dennis Creek Wildlife Management Area	FW2-NT/SE1(C1)
DEVILS GUT	
(Mad Horse Creek) - Entire length, except tributaries described below	SE1(C1)
(Mad Horse Creek) - Tributaries outside the Mad Horse Creek Wildlife Management Area	SE1
DIVIDING CREEK	
(Dividing Creek) - Entire length, except those segments described below	FW2-NT/SE1
(Edward G. Bevan) - Those segments of tributaries that are located entirely within the boundaries of the Edward G. Bevan Wildlife Management Area	FW1
DIVISION CREEK (Dix) - Entire length	SE1(C1)
DOCTORS CREEK	
(Red Creek) - Entire length, except segment described below	FW2-NT
(Imlaystown) - Segment within Imlaystown Lake Wildlife Management Area	FW2-NT(C1)
DONKEY'S CORNER BROOK (Delaware Water Gap) - Entire length	FW1
DRUMBO CREEK	
(Dix) - Entire length, except segment described below	FW2-NT/SE1
(Dix) - Segment within the boundaries of Dix Wildlife Management Area	FW2-NT/SE1(C1)
DRY BROOK (Branchville) - Entire length	FW2-NT
DUCK POND (Swartswood)	FW2-NT(C1)
DUNNFIELD CREEK	
(Del. Water Gap) - Source to Rt. I-80	FW1(tp)
(Del. Water Gap) - Rt. I-80 to Delaware River, except tributaries described below	FW2-TP(C1)
(Worthington) - All unnamed waters that are located entirely within the boundaries of the Worthington State Forest	FW1
EAST CREEK	
(Dennis) - Source to boundaries of the Pinelands Protection and Preservation Area except those portions described separately below	PL
(Belleplain) - A stream and tributary that originate just south of East Creek Mill Rd., 1.2+ miles north-northeast of Eldora and are located entirely within the boundaries of Belleplain State Forest	FW1
(Belleplain) - All tributaries to Lake Nummi from their origins downstream to the Lake	FW1
(Eldora) - Boundary of the Pinelands Protection and Preservation Area to Delaware Bay except segment described separately below	FW2-NT/SE1

(Dennis Creek) - Segment within the boundaries of the Dennis Creek Wildlife Management Area	FW2-NT/SE1(C1)
ELDER GUT (Egg Island) - Entire length	FW2-NT/SE1(C1)
FIDDLERS CREEK (Titusville) - Entire length	FW2-TM
FISHING CREEK (Egg Island) - Entire length	FW2-NT/SE1(C1)
FISHING CREEK	
(Canton) - Source to Mad Horse Creek Wildlife Management Area and all tributaries outside of the boundaries of Mad Horse Creek Wildlife Management Area	SE1
(Mad Horse Creek) - Creek and tributaries within the boundaries of Mad Horse Creek Wildlife Management Area	SE1(C1)
FLAT BROOK	
(Flatbrook-Roy) - Confluence of Big Flat Brook and Little Flat Brook to the boundary of Flatbrook-Roy Wildlife Management Area, except segments described below	FW2-TP(C1)
(Walpack) - Flatbook-Roy Wildlife Management Area boundary to the Delaware River, except segments described below	FW2-TM(C1)
(Stokes State Forest) - Two tributaries to Flat Brook which originate along Struble Road in Stokes State Forest to their confluences with Flat Brook within the boundaries of Flatbrook-Roy Wildlife Management Area	FW1(tm)
(High Point) - All surface water of the Flat Brook drainage area within the boundaries of High Point State Park and Stokes State Forest, except the following waters:	FW1
1. Saw Mill Pond and Big Flat Brook downstream to the confluence with Flat Brook;	
2. Mashipacong Pond and its outlet stream (Parker Brook) to the confluence with Big Flat Brook;	
3. Lake Wapalanne and its outlet stream to the confluence with Big Flat Brook;	
4. Lake Ocquittunk and waters connecting it with Big Flat Brook;	
5. Stony Lake and its outlet stream (Stony Brook) to the confluence with Big Flat Brook;	
6. Kittatinny Lake, that portion of its inlet stream outside the Stokes State Forest boundaries, and its outlet stream, including the Shotwell	

Camping Area tributary, to the confluence with Big Flat Brook;	
7. Deer Lake and its outlet stream to Lake Ashroe;	
8. Lake Ashroe, portions of its tributaries outside the Stokes State Forest boundaries, and its outlet stream to the confluence with Big Flat Brook;	
9. Lake Shawanni and its outlet stream to its confluence with Flat Brook;	
10. Crigger Brook and tributary to its confluence with Big Flat Brook	
(Del. Water Gap) - All tributaries to Flat Brook that flow from the Kittatiny Ridge and are located entirely within the boundaries of the Delaware Water Gap National Recreation Area	FW1
FORKED BROOK (Stokes State Forest) - Entire length	FW2-TP(C1)
FURNACE (OXFORD) BROOK	
(Oxford) - Source to railroad bridge at Oxford	FW2-TP(C1)
(Oxford) - Railroad bridge to Pequest River	FW2-NT
FURNACE LAKE (Oxford)	FW2-TM
GARDNERS LAKE (Andover)	FW2-TM
GOOSE POND (Mad Horse Creek)	SE1(C1)
GOSHEN CREEK	
(Woodbine) - Entire length except segment described below	SE1
(Dennis Creek) - Segment and all tributaries within the Dennis Creek Wildlife Management Area	SE1(C1)
GRAVELLY RUN (Edward G. Bevan) - Downstream to the Edward G. Bevan Wildlife Management Area boundaries	FW1
HAINESVILLE POND (Hainesville)	FW2-NT(C1)
HAKIHOKAKE CREEK (Milford) - Entire length, including headwaters known as Little York Creek	FW2-TP(C1)
TRIBUTARIES	
(Wydner) - Source to confluence with Hakihokake Creek west of York Road	FW2-TP(C1)
HALFWAY HOUSE BROOK (Franklin) - Entire length	FW2-TP(C1)
HANCES BROOK (Rockport) - Entire length	FW2-TP(C1)
HARIHOKAKE CREEK	
(Alexandria) - Source to Rt. 519 bridge, including all tributaries	FW2-NT(C1)
(Frenchtown) - Rt. 519 bridge to Delaware River, including all tributaries	FW2-TM(C1)
HARRISONVILLE LAKE (Harrisonville)	FW2-NT(C1)
HATCHERY BROOK (Hackettstown) - Entire length	FW2-TM

HIGBEE BEACH (Higbee Beach Wildlife Management Area)	
All waters within the boundaries of Higbee Beach Wildlife Management Area	FW2-NT/SE1(C1)
HIGHS BEACH (Highs Beach) - All waters within the Wildlife Management Area south of Highs Beach	FW2-NT/SE1(C1)
HONEY RUN (Hope) - Entire length	FW2-TM
HOPATCONG, LAKE (Hopatcong)	FW2-TM
ILLIF, LAKE (Andover)	FW2-TM
IMLAYSTOWN LAKE (Imlaystown)	FW2-NT(C1)
INDEPENDENCE CREEK	
(Alphano) - Source to Alphano Rd.	FW2-TP(C1)
(Alphano) - Alphano Rd. to Pequest River	FW2-NT
INDIAN DITCH (Egg Island) - Entire length	FW2-NT/SE1(C1)
ISLAND DITCH (Egg Harbor) - Entire length	FW2-NT/SE1(C1)
JACKSONBURG CREEK (Blairstown) - Entire length	FW2-TM
JACOBS CREEK (Hopewell) - Entire length	FW2-NT
JADE RUN (Lebanon State Forest)	FW1
JOSHUA BRANCH - See BUCKSHUTEM CREEK	
KING POND (Egg Island)	SE1(C1)
KITTATINNY LAKE (Sandyston)	FW2-NT(C1)
KITTATINNY LAKE TRIBUTARY	
(Stokes State Forest) - Source to boundary of Stokes State Forest	FW1(tp)
(Sandyston) - State Forest boundary to Kittatinny Lake	FW2-TP(C1)
KNOWLTON BROOK (Knowlton) - Entire length	FW2-TP(C1)
KURTENBACH'S BROOK (Waterloo) - Entire length	FW2-TP(C1)
KYMER BROOK (Andover) - Entire length	FW2-NT
LAHAWAY CREEK	
(Prospertown) - Entire length, except tributaries described separately below	FW2-NT
(Colliers Mills) - All tributaries which originate in the Colliers Mills Wildlife Management Area north-northeast of Archers Corners, from their sources to the boundaries of the Colliers Mills Wildlife Management Area	FW1
LAKE - See listing under Name	
LITTLE EASE RUN	
(Glassboro) - Entire length, except portion described separately below	FW2-NT
(Glassboro) - Run and tributaries within the Glassboro Wildlife Management Area, except tributary described separately below	FW2-NT(C1)
(Glassboro) - The portion of a branch of Little Ease Run situated immediately north of Stanger Avenue, and entirely within the Glassboro Wildlife Management Area	FW1
(Glassboro) - The first and second easterly tributaries to Little Ease Run north of Academy Road	FW1

LITTLE FLAT BROOK	
(High Point State Park) - Source to boundary of High Point State Park	FW1(tp)
(Layton) - State park boundary to, but not including, tributary described below, to confluence with Big Flat Brook	FW2-TP(C1)
(Flatbrook-Roy) - Tributary which originates north of Bevans-Layton Rd. downstream to the first pond adjacent to the Fish and Game headquarters building	FW1(tp)
LITTLE NISHISAKAWICK CREEK (Frenchtown) - Entire length	FW2-NT(C1)
LITTLE SHABACUNK CREEK (Lawrence) - Entire length	FW2-NT
LITTLE SWARTSWOOD LAKE (Swartswood)	FW2-NT(C1)
LITTLE YORK CREEK (Little York) - Entire length	FW2-TP(C1)
LOCKATONG CREEK	
(Kingwood) - Source to Idell Bridge	FW2-NT(C1)
(Raven Rock) - Idell Bridge to Delaware River	FW2-TM(C1)
LOGAN POND (Repaupo)	FW2-NT(C1)
LOMMASONS GLEN BROOK (Lommasons Glen) - Entire length	FW2-TP(C1)
LONG POND (Mad Horse Creek)	SE1(C1)
LONE TREE CREEK (Egg Island) - Entire length	SE1(C1)
LOPATCONG CREEK	
(Phillipsburg) - Source to a point 560 feet (straight line distance) upstream of the Penn Central railroad track, including all tributaries	FW2-TP(C1)
(Phillipsburg) - From a point 560 feet (straight line distance) upstream of the Penn Central railroad track downstream to the confluence with the Delaware River	FW2-TM
LOWER BROTHERS CREEK (Egg Island) - Entire length	SE1(C1)
LOWER DEEP CREEK (Mad Horse Creek) - Entire length	SE1(C1)
LUBBERS RUN (Byram) - Entire length	FW2-TM
MAD HORSE CREEK	
(Canton) - Source to the boundary of Mad Horse Creek Wildlife Management Area and all tributaries outside the boundaries of the Wildlife Management Area	FW2-NT/SE1
(Mad Horse Creek) - Creek and all waters within the Mad Horse Creek Wildlife Management Area	FW2-NT/SE1(C1)
MALAPATIS CREEK	
(Mad Horse Creek) - Entire length, except segment described below	SE1(C1)
(Mad Horse Creek) - Portions of the Creek beyond the boundaries of the Mad Horse Creek Wildlife Management Area	SE1
MANANTICO CREEK	

(Millville) - Entire length, except segment described below	FW2-NT
(Manantico) - Segment within the boundaries of the Manantico Ponds Wildlife Management Area	FW2-NT(C1)
MANTUA CREEK (Woodbury) - Entire length	FW2-NT/SE2
MARCIA LAKE	
(High Point State Park) - Entire Lake	FW2-TM(C1)
(High Point State Park) - Outlet stream from the Lake to the confluence with Clove (Mill) Brook	FW2-TP(C1)
MASHIPACONG POND (Montague)	FW2-NT(C1)
MASON CREEK	
(Springville) - Entire length, except segment described below	FW2-NT
(Medford) - Segment within Medford Wildlife Management Area	FW2-NT(C1)
MASONS RUN	
(Pine Hill) - Source to Little Mill Rd.	FW2-TP(C1)
(Lidenwold) - Little Mill Rd. to confluence with Big Timber Creek	FW2-NT
MAURICE RIVER	
MAIN STEM	
(Willow's Grove) - Source to the boundary of the section of Union Lake Wildlife Management Area north of Vineland	FW2-NT
(Vineland) - Boundary of the Union Lake Wildlife Management Area to confluence with Blackwater Branch	FW2-NT(C1)
(Vineland) - Confluence with Blackwater Branch to Delaware Bay, except tributaries described under Tributaries below	FW2-NT/SE1
TRIBUTARIES, MAURICE RIVER	
(Willow's Grove) - Those portion of tributaries that are within the boundaries of the Pinelands Protection and Preservation Area	PL
(Vineland) - All tributaries within the boundaries of the Union Lake Wildlife Management Area and within the Wildlife Management Area that borders Delaware Bay	FW2-NT/SE1(C1)
MCCORMICK POND (Egg Island)	FW2-NT/SE1(C1)
MACDONALD BRANCH - See RANCOCAS CREEK	
MERRILL CREEK (Harmony) - Entire length, but not including Merrill Creek Reservoir	FW2-TP(C1)
MERRILL CREEK RESERVOIR (Harmony)	FW2-TM
MIDDLE BROTHERS CREEK (Egg Island) - Entire length	SE1(C1)
MIDDLE MARSH CREEK	
(Dix) - All fresh waters which originate in and are located entirely within the boundaries of the Dix Wildlife Management Area	FW1

MILE BRANCH - Entire length	FW1
MILL BROOK (Montague) - See CLOVE BROOK	
MILL BROOK (Broadway) - Entire length	FW2-TP(C1)
MILL CREEK	
(Carmel) - Entire length, except segment described below	FW2-NT
(Union Lake) - Creek and tributaries within the boundaries of the Union Lake Wildlife Management Area	FW2-NT(C1)
MINE BROOK	
(Mt. Olive) - Source to, but not including, Upper Mine Brook Reservoir, downstream to Lower Mine Brook Reservoir outlet	FW2-TM
(Mt. Olive) - Lower Mine Brook Reservoir outlet downstream to Drakestown Road bridge	FW2-TP(C1)
(Hackettstown) - Drakestown Road bridge downstream to confluence with Musconetcong River	FW2-TM
TRIBUTARIES	
(Drakestown) - Source downstream to, but not including, Burd Reservoir	FW2-TP(C1)
(Drakestown) - Burd Reservoir downstream to confluence with Mine Brook	FW2-TM
(Washington) - Entire length of tributary which joins Mine Brook approximately 280 yards upstream of the confluence with the Musconetcong River	FW2-TP(C1)
MIRY RUN (Mercerville) - Entire length	FW2-NT
MOORE CREEK (Hopewell) - Entire length	FW2-TM
MOUNT MISERY BROOK	
(Woodmansie) - Entire length, except segments described below	PL
SOUTH BRANCH, MOUNT MISERY BROOK	
(Lebanon State Forest) - All tributaries to the South Branch that are located entirely within the boundaries of Lebanon State Forest	FW1
(Pasadena) - The two easterly branches of the Branch which are located entirely within the boundaries of the Pasadena Wildlife Management Area	FW1
MOUNTAIN LAKE (Liberty)	FW2-TM
MOUNTAIN LAKE CREEK	
(Liberty) - Source to Mountain Lake	FW2-TM
(White) - Mountain Lake dam to Pequest River	FW2-NT
MUDDY BROOK (Hope) - Entire length	FW2-NT
MUDDY CREEK	
(Mad Horse Creek) - Entire length, except segments described below	SE1(C1)

