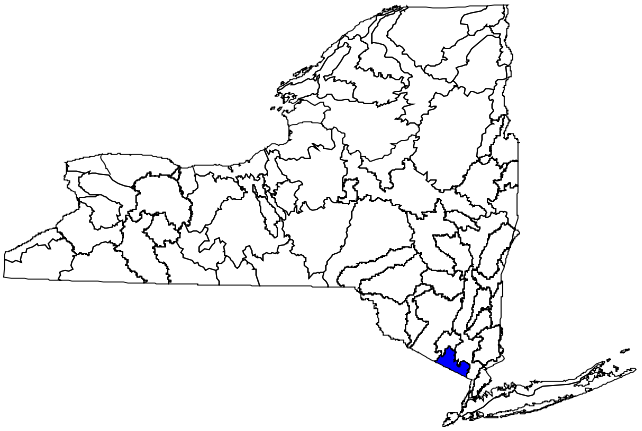
New York Department of Environmental Conservation. 2008. The Ramapo/Hackensack River Basin Waterbody Inventory and Priority Waterbodies List. July 2008. Available at http://www.dec.ny.gov/docs/water_pdf/pwlrmpo08.pdf

Bureau of Watershed Assessment and Management
Division of Water
NYS Department of Environmental Conservation

The Ramapo/Hackensack River Basin Waterbody Inventory and Priority Waterbodies List

Encompassing portions of
Orange and Rockland Counties



July 2008

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APPENDICES

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The Waterbody Inventory and Priority Waterbodies List

In order to fulfill certain requirements of the Federal Clean Water Act, the New York State Department of Environmental Conservation (NYSDEC) must provide regular, periodic assessments of the quality of the water resources in the state, and their ability to support specific uses. These assessments reflect monitoring and water quality information drawn from a number of programs and sources, both within and outside NYSDEC. This information has been compiled by NYSDEC Division of Water and merged into an inventory database of all waterbodies in New York State. The database is used to record current water quality information, characterize known and/or suspected water quality problems and issues, and track progress toward their resolution. This inventory of water quality information is the division's Waterbody Inventory/Priority Waterbodies List (WI/PWL).

In addition to providing a baseline assessment of water quality, the Waterbody Inventory/Priority Waterbodies List supports program management within the Division of Water in other ways. For example:

A Focus for Division Program Activities
Because of limited resources, various division programs (monitoring, compliance, restoration and protection activities, grant funding, etc) need to address those specific water quality issues – both statewide problems (e.g., stormwater, toxic/contaminated sediment) and site/waterbody-specific concerns – where program efforts will have the greatest impact.

A Consistent and Objective Inventory
WI/PWL assessments of water quality problems and issues are used in the development of program-specific priority ranking/scoring systems and efforts.

A Record of Water Quality History
Because the WI/PWL provides information for specific waterbodies, staff can easily respond to questions – from both within and outside the division (including the public) – concerning what is known about the water quality of specific rivers, lakes and watersheds.

A Measure of Progress
The WI/PWL also aids in the tracking of progress by division programs and other efforts toward improving the water resources of the state.

Comprehensive Assessment Strategy

The Waterbody Inventory/Priority Waterbodies List is a key component of the Division of Water's larger *Comprehensive Assessment Strategy*. This strategy is designed to integrate a variety of division activities into a more coordinated and comprehensive water quality program. The specific goals of the *Comprehensive Assessment Strategy* are to provide a:

- thorough (appropriate to available resources) monitoring of state waters;
- complete evaluation and consideration of all available monitoring data;
- comprehensive assessment of the quality of all waters in the state; and
- coordinated approach to improving and protecting these water resources.

Implementation of the *Comprehensive Assessment Strategy* relies on a rotating drainage basin approach. This approach focuses water quality monitoring and assessment activities on a portion of the state for a designated period of time, and then turns attention to other parts of the state. New York State's use of the rotating basin approach enables the updating of the WI/PWL in two or three of its seventeen drainage basins (about 20% of the state) each year. This schedule allows for a comprehensive reassessment of the water quality throughout the entire state over a five-year cycle (see Figure 1).

Statewide Waters Monitoring Program

Prior to the updating of the WI/PWL, the division conducts a two-year monitoring effort in the targeted drainage basins. These basin studies – conducted within the Division of Water's Statewide Waters Monitoring Program – involve a variety of sampling activities conducted by the division, other NYSDEC programs, and water quality partners outside NYSDEC.

The first year of these basin studies focuses on the review of existing water quality information and the incorporation of monitoring efforts being conducted by other basin/watershed partners. Division monitoring activities in the first year are generally limited to *biological screening*. Biological screening relies on the use of resident biological communities as indicators of water quality. The primary biological communities are fish, macroinvertebrates (aquatic insects) and algae. Of these, macroinvertebrates have proven the most appropriate for screening water quality at a large number of sites in a reasonable amount of time.

The second year of the basin studies involves more intensive chemical and biological monitoring. This includes water chemistry sampling at selected sites, sediment chemistry/toxicity sampling, multiple site surveys along specific river reaches, and other site- or problem-specific monitoring investigations.

Water Quality Assessments: Updating the WI/PWL

At the conclusion of the monitoring effort in a basin, the water quality data are evaluated to assess the ability of the waterbodies to support specific water uses (water supply, public bathing, aquatic life, secondary recreation, etc). As was the case with the monitoring effort, the evaluation and assessment of data and subsequent updating of WI/PWL information incorporates input from division/department staff and outside partners as well. WI/PWL assessment workshops are conducted for NYSDEC regional staff and watershed partners within each targeted basin, and participants are encouraged to submit assessment worksheets for waterbodies for which they have information. This information – along with Statewide Waters Monitoring Program assessment information – is compiled and distributed to participants for review and comment before the Final WI/PWL Assessment Report is issued.