(Mad Horse Creek) - Segments outside of the boundaries of the Mad Horse Creek Wildlife Management Area	SE1
MUDDY RUN	
(Elmer) - Entire length, except segments described below	FW2-NT
(Elmer) - Portion of the Run within Greenwood Pond Wildlife Management Area	FW2-NT(C1)
(Centerton) - Portion of the Run within Parvin State Park	FW2-NT(C1)
(Pittsgrove) - Portion of the run within Union Lake Wildlife Management Area	FW2-NT(C1)
MUD POND (Johnsonburg)	FW1
MUSCONETCONG RIVER	
(Hackettstown) - Lake Hopatcong dam to Delaware River, except tributaries described below	FW2-TM
TRIBUTARIES	
(Anderson) - Entire length	FW2-TP(C1)
(Changewater) - Entire length	FW2-TP(C1)
(Deer Park Pond) - See DEER PARK POND	
(Franklin) - Entire length	FW2-TP(C1)
(N. of Hackettstown) - Entire length	FW2-TM
(Lebanon) - Entire length	FW2-TP(C1)
(Port Murray) - Entire length	FW2-TP(C1)
(S. of Point Mtn.)	FW2-TP(C1)
(S. of Schooley's Mtn. Brook) - Entire length	FW2-TP(C1)
(Waterloo) - Tributary west of Kurtenbach's Brook from source downstream to Waterloo Valley Road bridge	FW2-TP(C1)
MUSKEE CREEK	
(Port Elizabeth) - Source to boundary of Pinelands Protection and Preservation Area, except segments described separately below	PL
(Peaselee) - The Middle Branch from its origin to the boundaries of the Peaselee Wildlife Management Area	FW1
(Peaselee) - Those portions of the tributaries to Slab Branch which are located entirely within the boundaries of the Peaselee Wildlife Management Area	FW1
(Bricksboro) - Pinelands Protection and Preservation Area boundaries to Maurice River	FW2-NT
NANCY GUT	
(Nantuxent) - Source to the boundary of Nantuxent Creek Wildlife Management Area	SE1(C1)
(Newport) - Stream and all tributaries outside of the boundaries of the Nantuxent Creek Wildlife Management Area	SE1

NANTUXENT CREEK	
(Newport Landing) - Entire length, except segment described below	FW2-NT/SE1
(Nantuxent) - All waters within the boundaries of Nantuxent Creek Wildlife Management Area	FW2-NT/SE1(C1)
NEW WAWAYANDA LAKE (Andover)	FW2-TM
NISHISAKAWICK CREEK (Frenchtown) - Entire length	FW2-NT(C1)
OLDMANS CREEK	
(Lincoln) - Entire length, except portion described below	FW2-NT/SE1
(Harrisonville) - Portion within Harrisonville Lake Wildlife Management Area	FW2-NT(C1)
OCQUITTUNK LAKE	
(Stokes State Forest) - Entire lake	FW2-NT(C1)
(Stokes State Forest) - From the outlet of the Lake to the confluence with Big Flat Brook	FW2-TP(C1)
OCQUITTUNK LAKE TRIBUTARY (Stokes State Forest) - Source to Ocquittunk Lake	FW1(tp)
ORANDAKEN CREEK	
(Fortescue) - Source to boundary of Egg Island Berrytown Wildlife Management Area	FW2-NT/SE1
(Egg Island) - Creek and tributaries within the boundaries of the Egg Island Berrytown Wildlife Management Area	FW2-NT/SE1(C1)
PARGEY CREEK	
(Gibbstown) - Entire length, except segment described below	FW2-NT/SE2
(Logans Pond) - Segment within the boundaries of Logans Pond Wildlife Management Area	FW2-NT/SE2(C1)
PARKER BROOK (Montague) - Entire length	FW2-TP(C1)
PARVIN LAKE (Parvin State Park)	FW2-NT(C1)
PATTYS FORK - See MAD HORSE CREEK	
PAULINA CREEK (Paulina) - Entire length	FW2-TM
PAULINS KILL	
EAST BRANCH	
(Andover) - Source to Limecrest quarry	FW2-NT(C1)
(Lafayette) - Limecrest quarry to confluence with Paulins Kill, West Branch, except tributary described below	FW2-TP(C1)
TRIBUTARY EAST BRANCH	
(Sussex Mills) - Entire length of tributary to the East Branch at Sussex Mills	FW2-NT(C1)
WEST BRANCH (Newton) - Entire length	FW2-NT
MAIN STEM	
(Blairstown) - Confluence of East and West branches to Rt. 15 bridge (bench mark 507)	FW2-TM
(Hampton) - Rt. 15 bridge (bench mark 507) to Balesville dam	FW2-NT(C1)

(Hampton) - Balesville dam to Paulins Kill Lake dam	FW2-NT
(Paulins Kill Lake) - Paulins Kill Lake dam to Delaware River, except tributaries described separately below	FW2-TM
TRIBUTARIES, MAIN STEM	
(Blairstown) - Entire length of tributary east of Walnut Valley	FW2-TM
(Emmons Station) - Entire length	FW2-TP(C1)
(Stillwater) - Entire length	FW2-TM
(Stillwater Station) - Entire length	FW2-TP(C1)
PENNSAUKEN CREEK (Cinnaminson) - Entire length	FW2-NT
PEQUEST RIVER	
(Tranquility) - Source to Tranquility bridge except segments described below	FW2-TM
(Whittingham) - Northwesterly tributaries, including Big Spring, located within the boundaries of the Whittingham Wildlife Management Area, southwest of Springdale, from their origins to their confluence with the Pequest River	FW1(tm)
(Whittingham) - Stream and tributaries within the Whittingham Wildlife Management Area, except those classified as FW1, above	FW2-TM(C1)
(Vienna) - Tranquility bridge to Lehigh and Hudson River railway bridge	FW2-NT
(Townsbury) - Lehigh and Hudson River railway bridge to the upstream most boundary of the Pequest Wildlife Management Area	FW2-NT(C1)
(Townsbury) - Upstream most boundary of the Pequest Wildlife Management Area boundary to the downstream most boundary of the Pequest Wildlife Management Area	FW2-TM(C1)
(Townsbury) - Downstream most Pequest Wildlife Management Area boundary to Delaware River	FW2-TM
TRIBUTARIES	
(Janes Chapel) - Headwater and tributaries downstream to the upstream boundary of Pequest Wildlife Management Area	FW2-TM
(Townsbury) - Tributaries within the Pequest Wildlife Management Area	FW2-TM(C1)
(Petersburg) - Headwaters and tributaries downstream to Ryan Road bridge	FW2-TP(C1)
PIERSONS DITCH (Egg Island) - Entire length	FW2-NT/SE1(C1)
PINE BRANCH - See BUCKSHUTEM CREEK	
PLUM BROOK (Sergeantsville) - Entire length	FW2-TM(C1)
POHATCONG CREEK	
MAIN STEM	
(Mansfield) - Source to Karrsville bridge, including all tributaries	FW2-TP(C1)

(Pohatcong) - Karrsville bridge to Rt. 519 bridge, except tributaries listed separately	FW2-TM(C1)
(Springtown) - Rt. 519 bridge to Delaware River, including all tributaries	FW2-TP(C1)
TRIBUTARIES	
(Greenwich) - Entire length	FW2-TP(C1)
(New Village) - Entire length	FW2-TP(C1)
(Willow Grove) - Entire length	FW2-TP(C1)
POND BROOK (Middleville) - Swartswood Lake outlet to Trout Brook	FW2-NT
POPHANDUSING BROOK	
(Hazen) - Source downstream to Route 519 bridge	FW2-TP(C1)
(Belvidere) - Route 519 bridge downstream to confluence with the Delaware River	FW2-TM
RACCOON CREEK (Logan) - Entire length	FW2-NT/SE2
RANCOCAS CREEK	
NORTH BRANCH	
(North Hanover) - Source to boundary of the Pinelands Protection and Preservation Area at Pemberton	PL
(Pemberton) - Boundary of the Pinelands Protection and Preservation Area to the Delaware River, except tributaries described below	FW2-NT
(Pemberton) - Tributaries within the boundaries of the Pinelands Protection and Preservation Areas	PL
SOUTH BRANCH RANCOCAS CREEK	
(Southhampton) - Source to Pinelands Protection and Preservation Area boundaries at Rt. 206 bridge south of Vincentown	PL
(Vincentown) - Vincentown to Delaware River, except tributaries described separately below	FW2-NT
(Vincentown) - All tributaries within the Pinelands Protection and Preservation Area	PL
COOPER BRANCH RANCOCAS CREEK	
(Woodmansie) - Entire length, except portions described separately, below	PL
(Lebanon State Forest) - Branch and tributaries downstream to Pakim Pond, and tributaries to Cooper Branch located entirely within the Lebanon State Forest boundaries	FW1
DEER PARK BRANCH RANCOCAS CREEK	
(Buckingham) - Stream and tributaries near Buckingham to confluence with Pole Bridge Branch	FW1
MACDONALDS BRANCH RANCOCAS CREEK	
(Woodmansie) - Entire length, except as described separately below	PL

(Lebanon State Forest) - Branch and tributaries located entirely within Lebanon State Forest	FW1
SHINNS BRANCH RANCOCAS CREEK	
(Lebanon State Forest) - Branch and tributaries located entirely within the boundaries of Lebanon State Forest, from their sources to the forest boundary	FW1
(Lebanon Lake Estates) - Forest boundary to lake	PL
ROARING DITCH	
(Heislerville) - Entire length, except segment described below	SE1
(Eldora) - Ditch and all tributaries within the Dennis Creek Wildlife Management Area boundaries	SE1(C1)
ROWANDS POND (Clementon) - Pond, inlet stream and outlet stream within Rowands Pond Wildlife Management Area	FW2-NT(C1)
RUNDLE BROOK (Del. Water Gap) - Source to Sussex County Route 615	FW1
SALEM RIVER (Salem) - Entire length	FW2-NT/SE1
SAMBO ISLAND BROOK (Del. Water Gap) - Entire length	FW1
SAMBO ISLAND POND (Del. Water Gap)	FW1
SANDYSTON CREEK (Sandyston) - Entire length	FW2-TP(C1)
SAVAGES RUN (East Creek)	
(Belleplain State Forest) - Entire length, except portions described separately, below	PL
(Belleplain State Forest) - Those two tributaries and portions thereof downstream of Lake Nummi and all tributaries to Lake Nummi that are located entirely within the boundaries of Belleplain State Forest	FW1
SAWMILL POND (High Point)	FW2-NT(C1)
SCHOOLEYS MTN. BROOK (Schooley's Mtn.) - Entire length	FW2-TP(C1)
SHABAKUNK CREEK (Ewing) - Entire length	FW2-NT
SHABBECONG CREEK (Washington) – Entire length	FW2-TM(C1)
SHAWANNI CREEK	
(Stokes State Forest) - Headwaters and tributaries downstream to, but not including, Shawanni Lake	FW1(tp)
(Stokes State Forest) - Outlet of Shawanni Lake downstream to confluence with Flat Brook	FW2-TP(C1)
SHAWANNI LAKE (Stokes State Forest)	FW2-NT(C1)
SHAWS MILL POND (Cedarville)	FW2-NT/SE1(C1)
TRIBUTARIES	
(Edward G. Bevan) - Cedar and Mile Branches to Shaw's Mill Pond	FW1
SHIMERS BROOK	
(Millville) - Entire length, except those segments designated FW1, below	FW2-TP(C1)

(High Point) - That segment of Shimers Brook and all tributaries within the boundaries of High Point State Park	FW1(tp)
SHINNS BRANCH - See RANCOCAS CREEK	
SHIPETAUKIN CREEK (Lawrenceville) - Entire length	FW2-NT
SHORE DITCH (Mad Horse Creek) - Entire length	SE1(C1)
SILVER LAKE (Hope)	FW2-TM
SILVER LAKE FORK - See MAD HORSE CREEK	
SLAB BRANCH - See MUSKEE CREEK	
SLUICE CREEK	
(South Dennis) - Entire length, except segment described below	FW2-NT/SE1
(Dennis Creek) - Segments of tributaries that are within the Dennis Creek and the Beaver Swamp Wildlife Management Areas	FW2-NT/SE1(C1)
SMITH FERRY BROOK (Del. Water Gap) - Entire length	FW1
SPARTA JUNCTION BROOK (Sparta Junction) - Entire length	FW2-TM(C1)
SPRING MILLS BROOK (Milford) – Entire length	FW2-TP(C1)
STEELE RUN	
(Washington Crossing State Park) - Source to confluence with westerly tributary	FW1
(Titusville) - Confluence with westerly tributary to the Delaware River	FW2-NT
STEENY KILL LAKE (High Point)	FW1
STEEP RUN (Mauricetown) - Entire length	FW2-NT(C1)
STEPHENSBURG BROOK (Stephensburg) - Entire length	FW2-TP(C1)
STONY BROOK (Knowlton) - Entire length	FW2-TP(C1)
STONY BROOK	
(Stokes State Forest) - Source and tributaries, wholey contained within Stokes State Forest, from their origins to, but not including, Stony Lake	FW1(tp)
(Stokes State Forest) - Tributary originating approximately one mile west of the Branchville Reservoir to the confluence with Stony Brook	FW1(tp)
(Stokes State Forest) - Outlet of Stony Lake to the confluence with Big Flat Brook	FW2-TP(C1)
STONY LAKE (Stokes State Forest)	FW2-TM(C1)
TRIBUTARIES - See STONY BROOK	
STOW CREEK	
(Stow Creek Landing) - Entire length, except tributaries described separately below	FW2-NT/SE1
(Mad Horse Creek) - Tributaries within the boundaries of the Mad Horse Creek Wildlife Management Area	FW2-NT/SE1(C1)
STRAIGHT CREEK (Berrytown) - Entire length	SE1(C1)
SUNFISH POND (Worthington) - The pond and its outlet stream to the Delaware River	FW1
SWAN CREEK (Lambertville) - Entire length	FW2-NT

SWARTSWOOD CREEK (Swartswood) - Entire length	FW2-TM
SWARTSWOOD LAKE (Stillwater)	FW2-TM(C1)
TAR HILL BROOK	
(Lake Lenape) - Source to, but not including, Lake Lenape	FW2-TM
(Lake Lenape) - Lake Lenape to Andover Junction Brook	FW2-NT
THREE MOUTHS (Egg Island)	FW2-NT/SE1(C1)
THUNDERGUST BROOK	
(Deerfield) - Entire length, except segment described below	FW2-NT
(Deerfield) - That segment within the boundaries of Parvin State Park	FW2-NT(C1)
THUNDERGUST LAKE (Parvin State Park)	FW2-NT(C1)
TILLMAN BROOK (Walpack) - Entire length	FW1(tp)
TROUT BROOK (Hackettstown) - Entire length	FW2-TM(C1)
TROUT BROOK (Tranquility) - Entire length	FW2-TP(C1)
TROUT BROOK (Hope) - Entire length	FW2-TM
TROUT BROOK (Allamuchy) - Entire length	FW2-NT
TROUT BROOK	
(Middleville) - Source to confluence with Pond Brook	FW2-TP(C1)
(Middleville) - Confluence with Pond Brook to Paulins Kill	FW2-NT
TUNNEL BROOK (Oxford Mtn.) - Entire length, including all tributaries	FW2-TP(C1)
TURKEY HILL BROOK (Bethlehem) - Entire length	FW2-TP(C1)
TURNERS FORK - See MAD HORSE CREEK	
TUTTLES CORNER BROOK (Tuttles Corner) - Entire length	FW2-TP(C1)
UPPER BROTHERS CREEK (Egg Island) - Entire length	SE1(C1)
UPPER DEEP CREEK (Mad Horse Creek) - Entire length	SE1(C1)
VANCAMPENS BROOK (Millbrook) - Entire length	FW2-TP(C1)
WAPALANNE LAKE (Stokes State Forest)	FW2-NT(C1)
WARFORD CREEK (Barbertown) – Entire length	FW2-TP(C1)
WELDON BROOK (Jefferson Township) - From source to, but not including, Lake Shawnee	FW2-TM
WEST CREEK	
(Halberton) - Source to the boundary of the Pinelands Protection and Preservation Areas, except those portions described separately, below	PL
(Belleplain) - The portion of the tributary that originates about 0.9 miles southeast of Hoffman's Mill and is located entirely within the boundaries of Belleplain State Forest	FW1
(Belleplain) - Those tributaries that originate about 0.5 miles upstream of Hoffman's Mill and are located entirely within the boundaries of Belleplain State Forest	FW1

(Belleplain) - Eastern branch of the easterly tributary to Pickle Factory Pond from its origin to its confluence with the western branch	FW1
(Delmont) - Boundary of the Pinelands Protection and Preservation Area to the boundary of the Fish and Game lands	FW2-NT/SE1(C1)
(Delmont) - Boundary of the Fish and Game lands to Delaware Bay	SE1
WEST PORTAL CREEK (West Portal) - Entire length	FW2-TP(C1)
WHITE BROOK (Montague) - Entire length	FW2-TP(C1)
WHITE LAKE (Hardwick)	FW2-TM
WICKECHEOKE CREEK	
(Locktown) - Source to confluence with Plum Brook	FW2-NT(C1)
(Stockton) - Confluence with Plum Brook to Delaware River	FW2-TM(C1)
WIDGEON PONDS (Egg Island)	FW2-NT/SE1(C1)
WILLS BROOK (Mt. Olive) - Entire length	FW2-TM
YARDS CREEK (Blairstown) - Entire length	FW2-TP(C1)

(e) The surface water classifications in Table 3 are for waters of the Passaic, Hackensack and New York Harbor Complex Basin:

TABLE 3

Waterbody	Classification
APSHAWA BROOK (Macopin) - Entire length	FW2-TP(C1)
ARTHUR KILL	
(Perth Amboy) - The Kill and its saline New Jersey tributaries between the Outerbridge Crossing and a line connecting Ferry Pt., Perth Amboy to Wards Pt., Staten Island, New York	SE2
(Elizabeth) - From an east-west line connecting Elizabethport with Bergen Pt., Bayonne to the Outerbridge Crossing	SE3
(Woodbridge) - All freshwater tributaries	FW2-NT
BEAR SWAMP BROOK (Mahwah) - Entire length	FW2-TP(C1)
BEAR SWAMP LAKE (Ringwood State Park)	FW2-NT(C1)
BEAVER BROOK	
(Meriden) - From Splitrock Reservoir Dam downstream to Meriden Road Bridge	FW2-TP(C1)
(Denville) - Meriden Road Bridge to Rockaway River	FW2-NT
TRIBUTARIES	
(Meriden) - Two tributaries located approximately three quarters of a mile southwest of Meriden	FW2-TP(C1)
BEECH BROOK	
(West Milford) - From State line downstream to Monksville Reservoir	FW2-TM
BELCHER CREEK (W. Milford) - Entire length	FW2-NT
BERRYS CREEK (Secaucus) - Entire length	FW2-NT/SE2
BLACK BROOK	
(Meyersville) - Entire length, except segment described below	FW2-NT
(Great Swamp) - Segment and tributaries within the Great Swamp National Wildlife Refuge	FW2-NT(C1)
BLUE MINE BROOK	
(Wanaque) - Headwaters Downstream to lower Snake Den Road bridge	FW2-TP(C1)
(Wanaque) - lower Snake Den Road bridge to the boundary of Norvin Green State Forest	FW2-TM
(Norvin Green State Forest) - That portion of the stream and any tributaries within the Norvin Green State Forest	FW2-TM(C1)
BOONTON RESERVOIR - See JERSEY CITY RESERVOIR	
BRUSHWOOD POND (Ringwood State Park)	FW2-TM(C1)

BUCKABEAR POND (Newfoundland) - Pond, its tributaries and connecting stream to Clinton Reservoir	FW2-NT(C1)
BURNT MEADOW BROOK (Green Pond) - Source downstream to confluence with Green Pond Brook	FW2-NT
BURNT MEADOW BROOK (Stonetown) - Entire length	FW2-TP(C1)
CANISTEAR RESERVOIR (Vernon)	FW2-TM
CANISTEAR RESERVOIR TRIBUTARY (Vernon) - The southern branch of the eastern tributary to the Reservoir	FW1
CANOE BROOK (Chatham) - Entire length	FW2-NT
CEDAR POND (Postville) - Pond and all tributaries	FW1
CHARLOTTEBURG RESERVOIR (Charlotteburg)	FW2-TM(C1)
CHERRY RIDGE BROOK	
(Vernon) - Tributaries not contained within Wawayanda State Park and Newark Watershed lands	FW2-NT
(Wawayanda State Park) - Brook and tributaries upstream of Canistear Reservoir located entirely within the boundaries of Wawayanda State Park and the Newark Watershed lands	FW1
CLINTON BROOK (W. Milford) - Clinton Reservoir dam to Pequannock River	FW2-TP(C1)
CLINTON RESERVOIR (W. Milford)	FW2-TM(C1)
CLOVE BROOK - See STAG BROOK	
COOLEY BROOK	
(W. Milford) - Entire length, except segments described below	FW2-TP(C1)
(Hewitt State Forest) - Segments of the brook and all tributaries which originate and are located entirely within Hewitt State Forest	FW1(tp)
CORYS BROOK (Warren) - Entire length	FW2-NT
CRESSKILL BROOK	
(Alpine) - Source to Duck Pond Rd. bridge, Demarest	FW2-TP(C1)
(Demarest) - Duck Pond Rd. bridge to Tenakill Brook	FW2-NT(C1)
CROOKED BROOK TRIB. (East of Sheep Hill) - Entire length	FW2-TP(C1)
CUPSAW BROOK	
(Skylands) - Source to Wanaque Reservoir, except segment described below	FW2-NT
(Ringwood State Park) - That segment of Cupsaw Brook within the boundaries of Ringwood State Park	FW2-NT(C1)
DEAD RIVER (Liberty Corners) - Entire length	FW2-NT
DEN BROOK (Randolph) - Entire length	FW2-NT
TRIBUTARY	
(Randolph) - Tributary west of Shongum Lake	FW2-TP(C1)
DUCK POND (Ringwood)	FW2-NT(C1)
ELIZABETH RIVER	

(Elizabeth) - Source to Broad St. bridge, Elizabeth and all freshwater tributaries	FW2-NT
(Elizabeth) - Broad St. bridge to mouth	SE3
FOX BROOK (Mahwah) - Entire length	FW2-NT
GLASMERE POND (Ringwood)	FW2-NT(C1)
GOFFLE BROOK (Hawthorne) - Entire length	FW2-NT
GRANNEY BROOK - See SPRING BROOK	
GRANNIS BROOK (Morris Plains) - Entire length	FW2-NT
GREAT BROOK	
(Chatham) - Entire length, except segment described below	FW2-NT
(Great Swamp) - Segment within the boundaries of the Great Swamp National Wildlife Refuge	FW2-NT(C1)
GREEN BROOK	
(W. Milford) - Entire length, except those segments described below	FW2-TP(C1)
(Hewitt State Forest) - Those segments and tributaries which originate and are located entirely within the Hewitt State Forest boundaries	FW1(tp)
GREEN POND (Rockaway)	FW2-TM
GREEN POND BROOK	
(Picatinny Arsenal) - Green Pond outlet to, but not including, Picatinny Lake	FW2-TP(C1)
(Wharton) - Outlet of Picatinny Lake to the confluence with the Rockaway River	FW2-NT
GREENWOOD LAKE (W. Milford)	FW2-TM
HACKENSACK RIVER	
(Oradell) - New York/New Jersey State line to Oradell dam, including Lake Tappan and all tributaries draining to the Hackensack River above Oradell Dam	FW2-NT(C1)
(Oradell) - Main stem and saline tributaries from Oradell dam to the confluence with Overpeck Creek	SE1
(Little Ferry) - Main stem and saline tributaries from Overpeck Creek to Route 1 and 9 crossing	SE2
(Kearny Point) - Main stem downstream from Route 1 and 9 crossing	SE3
TRIBUTARIES	
(Oradell) - Tributaries joining the main stem between Oradell dam and the confluence with Overpeck Creek	FW2-NT/SE1
(Little Ferry) - Tributaries joining the main stem downstream of Overpeck Creek	FW2-NT/SE2
HANKS POND (Clinton) - Pond and all tributaries	FW1
HARMONY BROOK (Brookside) - Entire length	FW2-TP(C1)
HARRISONS BROOK (Bernards) - Entire length	FW2-NT

HAVEMEYER BROOK (Mahwah) - Entire length	FW2-TP(C1)
HEWITT BROOK (W. Milford) - Entire length	FW2-TP(C1)
HIBERNIA BROOK	
(Marcella) - Source to first Green Pond Road bridge downstream of Lake Emma	FW2-TP(C1)
(Hibernia) - First Green Pond Road bridge to confluence with Beaver Brook	FW2-TM
TRIBUTARY	
(Lake Ames) - Source to, but not including, Lake Ames	FW2-TP(C1)
HIGH MOUNTAIN BROOK (Ringwood) - Source to, but not including, Skyline Lake	FW2-TP(C1)
HOHOKUS BROOK (Hohokus) - Entire length	FW2-NT/SE2
HUDSON RIVER	
(Rockleigh) - River and saline portions of New Jersey tributaries from the New Jersey-New York boundary line in the north to its confluence with the Harlem River, New York	SE1
(Englewood Cliffs) - River and saline portions of New Jersey tributaries from the confluence with the Harlem River, New York to a north-south line connecting Constable Hook (Bayonne) to St. George (Staten Island, New York)	SE2
TRIBUTARIES	
(Rockleigh) - Freshwater portions of tributaries to the Hudson River in New Jersey	FW2-NT
INDIAN GROVE BROOK (Bernardsville) - Entire length	FW2-TP(C1)
JACKSON BROOK	
(Mine Hill) - Source to the boundary of Hurd Park, Dover	FW2-TP(C1)
(Dover) - Hurd Park to Rockaway River	FW2-NT
JENNINGS CREEK (W. Milford) - State line to Wanaque River	FW2-TP(C1)
JERSEY CITY RESERVOIR (Boonton)	FW2-TM(C1)
KANOUSE BROOK (Newfoundland) - Entire length	FW2-TP(C1)
KIKEOUT BROOK (Butler) - Entire length	FW2-NT
KILL VAN KULL (Bayonne) - Westerly from a north-south line connecting Constable Hook (Bayonne) to St. George (Staten Island, New York)	SE3
LAKE RICKONDA OUTLET STREAM (Monks) - That segment of the outlet stream from Lake Rickonda within Ringwood State Park	FW2-TM(C1)
LAKE STOCKHOLM BROOK	
(Stockholm) - Entire length, except tributaries described separately below	FW2-TP(C1)
(Stockholm) - Portion of westerly tributary, from its origins to about 1000 feet south of the Route 23 bridge, located entirely within the boundaries of the Newark watershed	FW1(tp)

(Stockholm) - Brook between Hamburg Turnpike and Vernon-Stockholm Rd. to its confluence with Lake Stockholm Brook, north of Rt. 23	FW1(tp)
LITTLE POND BROOK (Oakland) - Entire length	FW2-TP(C1)
LOANTAKA BROOK	
(Green Village) - Entire length, except segment described below	FW2-NT
(Great Swamp) - Brook and all tributaries within the boundaries of Great Swamp National Wildlife Refuge	FW2-NT(C1)
LUD-DAY BROOK (Camp Garfield) - Source downstream to its confluence with the southwestern outlet stream from Clinton Resevoir just upstream of the confluence of the outlet stream and a tributary from Camp Garfield	FW1
MACOPIN RIVER	
(Newfoundland) - Source to Echo Lake dam	FW2-NT
(Newfoundland) - Echo Lake dam downstream to Pequannock River	FW2-TP(C1)
MEADOW BROOK	
(Wanaque) - Skyline Lake to E. Belmont Ave.	FW2-NT
(Wanaque) - E. Belmont Ave. downstream to Wanaque River	FW2-TP(C1)
MILL BROOK	
(Randolph) - Source to Rt. 10 bridge	FW2-TP(C1)
(Randolph) - Rt. 10 bridge to Rockaway River, including the easterly tributary	FW2-TM
TRIBUTARIES	
(N. of Union Hill) - Entire length	FW2-TP(C1)
MONKSVILLE RESERVOIR (Long Pond Iron Works State Park)	FW2-TM(C1)
MORSES CREEK (Linden) - Entire length	FW2-NT/SE3
MOSSMANS BROOK (West Milford) - Source to confluence with Clinton Reservoir	FW2-TP(C1)
MT. TABOR BROOK (Morris Plains) - Entire length	FW2-NT
NEWARK BAY (Newark) - North of an east-west line connecting Elizabethport with Bergen Pt., Bayonne up to the mouths of the Passaic and Hackensack Rivers	SE3
NOSENZO POND (Upper Macopin)	FW2-NT(C1)
OAK RIDGE RESERVOIR (Oak Ridge)	FW2-TM
OAK RIDGE RESERVOIR (Oak Ridge) - Northwestern tributary to Reservoir	FW1(tm)
OHIO BROOK (Morris Township) - Source downstream to Morristown town line	FW2-TM
ORADELL RESERVOIR (Oradell)	FW2-NT(C1)
TRIBUTARIES	

(Oradell) - All named and unnamed tributaries that are not listed separately, that drain into Oradell Reservoir above the Oradell Dam	(FW2-NT(C1)
OVERPECK CREEK (Palisades Park) - Entire length	FW2-NT/SE2
PACOCK BROOK	
(Canistear) - Brook and tributaries upstream of Canistear Reservoir located entirely within the boundaries of the Newark Watershed	FW1
(Stockholm) - Outlet of Canistear Reservoir to Pequannock River	FW2-NT
PASCACK BROOK (Hackensack) - New York/New Jersey State line to confluence with the Oradell Reservoir, including Woodcliff Lake, and all tributaries	FW2-NT(C1)
PASSAIC RIVER	
(Mendham) - Source downstream to, but not including, Osborn Pond or tributaries described separately below	FW2-TP(C1)
(Paterson) - Outlet of Osborn Pond to Dundee Lake dam	FW2-NT
(Little Falls) - Dundee Lake dam to confluence with Second River	FW2-NT/SE2
(Newark) - Confluence with Second River to mouth	SE3
TRIBUTARIES	
(Great Piece Meadows State Park) - Tributaries within Great Piece Meadows State Park	FW2-NT(C1)
PECKMAN RIVER (Verona) - Entire length	FW2-NT
PEQUANNOCK RIVER	
MAIN STEM	
(Vernon) - Source to confluence with Pacock Brook	FW1(tp)
(Hardyston) - River and the easterly tributary from Pacock Brook to, but not including, Oak Ridge Reservoir	FW2-TP(C1)
(Newfoundland) - Outlet of Oak Ridge Reservoir downstream to, but not including Charlotteburg Reservoir	FW2-TP(C1)
(Charlotteburg) - Outlet of Charlotteburg Reservoir to, but not including, Macopin Reservoir or the tributaries described separately below	FW2-TP(C1)
(Kinnelon) - Macopin Reservoir outlet to Hamburg Turnpike bridge in Pompton Lakes Borough	FW2-TP(C1)
(Riverdale) - Hamburg Turnpike bridge in Pompton Lakes Borough to confluence with Wanaque River	FW2-TM
(Pompton Plains) - Confluence with Wanaque River downstream to confluence with Pompton River	FW2-NT
TRIBUTARIES	
(Copperas Mtn.) - Entire length	FW2-TP(C1)

(Smoke Rise) - Entire length	FW2-TP(C1)
(Green Pond Junction) - Tributary at Green Pond Junction from its origin downstream to Route 23	FW1(tm)
(Jefferson) - Tributary joining the main stem about 3500± feet southeast of the Sussex-Passaic County line, near Jefferson from its origin to about 2000 feet upstream of the pond	FW1(tm)
(Lake Kampfe) - Source to, but not including, Lake Kampfe	FW2-TM
(Lake Kampfe) - Lake Kampfe to Pequannock River, except tributary described separately below	FW2-NT
(Lake Kampfe) - Tributary within the boundaries of Norvin Green State Forest, originating west of Torne Mtn.	FW2-NT(C1)
PILES CREEK (Grasselli) - Entire length	SE3
POMPTON LAKE (Pompton Lakes)	FW2-NT
POMPTON RIVER (Wayne) - Entire length	FW2-NT
POND BROOK (Oakland) - Entire length	FW2-NT
POSTS BROOK	
(Bloomingdale) - Source to confluence with Wanaque River, except Wanaque Reservoir and segment described below	FW2-NT
(Norvin Green State Forest) - That segment of the stream and all tributaries within the boundaries of Norvin Green State Forest	FW2-NT(C1)
PREAKNESS (SINGAC) BROOK	
(Wayne) - Source to, but not including, Barbour Pond	FW2-TP(C1)
(Barbour Pond) - Pond to Passaic River	FW2-NT
PRIMROSE BROOK	
(Harding) - Source to Lees Hill Road bridge	FW2-TP(C1)
(Harding) - Lees Hill Road bridge to Great Swamp National Wildlife Refuge boundary	FW2-NT
(Great Swamp) - Wildlife Refuge boundary to Great Brook	FW2-NT(C1)
RAHWAY RIVER	
SOUTH BRANCH	
(Rahway) - Source to Hazelwood Ave., Rahway	FW2-NT
(Rahway) - Hazelwood Ave. to mouth	SE2
MAIN STEM	
(Rahway) - Upstream of Pennsylvania Railroad bridge	FW2-NT
(Linden) - Penn. Railroad bridge to Route 1&9 crossing	SE2
(Carteret) - Route 1&9 crossing to mouth	SE3
RAMAPO LAKE (Ramapo) - Lake and all outlet streams and tributaries within the boundaries of Ramapo Mtn. State Forest	FW2-NT(C1)
RAMAPO RIVER (Mahwah) - State line to Pompton River	FW2-NT
TRIBUTARY (Oakland) - Entire length	FW2-TP(C1)

RINGWOOD CREEK	
(Ringwood) - Entire length, except segment described below	FW2-TM
(Sloatsburg) - Creek within Ringwood State Park	FW2-TM(C1)
RINGWOOD MILL POND (Ringwood)	FW2-NT(C1)
ROCKAWAY RIVER	
(Wharton) - Source to Washington Pond outlet, excluding the segment within the boundaries of the Berkshire Valley Wildlife Management Area	FW2-NT
(Berkshire Valley) - That segment within the boundaries of the Berkshire Valley Wildlife Management Area	FW2-NT(C1)
(Dover) - Washington Pond outlet downstream to Rt. 46 bridge	FW2-TM(C1)
(Boonton) - Rt. 46 bridge to Passaic River, excluding Jersey City Reservoir	FW2-NT
RUSSIA BROOK	
(Sparta) - Source to Lake Hartung dam	FW2-NT
(Milton) - Lake Hartung dam to, but not including, Lake Swannanoa	FW2-TM
TRIBUTARIES	
(S. of Mt. Paul) – Entire length	FW2-TP(C1)
SADDLE RIVER	
(Upper Saddle River) - State line to Bergen County Rt. 2 bridge	FW2-TP(C1)
(Saddle River) - Bergen County Rt. 2 bridge to Allendale Rd. bridge	FW2-TM
(Lodi) - Allendale Rd. bridge to Passaic River	FW2-NT/SE3
SAWMILL CREEK (Pompton Plains) - Entire length	FW2-NT
SCARLET OAK POND (Mahwah)	FW2-TM
SHEPPARD LAKE (Ringwood)	FW2-TM(C1)
SINGAC BROOK - See PREAKNESS BROOK	
SLOUGH BROOK (Livingston) - Entire length	FW2-NT
SMITH CREEK (Woodbridge) - Entire length	FW2-NT/SE3
SPLIT ROCK RESERVOIR (Rockaway)	FW2-TM
SPLIT ROCK RESERVOIR TRIBUTARIES	
(Farny State Park)- Three tributaries within Farny State Park	FW2-NT(C1)
SPRING (GRANNEY) BROOK (Mine Hill) - Entire length	FW2-TP(C1)
SPRING GARDEN BROOK (Florham) - Entire length	FW2-NT
STAG (CLOVE) BROOK (Mahwah) - Entire length	FW2-TP(C1)
STEPHENS BROOK	
(Roxbury) - Entire length, except segment described separately, below	FW2-NT
(Berkshire Valley) - That segment north of the boundaries of the Berkshire Valley Wildlife Management Area	FW1

STONE HOUSE BROOK (Kinnelon) - Entire length	FW2-NT
STONY BROOK (Boonton) - Entire length	FW2-NT
SURPRISE LAKE (Hewitt)	FW1
SWAN POND (Ringwood)	FW2-NT(C1)
TAPPAN, LAKE (Old Tappan)	FW2-NT(C1)
TENAKILL BROOK (Demarest) - Entire length, including all tributaries, except Cresskill Brook	FW2-NT(C1)
TERRACE POND (Wawayanda)	FW2-NT(C1)
TIMBER BROOK (Kitchell) - Entire length, except tributary described separately below	FW2-NT
TIMBER BROOK (Farny State Park) - Headwater segment of tributary to Timber Brook within Farny State Park	FW2-NT(C1)
TROY BROOK (Troy Hills) - Entire length	FW2-NT
WALLACE BROOK (Randolph) - Source downstream to, but not Including Hedden Park Lake	FW2-TP(C1)
WANAQUE RESERVOIR	FW2-TM(C1)
WANAQUE RIVER	
MAIN STEM	
(Wanaque) - Greenwood Lake outlet, through Wanaque Wildlife Management Area and Long Pond Iron Works State Park, including the Monksville Reservoir, to the Monksville Reservoir dam at Stonetown Road, except tributary described separately below	FW2-TM(C1)
(Hewitt) - Entire length of tributary south of Jennings Creek	FW2-TP(C1)
(Pompton Lakes) - Wanaque Reservoir dam to Wanaque Ave. bridge	FW2-NT
(Pompton Lakes) - Wanaque Ave. bridge downstream to Pequannock River	FW2-TM
WEST BROOK (W. Milford) - Entire length	FW2-TP(C1)
WEST POND (Hewitt)	FW1
WEYBLE POND (Ringwood)	FW2-NT(C1)
WHIPANNY RIVER	
(Brookside) - Source to Whitehead Rd. bridge	FW2-TP(C1)
(Morristown) - Whitehead Rd. bridge to Rockaway River	FW2-NT
TRIBUTARIES	
(Brookside) - Entire length	FW2-TP(C1)
(E. of Brookside) - Entire length	FW2-TM
(E. of Washington Valley) - Entire length	FW2-TM
(Gillespie Hill) - Entire length	FW2-TP(C1)
(Shongum Mtn.) - Entire length	FW2-NT
WONDER LAKE (West Milford)	FW2-NT(C1)
WOODBRIDGE CREEK (Woodbridge) - Entire length	FW2-NT/SE3
WOODCLIFF LAKE (Woodcliff Lake)	(FW2-NT(C1)

(f) The surface water classifications in Table 4 are for waters of the Raritan River and Raritan Bay Basin:

TABLE 4

Waterbody	Classification
ALLERTON CREEK (Allerton) - Entire length	FW2-NT
AMBROSE BROOK (Piscataway) - Entire length	FW2-NT
AMWELL LAKE (Syndertown)	FW2-NT(C1)
ASSISCONG CREEK (Flemington) - Entire length	FW2-NT
BACK BROOK (Vanliew's Corners) - Entire length	FW2-NT
BALDWINS CREEK	
(Pennington) - Entire length, except segment described separately below	FW2-NT
(Baldwin) - Segment within the boundaries of Baldwin Lake Wildlife Management Area	FW2-NT(C1)
BARCLAY BROOK (Redshaw Corners) - Entire length	FW2-NT
BEAR BROOK (West Windsor) - Entire length	FW2-NT
BEAVER BROOK	
(Cokesbury) - Source to Reformatory Road bridge	FW2-TP(C1)
(Annandale) - Reformatory Rd. bridge to Beaver Ave., bridge	FW2-TM
(Annandale) - Beaver Ave. bridge downstream to the lower most I-78 bridge	FW2-TP(C1)
(Clinton) - Lower most I-78 bridge downstream to, the South Branch Raritan River	FW2-TM
BEDEN BROOK (Montgomery) - Entire length	FW2-NT
BIG BROOK (Vanderberg) - Entire length	FW2-NT
BLACK BROOK (Polktown) - Entire length	FW2-TP(C1)
BLACK RIVER - See LAMINGTON RIVER	
BLACKBERRY CREEK	
(Oceanport) - Source to a line beginning on the easternmost extent of Gooseneck Point and bearing approximately 162 degrees True North to its terminus on the westernmost extent of an unnamed point of land in the vicinity of the western extent of Cayuga Ave. in Oceanport.	SE1
(Oceanport) - Creek below the line described above	SE1(C1)
BLUE BROOK (Mountainside) - Entire length	FW2-NT
BOULDER HILL BROOK (Tewksbury) - Entire length	FW2-TP(C1)
BOUND BROOK (Dunellen) - Entire length	FW2-NT
BRANCHPORT CREEK	
(Long Branch) - Source to a line beginning on the northernmost extent of an unnamed point of land lying north of Pocano Ave. in Oceanport	

and bearing approximately 055 degrees True North to its terminus on the westernmost extent of the northern bulkhead at the lagoon located between France Rd. and Lori Rd. in Monmouth Beach	FW2-NT/SE1
(Monmouth Beach) - Creek below line described above	SE1(C1)
BUDD LAKE (Mt. Olive)	FW2-NT(C1)
TRIBUTARIES	
(E. of Budd Lake) - Entire Length	FW2-TM
(W. of Budd Lake) - Entire Length	FW2-NT
BURNETT BROOK (Ralston) - Entire length	FW2-TP(C1)
BUSHKILL BROOK	
(Flemington) – Source and tributary downstream to Rt. 31 Bridge	FW2-TM
(Flemington) – Rt. 31 bridge downstream to South Branch Raritan River	FW2-NT
CAPOOLONG (CAKEPOULIN) CREEK (Sydney) - Entire length	FW2-TP(C1)
CEDAR BROOK (Spotswood) - Entire length	FW2-NT
CHAMBERS BROOK (Whitehouse) - Entire length	FW2-NT
CHEESEQUAKE STATE PARK WATERS (S. Amboy) - Fresh waters within the park upstream of the limits of tidal influence	FW2-NT(C1)
CLAYPIT CREEK	
(Navesink) - Source to widening of the Creek near Linden Ave. and just north to the Locust Ave. bridge in Navesink	FW2-NT/SE1
(Navesink) - Widening of Creek to Navesink River	SE1(C1)
COLD BROOK (Oldwick) - Entire length	FW2-TP(C1)
CRAMERS CREEK (Hamden) - Entire length	FW2-NT
CRANBURY BROOK (Old Church) - Entire length	FW2-NT
CRUSER BROOK (Montgomery) - Entire length	FW2-NT
CUCKELS BROOK (Bridgewater) - Entire length	FW2-NT
DAWSONS BROOK (Ironia) - Entire length	FW2-TP(C1)
DEEP RUN (Old Bridge) - Entire length	FW2-NT
DEVILS BROOK (Schalks) - Entire length	FW2-NT
DRAKES BROOK	
(Ledgewood) - Source downstream to Hillside Avenue bridge	FW2-TM(C1)
(Flanders) - Hillside Avenue bridge to confluence with the South Branch Raritan River	FW2-NT(C1)
TRIBUTARY (Mt. Olive) - Source downstream to Central Railroad bridge	FW2-TP(C1)
DUCK POND RUN (Port Mercer) - Entire length	FW2-NT
DUKES BROOK (Somerville) - Entire length	FW2-NT
ELECTRIC BROOK (Schooley's Mtn.) - Entire length	FW2-TP(C1)
FLANDERS BROOK (Flanders) - Entire length	FW2-TP(C1)
FLANDERS CANAL (Flanders) - Entire length	FW2-NT(C1)
FROG HOLLOW BROOK (Califon) - Entire length	FW2-TP(C1)

GANDER BROOK (Manalapan) - Entire length	FW2-NT
GLADSTONE BROOK (St. Bernards School) - Entire length	FW2-TP(C1)
GRANDIN BROOK (see SIDNEY BROOK)	
GREAT DITCH (S. Brunswick) - That portion of Great Ditch and its tributaries within Pigeon Swamp State Park	FW2-NT(C1)
GREEN BROOK	
(Watchung) - Source to Rt. 22 bridge	FW2-TM
(Plainfield) - Rt. 22 bridge to Bound Brook	FW2-NT
GUINEA HOLLOW BROOK (Tewksbury)	FW2-TP(C1)
HACKLEBARNEY BROOK (Hacklebarney) - Entire length	FW2-TP(C1)
HEATHCOTE BROOK (Kingston) - Entire length	FW2-NT
HERZOG BROOK (Pottersville) - Entire length	FW2-TP(C1)
HICKORY RUN (Califon) - Entire length	FW2-TP(C1)
HOCKHOCKSON BROOK (Colts Neck) - Entire length	FW2-TM
HOLLAND BROOK (Readington) - Entire length	FW2-NT
HOLLOW BROOK (Pottersville) - Entire length	FW2-TP(C1)
HOOKS CREEK LAKE (Cheesequake State Park)	FW2-NT(C1)
HOOPSTICK BROOK (Bedminister) - Entire length	FW2-NT
INDIA BROOK (NORTH BRANCH, RARITAN RIVER)	
(Randolph) - Entire length	FW2-TP(C1)
IRELAND BROOK (Paulus Corners) - Entire length	FW2-NT
IRESICK BROOK (Spotswood) - Entire length	FW2-NT
KRUEGER'S BROOK - (Flanders) - Entire length	FW2-TP(C1)
LAMINGTON RIVER (BLACK RIVER)	
(Succasunna) - Source to Rt. 206 bridge	FW2-NT(C1)
(Milltown) - Rt. 206 bridge to confluence with Rinehart Brook	FW2-TM(C1)
(Pottersville) - Confluence with Rinehart Brook to Camp Brady bridge, Bedminister	FW2-TP(C1)
(Vliettown) - Camp Brady bridge to Rt. 523 bridge	FW2-TM
(Burnt Mills) - Rt. 523 to North Branch, Raritan River	FW2-NT
TRIBUTARY (Ironia) - Source downstream to, but not including, Bryant Pond	FW2-TP(C1)
LAWRENCE BROOK	
(Deans) - Source to the intake of the New Brunswick Water Department at Weston's Mill Dam	FW2-NT
(New Brunswick) - Weston's Mill Dam to Raritan River	SE1
LEDGEWOOD BROOK (Ledgewood) - Entire length	FW2-TP(C1)
LITTLE BROOK (Califon) - Entire length	FW2-TP(C1)
LITTLE SILVER CREEK	
(Shrewsbury) - Source to a line beginning on the eastern bank of that unnamed lagoon located between Wardell Ave. and Oakes Rd. in Rumson and bearing approximately 171 degrees T (True North) to its terminus on the south shore of Little Silver Creek	FW2-NT/SE1
(Rumson) - Creek below line described above	SE1(C1)

LOMERSON BROOK - See HERZOG BROOK	
MANALAPAN BROOK	
(Jamesburg) - Source to Duhernal Lake dam, except tributary described separately below	FW2-NT
(Tennent) - That portion of the tributary at Tennent along the boundary of Monmouth Battlefield State Park	FW2-NT(C1)
MATCHAPONIX BROOK (WEAMACONK CREEK)	
(Mount Mills) - Entire length, except segments described below	FW2-NT
(Freehold) - The brook and tributaries within the boundaries of Monmouth Battlefield State Park	FW2-NT(C1)
MCGELLAIRDS BROOK	
(Englishtown) - Entire length, except tributary described separately below	FW2-NT
(Freehold) - Tributary within Monmouth Battlefield State Park	FW2-NT(C1)
MCVICKERS BROOK (Mendham) - Entire length	FW2-TM(C1)
MIDDLE BROOK (Greater Cross Roads) - Entire length	FW2-NT
MIDDLE BROOK	
EAST BRANCH (Springdale) - Entire length	FW2-TM
WEST BRANCH (Martinsville) - Entire length	FW2-NT
MAIN STEM (Bound Brook) - Confluence of East and West branches to Raritan River	FW2-NT
MILFORD BROOK (Lafayette Mills) - Entire length	FW2-NT
MILLSTONE RIVER (Hightstown) - Entire length	FW2-NT
MINE BROOK (Mine Brook) - Entire length	FW2-NT
TRIBUTARIES	
(East of Mine Mt.) - Entire length	FW2-TP(C1)
(South of Mine Mt.) - Source downstream to Douglass Road Bridge	FW2-TP(C1)
MINE BROOK (Colts Neck) - Entire length	FW2-NT
MULHOCKAWAY CREEK (Pattenburg) - Entire length	FW2-TP(C1)
NAVESINK RIVER	
(Red Bank) - Source to a line starting at a point at the northeast end of Blossom Cove, bearing approximately 142 degrees T (True North), through navigational aid C23 to the south bank near Riverview Hospital	SE1
(Rumson) - River southeast of the line described above, except segment described below	SE1(C1)
(Monmouth Beach) - All water south and east of a line beginning on the northwesternmost point of land on Raccoon Island (in the vicinity of the western extent of Highland Ave.) in Monmouth Beach, and bearing approximately 056 degrees T (True North) to the southernmost point of a small unnamed island, and then bearing	

approximately 091 degrees T (True North) to its terminus on the northernmost point of land located at the northern extent of Monmouth Parkway in Monmouth Beach and all waters south of a line beginning on the western shoreline (just east of Monmouth Parkway in Monmouth Beach) and bearing approximately 081 degrees T (True North), intersecting Channel Marker Flashing Red 4 and Channel Marker Flashing Red 2 and terminating on the eastern shoreline of the Galilee section of Monmouth Beach.	SE1
NESHANIC RIVER (Reaville) - Entire length	FW2-NT
NORTON BROOK (Norton) - Entire length	FW2-TP(C1)
OAKDALE CREEK (Chester) - Entire length	FW2-TP(C1)
OAKEYS BROOK (Deans) - Entire length	FW2-NT
OCEANPORT CREEK	
(Fort Monmouth) - Source to a line beginning on the easternmost extent of Horseneck Point and bearing approximately 140 degrees T (True North) to its terminus on the westernmost extent of an unnamed point of land located at the westernmost extent of Monmouth Boulevard in Oceanport	FW2-NT/SE1
(Oceanport) - Creek downstream of line described above	SE1(C1)
PARKERS CREEK	
(Fort Monmouth) - Source to a line beginning on the easternmost extent of Horseneck Point and bearing approximately 000 degrees T (True North) to its terminus on Breezy Point on the Little Silver side (north) side of the creek	FW2-NT/SE1
(Fort Monmouth) - Creek downstream of line described above	SE1(C1)
PEAPACK BROOK (Gladstone) - Entire length	FW2-TP(C1)
PETERS BROOK (Somerville) - Entire length	FW2-NT
PIGEON SWAMP (Pigeon Swamp State Park) - All waters within the boundaries of Pigeon Swamp State Park	FW2-NT(C1)
PIKE RUN (Belle Meade) - Entire length	FW2-NT
PINE BROOK (Clarks Mills) - Entire length	FW2-NT
PINE BROOK (Cooks Mill) - Entire length	FW2-TM
PLEASANT RUN (Readington) - Entire length	FW2-NT
PRESCOTT BROOK (Stanton Station) - Entire length	FW2-TM
RAMANESSIN (HOP) BROOK (Holmdel) - Entire length	FW2-TM
RARITAN BAY - Entire drainage	FW2-NT/SE1
RARITAN RIVER	
NORTH BRANCH (Also see INDIA BROOK)	

(Pleasant Valley) - Source to, but not including, Ravine Lake	FW2-TP(C1)
(Far Hills) - Ravine Lake dam to Rt. 512 bridge	FW2-TM
(Bedminister) - Rt. 512 bridge to confluence with South Branch, Raritan River	FW2-NT
SOUTH BRANCH RARITAN RIVER	
(Mt. Olive) - Source to the dam that is 390 feet upstream of the Flanders-Drakestown Road bridge and the two tributaries which originate north and east of the Budd Lake Airfield	FW2-NT(C1)
(Mt. Olive) - Dam to confluence with Turkey Brook	FW2-TM(C1)
(Middle Valley) - Confluence with Turkey Brook toRt. 512 bridge	FW2-TP(C1)
(Califon) - Rt. 512 bridge to downstream end of Packers Island, except segment described separately, below	FW2-TM
(Ken Lockwood Gorge) - River and tributaries within Ken Lockwood Gorge Wildlife Management Area	FW2-TM(C1)
(Neshanic Sta.) - Downstream end of Packers Island to confluence with North Branch, Raritan River	FW2-NT
TRIBUTARIES, SOUTH BRANCH RARITAN RIVER	
(Long Valley) - Entire length	FW2-TP(C1)
(High Bridge) - Entire length	FW2-TM
(S. of Hoffmans) - Entire length	FW2-TP(C1)
(S. of Schooley's Mt.) - Entire length	FW2-TP(C1)
MAIN STEM RARITAN RIVER	
(Bound Brook) - From confluence of North and South Branches to Landing Lane bridge in New Brunswick and all freshwater tributaries downstream of Landing Lane bridge.	FW2-NT
(Sayreville) - Landing Lane bridge to Raritan Bay and all saline water tributaries	SE1
RINEHART BROOK (Hacklebarney) - Entire length	FW2-TP(C1)
ROCK BROOK (Montgomery) - Entire length	FW2-NT
ROCKAWAY CREEK	
NORTH BRANCH	
(Mountainville) - Source to Rt. 523 bridge	FW2-TP(C1)
(Whitehouse) - Rt. 523 bridge to confluence with South Branch	FW2-TM
SOUTH BRANCH	
(Clinton) - Headwaters to Readington Township boundary including all tributaries	FW2-TP(C1)
(Clinton) - Readington Township boundary to Lake Cushetunk, including all tributaries	FW2-TM(C1)
(Whitehouse) - Lake Cushetunk to its confluence with main stem Rockaway Creek	FW2-TM

MAIN STEM (Whitehouse) - Confluence of North and South Branches to Lamington River	FW2-NT
ROCKY RUN - (Lebanon) - Entire length	FW2-TP(C1)
ROUND VALLEY RESERVOIR (Clinton)	FW2-TP(C1)
ROYCE BROOK (Manville) - Entire length	FW2-NT
SANDY HOOK BAY (Sandy Hook)	SE1
SHREWSBURY RIVER	
(Little Silver) - Source to Rt. 36 highway bridge	SE1(C1)
(Highlands) - Rt. 36 bridge to Sandy Hook Bay	SE1
SIDNEY BROOK	
(Grandin) - Headwaters to its confluence with the South Branch Raritan River, including all tributaries	FW2-NT(C1)
SIMONSON BROOK (Griggstown) - Entire length	FW2-NT
SIX MILE RUN	
(Franklin Church) - Entire length, except segment described below	FW2-NT
(Hillsborough) - Segment within the boundaries of Six Mile Run State Park	FW2-NT(C1)
SOUTH RIVER	
(Old Bridge) - Duhernal Lake to intake of the Sayreville Water Department	FW2-NT
(Sayreville) - Below the intake of the Sayreville Water Department	SE1
SPOOKY BROOK (Bound Brook)	FW2-NT
SPRUCE RUN	
(Glen Gardner) - Source to, but not including, Spruce Run Reservoir	FW2-TP(C1)
(Clinton) - Spruce Run Reservoir dam to Raritan River, South Branch	FW2-TM
SPRUCE RUN RESERVOIR (Union) - Reservoir and tributaries	FW2-TM(C1)
STONY BROOK (Washington) - Entire length	FW2-TP(C1)
STONY BROOK	
(Hopewell) - Entire length, except that segment described below	FW2-NT
(Syndertown) - Brook and tributaries within Amwell Lake Wildlife Management Area	FW2-NT(C1)
STONY BROOK (Watchung) - Entire length	FW2-NT
SUN VALLEY BROOK (Mt Olive) - Entire length	FW2-TP(C1)
SWIMMING RIVER RESERVOIR (Red Bank)	FW2-NT(C1)
SWIMMING RIVER (Red Bank) - Swimming River Reservoir dam to the Navesink River	FW2-NT/SE1
TANNERS BROOK (Washington) - Entire length	FW2-NT(C1)
TEETERTOWN BROOK (Lebanon) - Entire length	FW2-TP(C1)
TEN MILE RUN (Franklin) - Entire length	FW2-NT
TENNENT BROOK (Old Bridge) - Entire length	FW2-NT
TEPEHEMUS BROOK (Manalapan) - Entire length	FW2-NT
TOWN NECK CREEK	

(Little Silver) - Source to a line beginning on the easternmost extent of the unnamed point of land located just east of Paag Circle on the south bank of Town Neck Creek and bearing approximately 095 degrees True North and terminating on Silver Point	FW2-NT/SE1
(Little Silver) - Creek below line described below	SE1(C1)
TROUT BROOK (Hacklebarney) - Entire length	FW2-TP(C1)
TURKEY BROOK (Mt. Olive) - Entire length	FW2-TP(C1)
TURTLEBACK BROOK (Middle Valley) - Entire length	FW2-NT
WALNUT BROOK (Flemington) - Entire length	FW2-TM
WEAMACONK CREEK - See MATCHAPONIX BROOK	
WEMROCK BROOK	
(Millhurst) - Entire length, except that segment described below	FW2-NT
(Monmouth Battlefield State Park) - Those segments of the brook and its tributaries within the boundaries of Monmouth Battlefield State Park	FW2-NT(C1)
WEMROCK POND (Monmouth Battlefield State Park)	FW2-NT(C1)
WILLOUGHBY BROOK (Buffalo Hollow) - Entire length	FW2-TP(C1)
WILLOW BROOK (Holmdel) - Entire length	FW2-NT
YELLOW BROOK (Colts Neck) - Entire length	FW2-NT

(g) The surface water classifications in Table 5 are for waters of the Wallkill River Basin:

TABLE 5

Waterbody	Classification
BEARFORT WATERS (Wawayanda)	FW2-NT(C1)
BEAVER RUN (Wantage) - Entire length	FW2-NT
BLACK CREEK	
(McAfee) - Source to Rt. 94 bridge, except those tributaries described separately, below	FW2-TM
(Vernon) - Rt. 94 bridge to Pochuck Creek	FW2-NT
TRIBUTARIES	
(Hamburg) - Three tributaries to Black Creek which originate in the former Hamburg Mtn. Wildlife Management Area from their sources to the former Management Area boundaries	FW1(tm)
(Rudeville) - Triburaries within the former Hamburg Mtn. Wildlife Management Area not classified as FW1, above	FW2-TM(C1)
(McAfee) - Entire length	FW2-TP(C1)
(Vernon Valley) - Entire length	FW2-NT
CLOVE CREEK (Colesville) - Entire length	FW2-TM
CLOVE BROOK	
(Wantage) - Source to, but not including, Clove Acres Lake, except those tributaries described separately below	FW2-TM
(Sussex) - Clove Acres Lake to Papakating Creek	FW2-NT
(High Point) - Those portions of the two northernmost tributaries located entirely within High Point State Park boundaries, immediately east of Lake Marcia	FW1(tp)
FRANKLIN POND CREEK	
(Hardyston) - Source to, but not including, Franklin Pond	FW2-TP(C1)
(Hamburg Mtn.) - Tributaries within the Hamburg Mtn.Wildlife Management Area	FW2-TM(C1)
TRIBUTARY (Hamburg Mtn.) - The first tributary to Franklin Pond Creek just south of Hamburg Mountain, flowing toward the Wallkill River and located entirely within the former Hamburg Mtn. Wildlife Management Area	FW1
GLENWOOD BROOK (Glenwood) - Outlet of Glenwood Lake to State line	FW2-TM
HAMBURG CREEK	

(Hamburg Mtn.) - Source to Rt. 517 bridge, Rudeville, except tributary described separately below	FW2-TM
(Hardistonville) - Rt. 517 bridge to Wallkill River	FW2-NT
(Hamburg Mtn.) - The third tributary just southwest of Hamburg Mtn. flowing toward the Wallkill River and located entirely within the Hamburg Mtn. Wildlife Management Area	FW1
HANFORD BROOK (Hanford) - Entire length within New Jersey	FW2-NT
LAKE LOOKOUT (Wawayanda)	FW1
LAKE LOOKOUT BROOK (Wawayanda) - Brook and tributaries from source in Newark City holdings, through the Wawayanda State Park, to confluence with the outlet stream from Lake Wawayanda	FW1
LAKE RUTHERFORD (Wantage) - The Lake and its tributaries	FW1(tm)
LAUREL POND (Wawayanda) - Laurel Pond, including its outlet stream and tributaries, to the outlet stream from Lake Wawayanda	FW1
LIVINGSTON PONDS (Wawayanda) - The two northwestern ponds which are within State Park lands	FW2-NT(C1)
LIVINGSTON PONDS BROOK (Wawayanda State Park) - Source downstream to State line	FW2-TP(C1)
LONG HOUSE BROOK	
(Upper Greenwood Lake) - Source to State line, except segment described below	FW2-NT
(Upper Greenwood Lake) - Segment within the bounds of Hewitt State Forest	FW2-NT(C1)
LOUNSBERRY HOLLOW BROOK	
(Vernon Valley) - Outlet of Glenwood Lake to Pochuck Creek	FW2-TM
MUD POND OUTLET STREAM (Hamburg) - Outlet stream from the Pond downstream to confluence with Hamburg Creek, including all tributaries	FW2-TP(C1)
PAPAKATING CREEK	
MAIN STEM	
(Frankford) - Source to Rt. 629 bridge.	FW2-TM
(Pellettown) - Entire length of tributary	FW2-NT
(Wantage) - Rt. 629 bridge to Wallkill River	FW2-NT
WEST BRANCH	
(Wantage) - Entire length	FW2-NT
PARKER LAKE (Wawayanda)	FW2-NT(C1)
POCHUCK CREEK	
(Vernon) - Source to State line, except segment described separately below	FW2-NT
(High Point) - Segment within State Park lands	FW2-NT(C1)
QUARRYVILLE BROOK - See WILLOW BROOK	
RUTGERS CREEK (High Point) - The Cedar Swamp headwaters of the tributary to Rutgers Creek	

located entirely within the High Point State Park boundaries just south of the State line	FW1
SAND HILLS BROOK	
(Hamburg Mtn.) - The upstream portion of Sand Hills Brook, including the pond at its headwaters, located entirely within the boundaries of the Hamburg Mtn. Wildlife Management Area	FW1
(Hamburg) - Brook and tributaries beyond Management Area boundaries	FW2-NT
SAWMILL POND BROOK	
(W. Milford) - Entire length, except segment described separately below	FW2-NT
(Wawayanda) - Segment within the boundaries of Wawayanda State Park	FW2-NT(C1)
SPARTA GLEN BROOK (Sparta) - Entire length	FW2-TP(C1)
SPRING BROOK (Maple Grange) - Entire length	FW2-TP(C1)
TOWN BROOK (Vernon) - Entire length	FW2-TM
WALLKILL RIVER	
(Sparta) - Source to confluence with Sparta Glen Brook	FW2-NT
(Franklin) - Sparta Glen Brook to, but not including, Franklin Pond	FW2-TM
(Wantage) - Outlet of Franklin Pond to State line	FW2-NT
TRIBUTARIES	
(Sparta) - Lake Saginaw dam downstream to Wallkill River	FW2-TP(C1)
(Hamburg Mtn.) - The first tributary, just south of Hamburg Mtn., flowing toward the Wallkill River and located entirely within the Hamburg Mtn. Wildlife Management Area	FW1(tm)
(Ogdensburg) - Tributary from the outlet of Heaters Pond to the confluence with the Wallkill River	FW2-TP(C1)
WANTAGE BROOK (Wantage) - Entire length	FW2-NT
WAWAYANDA CREEK	
(Vernon) - State line to Pochuck Creek, except unnamed tributary described below	FW2-TM
TRIBUTARIES	
(Wawayanda) - Source to State line	FW2-NT
(Wawayanda State Park) - Segments within State Park boundaries, except Livingston Ponds Brook as noted above	FW2-NT(C1)
WAWAYANDA LAKE (Wawayanda)	FW2-TM(C1)
WHITE LAKE (Sparta)	FW2-TM
WILDCAT BROOK (Franklin) - Entire length	FW2-NT
WILLOW (QUARRYVILLE) BROOK (Wantage) - Entire length	FW2-TM

(h) FW1 waters are listed in Table 6 by tract within basins:

Table 6

ATLANTIC COASTAL PLAIN BASIN

ALLAIRE STATE PARK	MANASQUAN RIVER WATERSHED Those portions of the first and second southerly tributaries to the Manasquan River, which are west of Hospital Rd. and are located entirely within the boundaries of Allaire State Park The easterly tributary to Mill Run upstream of Brisbane Lake, located entirely within the boundaries of Allaire State Park
BASS RIVER STATE FOREST	BASS RIVER WATERSHED Tommy's Branch from its headwaters downstream to the Bass River State Forest Recreation Area service road Falkenburg Branch of Lake Absegami from its headwaters to the Lake
GREENWOOD FOREST WILDLIFE MANAGEMENT AREA	CEDAR CREEK WATERSHED Webbs Mill Branch and tributaries, located entirely within the Greenwood Forest Wildlife Management Area boundaries Chamberlain's Branch from its origins to a point 1000 feet west of Route 539 Those portions of the tributaries to Chamberlain's Branch originating and wholly contained within the boundaries of the Greenwood Forest Wildlife Management Area WADING RIVER WATERSHED Westerly tributary to the Howardsville Cranberry Bog Reservoir and other tributaries that are located entirely within the boundaries of the Greenwood Forest Wildlife Management Area
ISLAND BEACH STATE PARK	BARNEGAT BAY WATERSHED All freshwater ponds in Island Beach State Park

LESTER G. MACNAMARA WILDLIFE MANAGEMENT AREA	GREAT EGG HARBOR RIVER WATERSHED Hawkins Creek and tributaries and the next adjacent, northern stream and tributaries that enter the Great Egg Harbor River, from their origins downstream to where the influence of impoundment begins
TUCKAHOE PUBLIC FISHING HUNTING GROUNDS	See LESTER G. MACNAMARA WILDLIFE AND MANAGEMENT AREA
WHARTON STATE FOREST	MULLICA RIVER WATERSHED Deep Run and tributaries from their headwaters downstream to Springer's Brook Skit Branch and tributaries from their headwaters downstream to the confluence with Robert's Branch Tulpehocken Creek and tributaries from their sources downstream to the confluence with Featherbed Branch The westerly tributaries to Tulpehocken Creek and those natural ponds within the lands bounded by Hawkins (Bulltown-Hawkins) Rd., Hampton Gate (Tuckerton) Rd., and Sandy Ridge Rd. Stream in the southeasterly corner of the Wharton State Forest, located between Ridge Rd. and Seaf Weeks Rd. downstream to the boundaries of Wharton State Forest Brooks and tributaries to the Mullica River between and immediately to the west of Tylertown and Crowleytown, from their headwaters downstream to the head of tide at mean high water The easterly branches of the Batsto River from Batsto Village upstream to the confluence with Skit Branch Gun Branch from its headwaters downstream to U.S. Route 206

DELAWARE RIVER BASIN

ALLAMUCHY STATE PARK	MUSCONETCONG RIVER WATERSHED All those tributaries to Deer Park Pond and its outlet stream, that are located entirely within the boundaries of Allamuchy State Park PEQUEST RIVER WATERSHED All tributaries that are located entirely within Allamuchy State Park and flow into Allamuchy Pond
BELLEPLAIN STATE FOREST	EAST CREEK WATERSHED All tributaries to Lake Nummi from their origins downstream to the Lake. Those two tributaries to Savages Run and portions thereof downstream of Lake Nummi, which are located entirely within the Belleplain State Forest boundaries A stream and its tributaries that originate just south of East Creek Mill Rd., 1.2+ miles north-northeast of Eldora, and are located entirely within the boundaries of Belleplain State Forest WEST CREEK WATERSHED The portion of the tributary to West Creek that originates about 0.9 miles southeast of Hoffman's Mill and is located entirely within the boundaries of Belleplain State Forest Eastern branch of the easterly tributary to Pickle Factory Pond from its origin to its confluence with the western branch Those tributaries to the stream which enter West Creek approximately 0.5 miles upstream of Hoffman's Mill and which are located entirely within the boundaries of Belleplain State Forest
COLLIERS MILLS WILDLIFE MANAGEMENT AREA	CROSSWICKS CREEK WATERSHED All tributaries to Lahaway Creek originating in the Colliers Mills Wildlife Management Area north-northeast of Archers Corner, from their origins downstream to the boundaries of the Colliers Mills Wildlife Management Area

DELAWARE WATER GAP NATIONAL RECREATION AREA	DELAWARE RIVER WATERSHED All tributaries to Flat Brook flowing from the Kittatinny Ridge and located entirely within the boundaries of the Delaware Water Gap National Recreation Area Rundle Brook upstream of Sussex County Route 615 Smith Ferry Brook Donkey's Corner Brook Sambo Island Brook and Pond Coppermine Brook in Pahaquarry Dunnfield Creek to Route I-80
DIX WILDLIFE MANAGEMENT AREA	MIDDLE MARSH CREEK WATERSHED All fresh waters which originate in and are located entirely within the boundaries of the Dix Wildlife Management Area
EDWARD G. BEVAN WILDLIFE MANAGEMENT AREA	MAURICE RIVER WATERSHED Joshua and Pine Branches of Buckshutem Creek to their confluences with Buckshutem Creek Gravelly Run downstream to the boundaries of the Edward G. Bevan Wildlife Management Area NANTUXENT CREEK WATERSHED Cedar and Mile Branches to Shaw's Mill Pond DIVIDING CREEK WATERSHED Those tributaries to Cedar Creek which originate in and are located entirely within the boundaries of the Edward G. Bevan Wildlife Management Area Those portions of tributaries to Dividing Creek, located entirely within the boundaries of the Edward G. Bevan Wildlife Management Area
FLATBROOK-ROY WILDLIFE MANAGEMENT AREA	FLAT BROOK WATERSHED The tributary to Little Flat Brook which originates north of the Bevans-Layton Rd., downstream to the first pond adjacent to the Fish and Game headquarters building

Two tributaries to Flat Brook which originate along Struble Rd. in Stokes State Forest, downstream to the confluence with Flat Brook within Flatbrook-Roy Wildlife Management Area boundaries

GLASSBORO WILDLIFE MANAGEMENT AREA	MAURICE RIVER WATERSHED The portion of a branch of Little Ease Run situated immediately north of Stanger Avenue, and entirely within the Glassboro Wildlife Management Area First and second easterly tributaries to Little Ease Run north of Academy Road
HIGH POINT STATE PARK AND STOKES STATE FOREST	CLOVE BROOK WATERSHED The second and third northerly tributaries to Clove Brook, those tributaries to Steeny Kill Lake, Steeny Kill Lake, and those downstream of the Lake which originate in High Point State Park, downstream to the confluence with Clove Brook or to the boundaries of High Point State Park The northerly tributaries to Mill Brook due west of Steeny Kill Lake, within the High Point State Park boundaries FLAT BROOK WATERSHED All surface waters of the Flat Brook drainage within the boundaries of High Point State Park and Stokes State Forest except the following: (1) Saw Mill Pond and Big Flat Brook downstream to the confluence with Flat Brook; (2) Mashipacong Pond and its outlet stream (Parker Brook) to the confluence with Big Flat Brook; (3) Lake Wapalanne and its outlet stream to the confluence with Big Flat Brook; (4) Lake Ocquittunk and waters connecting it with Big Flat Brook; (5) Stony Lake and its outlet stream (Stony Brook) downstream to the confluence with the Big Flat Brook; (6) Kittatinny Lake, that portion of its inlet stream outside the Stokes State Forest boundaries, and its

	outlet stream, including the Shotwell Camping Area tributary, to the confluence with Big Flat Brook; (7) Deer Lake and its outlet stream to Lake Ashroe; (8) Lake Ashroe, the portions of its tributaries outside the Stokes State Forest boundaries, and its outlet stream to the confluence with Big Flat Brook; (9) Lake Shawanni and its outlet stream to the confluence with Flat Brook; (10) Crigger Brook and its tributary to the confluence with Big Flat Brook
	SHIMERS BROOK WATERSHED The portion of Shimers Brook and its tributaries that are located within the boundaries of High Point State Park
JOHNSONBURG NATURAL AREA	PEQUEST RIVER WATERSHED Mud Pond and its outlet stream, Bear Creek, to the Erie-Lackawanna Railroad trestle, north of Johnsonburg
LEBANON STATE FOREST	RANCOCAS CREEK WATERSHED Deer Park Branch and tributaries near Buckingham, downstream to the confluence with Pole Bridge Branch Tributaries to the South Branch of Mount Misery Brook located entirely within the boundaries of Lebanon State Forest Cooper Branch and tributaries downstream to Pakim Pond and those tributaries to Coopers Branch downstream of Pakim Pond that are located entirely within the boundaries of Lebanon State Forest Shinns Branch and tributaries located entirely within the boundaries of Lebanon State Forest, from their sources to the forest boundary Jade Run located entirely within the boundaries of Lebanon State Forest

	MacDonalds Branch and tributaries located entirely within the boundaries of Lebanon State Forest, from their sources to the forest boundary
MILLVILLE FISH AND GAME TRACT	See EDWARD G. BEVAN WILDLIFE MANAGEMENT AREA
PASADENA WILDLIFE MANAGEMENT AREA	RANCOCAS CREEK WATERSHED The two easterly branches of the South Branch of Mount Misery Brook, located entirely within the boundaries of the Pasadena Wildlife Management Area
PEASELEE WILDLIFE MANAGEMENT AREA	MAURICE RIVER WATERSHED Middle Branch of Muskee Creek from its origin to the boundaries of the Peaselee Wildlife Management Area Cedar Branch of the Manumuskin River, from its origin to the boundaries of the Peaselee Wildlife Management Area Those portions of tributaries to Slab Branch located entirely within the boundaries of the Peaselee Wildlife Management Area
WASHINGTON CROSSING STATE PARK	STEELE RUN WATERSHED That portion of Steele Run, located within the boundaries of Washington Crossing State Park, to the confluence with the westerly tributary
WHITTINGHAM WILDLIFE MANAGEMENT AREA	PEQUEST RIVER WATERSHED Northwesterly tributaries to the Pequest River, including Big Spring, located within the boundaries of the Whittingham Wildlife Management Area southwest of Springdale, from their origins to their confluence with the Pequest River

WORTHINGTON STATE FOREST	DELAWARE RIVER WATERSHED Sunfish Pond and its outlet stream to the Delaware River. All unnamed waters located entirely within the boundaries of the Worthington State Forest DUNNFIELD CREEK WATERSHED Dunnfield Creek to I-80

PASSAIC RIVER, HACKENSACK RIVER, NY HARBOR COMPLEX BASIN

A. S. HEWITT STATE FOREST	WANAQUE RIVER WATERSHED Portions of Cooley Brook and tributaries which originate and are located entirely within the boundaries of Hewitt State Forest Surprise Lake Portions of Green Brook and tributaries which originate and are located entirely within the boundaries of Hewitt State Forest West Pond
BERKSHIRE VALLEY WILDLIFE MANAGEMENT AREA	ROCKAWAY RIVER WATERSHED Stephens Brook north of the boundaries of the Berkshire Valley Wildlife Management Area
CITY OF NEWARK HOLDINGS AND WAWAYANDA STATE PARK	PEQUANNOCK RIVER WATERSHED Cedar Pond and all tributaries Hanks Pond and all tributaries Tributary to Pequannock River at Green Pond Junction from its origin downstream to Route 23 Tributary joining the main stem of the Pequannock River 3500+ feet southeast of the Sussex-Passaic County line, near Jefferson from its origin to about 2000 feet upstream of the pond Pacack Brook and its tributaries upstream of Canistear Reservoir, located entirely within the boundaries of the Newark watershed and Wawayanda State Park Cherry Ridge Brook and its tributaries north of Canistear Reservoir, located entirely within the

	boundaries of the Newark watershed lands and Wawayanda State Park
	The southern branch of the easterly tributary to Canistear Reservoir
	Pequannock River and tributaries upstream of the confluence with Pacack Brook
	The northwestern tributary to Oak Ridge Reservoir
	The portion of the westerly tributary to Lake Stockholm Brook, from its origins to about 1000 feet south of the Route 23 Bridge, located entirely within the boundaries of the Newark watershed
	Lud-Day Brook downstream to its confluence with the southwestern outlet stream from Clinton Reservoir just upstream of the confluence of the outlet stream and a tributary from Camp Garfield
	Brook between Hamburg Turnpike and Vernon-Stockholm Road, downstream to its confluence with Lake Stockholm Brook, north of Rt. 23
RARITAN RIVER BASIN	NONE
WALLKILL RIVER BASIN	
CITY OF NEWARK HOLDINGS AND WAWAYANDA STATE PARK	LAKE LOOKOUT BROOK WATERSHED Lake Lookout, Lake Lookout Brook and tributaries from its headwaters in the Newark City holdings, downstream through the State-owned Wawayanda State Park to the confluence with the outlet stream from Lake Wawayanda
HAMBURG MOUNTAIN WILDLIFE MANAGEMENT	SAND HILLS BROOK WATERSHED The upstream portion of Sand Hills Brook, including the pond at its headwaters, located entirely within the boundaries of the Hamburg Mtn. Wildlife Management Area

	BLACK CREEK WATERSHED All those portions of three tributaries to Black Creek originating in the Hamburg Mtn. Wildlife Management Area, from their origin downstream to the Management Area boundaries
	FRANKLIN POND CREEK WATERSHED The first tributary to Franklin Pond Creek just south of Hamburg Mountain, flowing toward the Wallkill River and located entirely within the Hamburg Mtn. Wildlife Management Area
	HAMBURG CREEK WATERSHED The third tributary just southwest of Hamburg Mountain, which flows toward the Wallkill River and is located entirely within the Hamburg Mtn. Wildlife Management Area
HIGH POINT STATE PARK	CLOVE RIVER WATERSHED Those portions of the two northernmost tributaries to Clove River which are located entirely within the boundaries of High Point State Park, and are immediately east of Lake Marcia
	RUTGERS CREEK WATERSHED The Cedar Swamp headwaters of the tributary to Rutgers Creek, located entirely within the boundaries of High Point State Park, just south of the New Jersey-New York state line
SUSSEX BOROUGH WATER SUPPLY LAND	LAKE RUTHERFORD WATERSHED Lake Rutherford and tributaries, located northwest of Colesville
WAWAYANDA STATE PARK	LAUREL POND WATERSHED Laurel Pond, and its outlet stream and tributaries downstream to the outlet stream from Lake Wawayanda

(i) The following are the Outstanding National Resource Waters of the State:

Table 7

1. FW1 Waters; and
2. PL Waters.

Appendix K

Status of TMDLs From The 2004 Integrated Report's Two-Year TMDL Schedule

WMA	Site ID	Station Name	Pollutant	2004 TMDL schedule	Status	Date TMDL Approved
3	Greenwood Lake 03	Greenwood Lake	Total Phosphorus	No	Approved	September-04
3	1388720	Pompton River Trib at Ryerson Road	Fecal Coliform	No	Approved	September-05
3	01382410	Macopin River at Echo Lake	Temperature	No	Approved	June-05
3	PQ1	Pequannock River above Pacock	Temperature	No	Approved	June-05
3	PQ3	Pequannock River below Pacock	Temperature	No	Approved	June-05
3	PQ4	Pequannock River above Clinton	Temperature	No	Approved	June-05
3	PQ5	Pequannock River below Clinton	Temperature	No	Approved	June-05
3	PQ6	Pequannock River at Macopin Reservoir	Temperature	No	Approved	June-05
3	PQ7	Pequannock River above Macopin	Temperature	No	Approved	June-05
3	PQ8	Pequannock River at Macopin Intake Dam	Temperature	No	Approved	June-05
3	PQ16	Clinton Brook below Clinton Reservoir	Temperature	No	Approved	June-05
4	01391500	Saddle River At Lodi	Total Phosphorus	Yes	Deferred	
5	1378560	Coles Brook At Hackensack	Total Phosphorus	Yes	Approved	September-05
5	1378500	Hackensack River At New Milford	Total Phosphorus	Yes	Deferred	
5	1377499	Musquapsink Brook At River Vale	Total Phosphorus	Yes	Approved	September-05
5	1377500	Pascack Brook at Westwood	Total Phosphorus	Yes	Approved	September-05
6	1378660	Passaic R at Tempewick Rd near Mendham	Fecal Coliform	No	Approved	September-05
17	1413013	Barrett Run at Bridgeton	Total Phosphorus	No	Approved	September-05
17	1412800	Cohansey River at Seeley	Total Phosphorus	No	Approved	September-05
17	1411950	Major Run at Sharptown	Fecal Coliform	No	Approved	September-05
18	1467082	Pennsauken Creek Rt 130 in Pennsauken	Total Phosphorus	Yes	Deferred	
18	01467069	NB Pennsauken Ck Nr Morrestown	Total Phosphorus	Yes	Deferred	
18	01467081	SB Pennsauken Ck At Cherry Hill	Total Phosphorus	Yes	Deferred	
18	1467329	Big Timber Creek SB at Blackwood Terrace	Total Phosphorus	No	Approved	September-05
18	1477510	Oldmans Creek at Porches Mill	Total Phosphorus	No	Approved	September-05
18	1475090	Edwards Run at Jefferson	Fecal Coliform	No	Approved	September-05
18	1467120	Cooper River at Lindenwald	Total Phosphorus	No	Approved	September-04
18	1467140	Cooper River at Lawnside	Total Phosphorus	No	Approved	September-04
18	1467150	Cooper River at Haddonfield	Total Phosphorus	No	Approved	September-04
18	1467155	Cooper River at Kresson	Total Phosphorus	No	Approved	September-04
18		Cooper River Lake	Total Phosphorus	No	Approved	September-04
18		Evans Pond and Wallworth Lake	Total Phosphorus	No	Approved	September-04
19	01465970	Rancocas Creek N Br at Browns Mills	Total Phosphorus	Yes	Deferred	
19	01467005	NB Rancocas Creek At Iron Works Park At Mt Holly	Total Phosphorus	Yes	Deferred	
19	01465850	SB Rancocas Ck At Vincentown	Total Phosphorus	Yes	Deferred	

WMA	Site ID	Station Name	Pollutant	2004 TMDL schedule	Status	Date TMDL Approved
19	EWQ0169	Rancocas Creek S Br at Rt 70 Medford	Total Phosphorus	Yes	Deferred	
20	1464380	North Run at Cookstown	Fecal Coliform	No	Approved	September-05
20	1464527	Blacks Creek at Chesterfield-Georgetown Rd	Total Phosphorus	No	Approved	September-05
1	1457400	Musconetcong River at Riegelsville	Total Phosphorus		Deferred	
1	1455801	Musconetcong River at Lockwood	fecal coliform	No	Approved	September-05
1	1455801	Musconetcong River at Lockwood	Total Phosphorus	Yes	Approved	September-05
1	1445500	Pequest River at Pequest	Total Phosphorus	Yes	Deferred	
1	Swartwood	Swartswood Lake	Fish Community	No	Approved	September-05
1	Swartwood	Swartswood Lake	Total Phosphorus	Yes	Approved	September-05
1	1455200	Pohatcong Creek at New Village	Total Phosphorus	Yes	Deferred	
1	1445900	Honey Run near Hope	fecal coliform	No	Approved	September-05
1	DRBCNJ-0028	Lopatcong Creek at Main St in Phillipsburg	fecal coliform	No	Approved	September-05
1	1443250	Paulins Kill at Warbasse Junction Rd nr Lafayette	fecal coliform	No	Approved	September-05
1	DRBCNJ-0027	Pohatcong Creek at River Rd. Bridge	fecal coliform	No	Approved	September-05
2	01368950	Black Creek Nr Vernon	Total Phosphorus	Yes	Approved	September-05
2	Wallkill F	Black Creek at Rt 94/517 Vernon	Total Phosphorus	No	Approved	September-05
2	Wallkill G	Black Creek at Sandhill Rd in Vernon	Total Phosphorus	No	Approved	September-05
2	1368900	Wawayanda/Pochuck R alt Rt 515 Maple Grange	Total Phosphorus	No	Approved	September-05
2	Clove Lake 02	Clove Acres Lake	Total Phosphorus	No	Approved	September-04
2	01367700	Wallkill River near Franklin	Arsenic	No	Approved	September-04
2	01367715	Wallkill River At Scott Road At Franklin	Arsenic	No	Approved	September-04
2	1367729	Wallkill River at Rt 94 in Hamburg	Arsenic	No	Approved	September-04
2	01367770	Wallkill River near Sussex	Arsenic	No	Approved	September-04
2	1368000	Wallkill River near Unionville	Arsenic	No	Approved	September-04
2	1367910	Papakating Creek at Sussex	Total Phosphorus	No	Approved	September-04
2	1367910	Papakating Creek at Sussex	Arsenic	No	Approved	September-04
11	1464020	Assunpink Creek at Peace Street Trenton	Total Phosphorus	Yes	Deferred	
11		Assunpink Creek at Rt 539 Upper Freehold	Total Phosphorus	Yes	Deferred	
11	1464000	Assunpink Creek at Trenton	Total Phosphorus	Yes	Deferred	
11	DRBCNJ12	Wickecheoke Creek at Stockton	Total Phosphorus	Yes	Approved	September-05
11	DRBCNJ12	Wickecheoke Creek at Stockton	Fecal Coliform	No	Approved	September-05
11	1461282	Wickecheoke Creek near Sergentsville	Total Phosphorus	No	Approved	September-05
11	1461282	Wickecheoke Creek near Sergentsville	Fecal Coliform	No	Approved	September-05
11	DRBCNJ13	Lockatong Creek at Rosemont-Raven Rock Ridge Bridge	Total Phosphorus	No	Approved	September-05

WMA	Site ID	Station Name	Pollutant	2004 TMDL schedule	Status	Date TMDL Approved
11	DRBCNJ23	Harihokake Cr at Bridge Street Bridge in Milford	Fecal Coliform	No	Approved	September-05
11	1461220	Wickecheoke Creek at Croton	Fecal Coliform	No	Approved	September-05
11	1461220	Jacobs Creek at Rt 29	Fecal Coliform	No	Approved	September-05
7	1381200	Rockaway River at Pine Brook	Total Phosphorus	Yes	Deferred	
7	1393450	Elizabeth River at Ursino Lk at Elizabeth	Total Phosphorus	Yes	Deferred	
7	1395000	Rahway River at Rahway	Total Phosphorus	Yes	Deferred	
7	1393960	Rahway River W Br at Northfield Ave West Orange	Total Phosphorus	Yes	Deferred	
7	1396030	Rahway River S Br at Colonia	Fecal Coliform	No	Approved	September-05
8	1396900	Cakepoulin Creek at Lansdown Rd nr Landsdown	Total Phosphorus	Yes	Deferred	
8	1399780	Lamington River at Burnt Mills	Total Phosphorus	Yes	Deferred	
8	1399200	Lamington River near Ironia	Total Phosphorus	Yes	Deferred	
8	1399500	Lamington River near Pottersville	Total Phosphorus	Yes	Deferred	
8	1398000	Neshanic River at Reaville	Total Phosphorus	Yes	Deferred	
8	1396280	Raritan River S Br at Middle Valley	Total Phosphorus		Deferred	
8	1398102	Raritan River S Br at South Branck	Total Phosphorus	Yes	Deferred	
8	1397400	Raritan River S Br at Three Bridges	Total Phosphorus	Yes	Deferred	
8	1396800	Spruce Run at Clinton	Total Phosphorus	Yes	Deferred	
9	1400500	Raritan River at Manville	Total Phosphorus	Yes	Deferred	
9	9	Weemaconk Creek at Main Street	Total Phosphorus	Yes	Deferred	
9	68	Wemrock Brook at Rt 9 (Before Pipes) in Freehold	Total Phosphorus	Yes	Deferred	
9	69	Wemrock Brook at Rt 9 (after 1st Pipe) in Freehold	Total Phosphorus	Yes	Deferred	
9	1403900	Bound Brook at Middlesex	Total Phosphorus	Yes	Deferred	
9	1403385	Bound Brook at Rt 28 Middlesex	Total Phosphorus	Yes	Deferred	
9	61	Lake Topanemus at Pond rd in Freehold	Total Phosphorus	Yes	Deferred	
9	1405340	Manalapan Brook at Federal rd near Manalapan	Total Phosphorus	Yes	Deferred	
9	1405302	Matchaponix Brook at Spotswood	Total Phosphorus	Yes	Deferred	
9	22	McGolliard Brook at Main Street in Englishtown	Total Phosphorus	Yes	Deferred	
9	1404170	Raritan River at Landing Lane in Johnson Park Piscataway	Total Phosphorus	Yes	Deferred	
9	1403300	Raritan River at Queensbridge	Total Phosphorus	Yes	Deferred	

WMA	Site ID	Station Name	Pollutant	2004 TMDL schedule	Status	Date TMDL Approved
9	1403171	Middle Brook W Br Chimney Rock Rd Martinsville	Fecal Coliform	No	Approved	September-05
10	1401600	Beden Brook near Rocky Hill	Total Phosphorus	Yes	Deferred	
10	1402000	Millstone River at Blackwells Mills	Total Phosphorus	Yes	Deferred	
10	1400650	Millstone River at Grovers Mill	Total Phosphorus	Yes	Deferred	
10	1401440	Millstone River at Kingston	Total Phosphorus	Yes	Deferred	
10	1402540	Millstone River at Weston	Total Phosphorus	Yes	Deferred	
10	1400530	Millstone River near Manalapan	Total Phosphorus	Yes	Deferred	
10	1401700	Pike Run near Rocky Hill	Total Phosphorus	Yes	Deferred	
10		Six Mile Run at Canal Rd in Franklin	Total Phosphorus	Yes		
10	1401000	Stony Brook at Princeton	Total Phosphorus	Yes	Deferred	
10	1401560	Rock Brook at Zion	Fecal Coliform	No	Approved	
		Passaic River Lower, Estuary and Tribs	Fish-Dioxin	Yes	Deferred	
		Passaic River Lower, Estuary and Tribs	Fish-PCB	Yes	Deferred	
		Passaic River Lower, Estuary and Tribs	Mercury	Yes	Deferred	
		Passaic River Estuary	Arsenic	Yes	Deferred	
		Passaic River Estuary	Mercury	Yes	Deferred	
	HR1, HR2	Hackensack River - Tidal	Fish-Dioxin	Yes	Deferred	
	HR1, HR2	Hackensack River - Tidal	Fish-PCB	Yes	Deferred	
	HR1, HR2	Hackensack River - Tidal	Mercury	Yes	Deferred	
	HR1, HR2	Hudson River - NYC & Battery	Fish-Dioxin	Yes	Deferred	
	HR1, HR2	Hudson River - NYC & Battery	Fish-PCB	Yes	Deferred	
	HR1, HR2	Hudson River - NYC & Battery	Mercury	Yes	Deferred	
	HR 4	Hudson River at GW Bridge	Fish-Dioxin	Yes	Deferred	
	HR 4	Hudson River at GW Bridge	Fish-PCB	Yes	Deferred	
	HR 4	Hudson River at GW Bridge	Mercury	Yes	Deferred	
		Hudson River - NYC Area	Fish-Dioxin	Yes	Deferred	
		Hudson River - NYC Area	Fish-PCB	Yes	Deferred	
		Hudson River - NYC Area	Mercury	Yes	Deferred	
	UH-11	Kill Van Kull	Fish-Dioxin	Yes	Deferred	
	UH-11	Kill Van Kull	Fish-PCB	Yes	Deferred	
	UH-11	Kill Van Kull	Mercury	Yes	Deferred	
		New York Harbor, Upper	Fish-Dioxin	Yes	Deferred	
		New York Harbor, Upper	Fish-PCB	Yes	Deferred	
		New York Harbor, Upper	Mercury	Yes	Deferred	
		Newark Bay	Fish-Dioxin	Yes	Deferred	
		Newark Bay	Fish-PCB	Yes	Deferred	

WMA	Site ID	Station Name	Pollutant	2004 TMDL schedule	Status	Date TMDL Approved
		Newark Bay	Mercury	Yes	Deferred	
		Newark Bay Tribs	Fish-Dioxin	Yes	Deferred	
		Newark Bay Tribs	Fish-PCB	Yes	Deferred	
		Newark Bay Tribs	Mercury	Yes	Deferred	
		Raritan Bay and Tidal Tribs	Fish-Dioxin	Yes	Deferred	
		Raritan Bay and Tidal Tribs	Fish-PCB	Yes	Deferred	
		Raritan Bay and Tidal Tribs	Mercury	Yes	Deferred	
	HR7	Hudson River near Yonkers	Fish-Dioxin	Yes	Deferred	
	HR7	Hudson River near Yonkers	Fish-PCB	Yes	Deferred	
	HR7	Hudson River near Yonkers	Mercury	Yes	Deferred	
		Passaic R from Rt 280 to Confl of Pompton R	Fish-Mercury	Yes	Deferred	
		NY-NJ Harbor Wide	PCB, PAHs	Yes	Deferred	
		NY-NJ Harbor Wide	Pesticides	Yes	Deferred	
		NY-NJ Harbor Wide	Dioxin	Yes	Deferred	
		Sandy Hook Bay	Pathogens	Yes	Deferred	
	Arthur Kill 4	Arthur Kill	Pathogens	Yes	Deferred	
	02030105-002	Raritan River Estuary	Pathogens	Yes	Deferred	
	02030105-002	Raritan River Estuary	PCBs	Yes	Deferred	
	02030105-002	Raritan River Estuary	Arsenic	Yes	Deferred	
	02030105-002	Raritan River Estuary	Cadmium	Yes	Deferred	
	02030105-002	Raritan River Estuary	Zinc	Yes	Deferred	
	RB 1 - 7	Raritan Bay	Pathogens	Yes	Deferred	
12	Wreck 12	Wreck Pond	Fecal Coliform	Yes	Deferred	
12	01407750	Shark River near Neptune City	Total Phosphorus	Yes	Approved	September-05
12	01407750	Shark River near Neptune City	Fecal Coliform	No	Approved	September-05
12	30	Shark River at Shark River Station Rd Tinton Falls	Total Phosphorus	No	Approved	September-05
12	01407760	Jumping Brook near Neptune City	Fecal Coliform	No	Approved	September-04
12	11	Musquash Broook at Brighton Ave in Neptune City	Fecal Coliform	No	Approved	September-04
12	01407806	Hannabrand Brook at Old Mill Rd near Spring Lake	Fecal Coliform	No	Approved	September-05
12	55	Trout Brook at Richdale Rd in Colts Neck	Fecal Coliform	No	Approved	September-05
12	EWQ0489	Manasquan River at Squankum	Total Phosphorus	No	Approved	September-05
12	01407868	Long Brook at Wycoff Mills	Total Phosphorus	No	Approved	September-05
13	6	Metedeconk River N Br Jackson Mills Rd Freehold	Total Phosphorus	No	Approved	September-05

WMA	Site ID	Station Name	Pollutant	2004 TMDL schedule	Status	Date TMDL Approved
14	1409416	Hammonton Creek at Westcoatville	Total Phosphorus	Yes	Deferred	
		Mullica River at Green Bank	Total Phosphorus	Yes	Deferred	
15	1410820	Great Egg Harbor at Blue Anchor	Total Phosphorus	Yes	Deferred	
15	01407868	Long Brook At Wyckoff Mills	Fecal Coliform	No	Approved	September-04
15	01407997	Marsh Bog Brook At Squankum	Fecal Coliform	No	Approved	September-05
15	01407997	Marsh Bog Brook At Squankum	Total Phosporus	No	Approved	September-05
15	01408000	Manasquan River At Squankum	Fecal Coliform	No	Approved	September-05
15	01408000	Manasquan River At Squankum	Total Phosporus	No	Approved	September-05
15	01408009	Mingamahone Brook Near Earle	Fecal Coliform	No	Approved	September-04

Appendix L

Section 319(h) Grant Projects Funded SFY '03-'05

Water Quality Projects funded with Section 319(h) funds 2003-2005

FY	WMA	RECIPIENT	PROJECT DESCRIPTION	GRANT AMOUNT
2003	17	Salem County Soil Conservation District	Watershed Restoration Plan for the Upper Salem River-Phase 1	$63,220
2003	12	Borough of Avon by the Sea	Removing Siltation and Debris in Sylvan Lake	$230,000
2003	12	Monmouth County Planning Board	Ramanessin Brook NPS Pollution Source Assessment and Stormwater Impact Study	$177,500
2003	12	Township of Neptune	The Implementation of Stormwater BMPs at Lake Alberta	$195,400
2003	11	City of Trenton	Urban Stormwater Retrofit in the City of Trenton	$75,000
2003	9	Township of Franklin and NJ Water Supply Authority	Stormwater Management Plan for the Cedar Grove (Al's) Brook Watershed	$150,000
2003	7	Rutgers, the State University	Regional Stormwater Management Plan for Robinson's Branch	$291,124
2003	2	Township of Sparta	Lake Mohawk Stormwater Basin Alum Injection System	$98,200
2003	18	Camden and Gloucester County Soil Conservation Districts	Development of a Regional Stormwater Management Plan for the Raccoon Creek	$637,174
2003	12	Monmouth University School of Science, Technology & Eng.	Innovative Assessment of Sources of Fecal E Coli in Pathogen Impaired Waterbodies of the Monmouth Coastal Watersheds Region	$124,762
2003	6	Rutgers University	Bee Meadow Pond Shoreline Restoration Project	$126,940
2003	6	Rutgers University	Regional Stormwater Management Plan for Troy Brook	$213,400
2003	5	Borough of Demarest	Demarest Park Shoreline Restoration and Stormwater BMP Project	$179,500
2003	3	Pequannock River Coalition	Pequannock River Thermal Mitigation, Monitoring and Assessment	$23,105
2003	2	Wallkill River National Wildlife Refuge	Streambank Restoration along the Wallkill River at Route 565 within the Wallkill River National Wildlife Refuge	$167,400
2003	1	Swartswood Lakes and Watershed Association	Swartswood Lakes and Watershed Diagnostic Assessment	$65,000
2003	All	Rutgers Office of Cont. & Prod Ed	NPS Pollution Workshops	$50,000

Water Quality Projects funded with Section 319(h) funds 2003-2005

FY	WMA	RECIPIENT	PROJECT DESCRIPTION	GRANT AMOUNT
2004	3	West Milford Township	Lake Restoration Plan for Greenwood Lake Passaic County, New Jersey	$152,330
2004	12	The Deal Lake Commission c/o Borough of Allenhurst	Regional Stormwater Management Plan for the Deal Lake Watershed For the Purpose of the Managing Existing and future Stormwater Impact	$99,400
2004	12	Atlantic Highlands Environmental Commission	Many Mind Creek Regional Stormwater Management Plan	$87,833
2004	8,10	East Amwell Township	A Proposal to Prepare a Regional Stormwater Management Plan for the Sourland Mountain Watershed	$92,470
2004	10	Middlesex Planning Department	A Regional Stormwater Management Plan for the Devils, Shallow, Cedar, and Cranbury Brooks Watershed	$286,200
2004	3	West Milford Township	Posts Brook Regional Stormwater Management Plan	$144,872
2004	18	Rutgers, The State University of New Jersey	Regional Stormwater Management Plan for Pompeston Creek, Burlington County, New Jersey	$249,570
2004	8	Readington Township	A Regional Stormwater Management Plan For the Pleasant Run and Watershed	$52,560
2004	18	Camden County Soil Conservation District	Development of a Regional Stormwater Management Plan for the Upper Mantua Creek	$503,065
2005	17	Cumberland/Salem County Soil Conservation District	Watershed Restoration Plan for the Upper Salem River Watershed	$313,400
2005	1	Lake Hopatcong Commission	Implementation of Nonpoint Source Management Measures to Reduce the Phosphorus and Sediment Loads Entering Lake Hopatcong	$844,500
2005	8	Mount Olive Township	Budd Lake Watershed Restoration, Protection, and Regional Stormwater Management Plan	$393,994
2005	6	Rockaway River Watershed Cabinet	Hurd Park Goose Management and Shoreline Restoration Project	$201,000
2005	17	Rutgers, The State University	Watershed Restoration Plan for the Upper Cohansey River Watershed	$310,640

Water Quality Projects funded with Section 319(h) funds 2003-2005

FY	WMA	RECIPIENT	PROJECT DESCRIPTION	GRANT AMOUNT
2005	2	Vernon Township Department of Health and Human Services	Black Creek Watershed Restoration, Protection, and Regional Stormwater Management Plan	$385,674
2005	2	Wallkill River Watershed Management Group	Watershed Restoration Plan for the Papakating Creek and the Surrounding Watershed	$168,850
2005	2	Wallkill River Watershed Management Group	Watershed Restoration Plan for Clove Acres Lake and the Surrounding Lakeshed	$138,050
2005	11	West Amwell Environmental Commission	Watershed Protection Plan for the Alexauken Creek Watershed	$239,300
2005	4	William Patterson University	Preakness Brook Restoration, Protection, and Regional Stormwater Management Plan	$408,586
2005	11	New Jersey Water Supply Authority	Watershed Restoration and Protection Plan for the Lockatong and Wickecheoke Creek Watersheds, Hunterdon County, New Jersey	$237,290