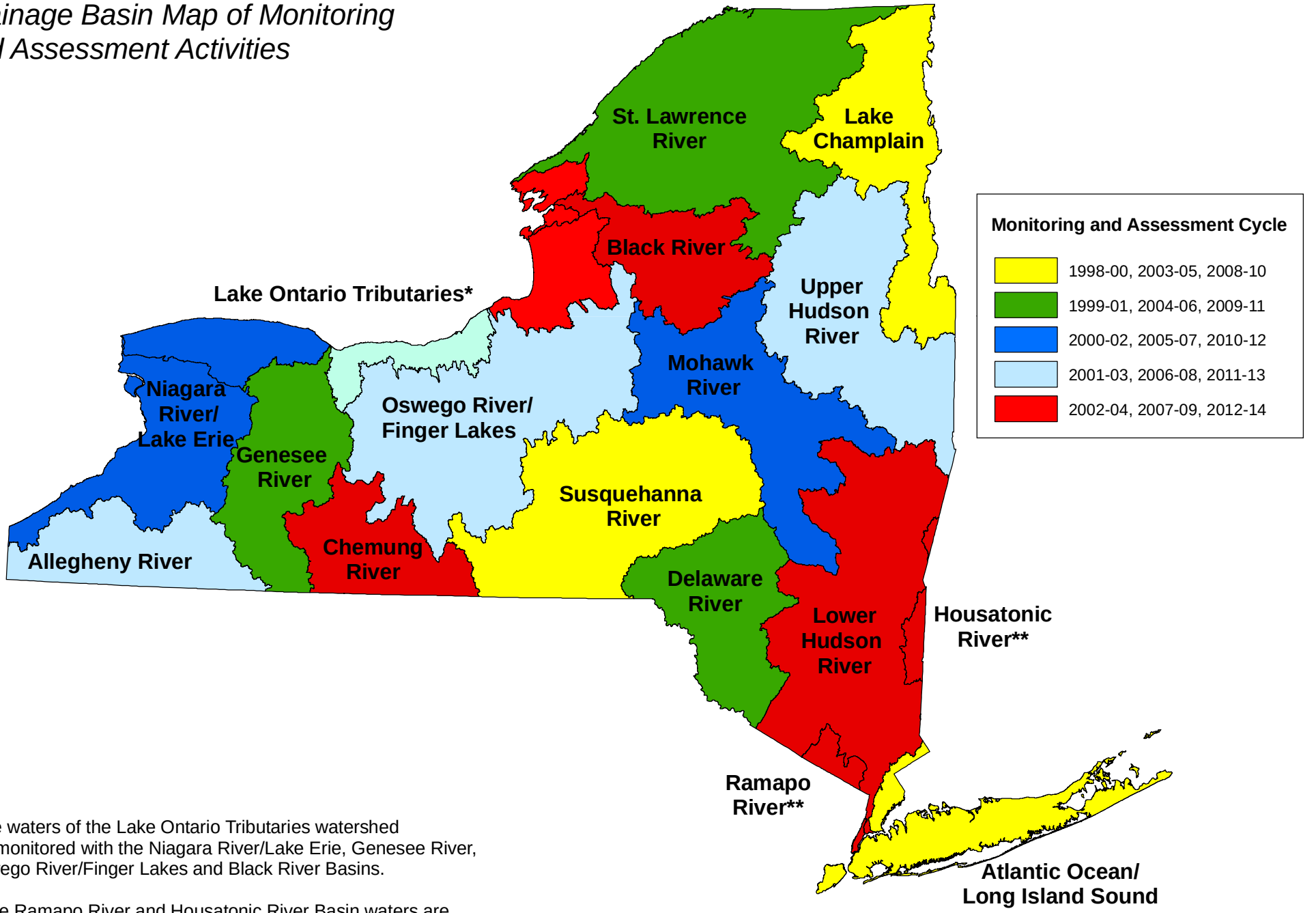
An Expanded *Waterbody Inventory*

Upon its inception in 1983 and through the mid-1990s, the Priority Waterbodies List was limited to recording information for only those waters with known or suspected water quality problems. The expansion of the database to include *all* waters in the state, including those with good and unknown water quality, is a fairly recent effort. However, while this expanded waterbodies database provides more complete water quality information, for program management purposes the division must also be able to cull a subset of "*priority*" waterbodies from the inventory of all waters on which the division should spend resources. In other words, there is a need for both a comprehensive *Waterbody Inventory* of water quality information for all waters in the state and a subset of this inventory that is limited to segments with well documented, potentially resolvable, higher priority problems and issues. This subset of the Waterbody Inventory is the *Priority Waterbodies List*.

Figure 1

Comprehensive Assessment Strategy

Drainage Basin Map of Monitoring and Assessment Activities



*The waters of the Lake Ontario Tributaries watershed are monitored with the Niagara River/Lake Erie, Genesee River, Oswego River/Finger Lakes and Black River Basins.

**The Ramapo River and Housatonic River Basin waters are monitored with the Lower Hudson River basin.

In order to achieve these multiple objectives, segments in the larger comprehensive Waterbody Inventory are segregated into one of six (6) *Water Quality Assessment Categories*. These are outlined below.

WI/PWL Waterbody Assessment Categories

Impaired Waters: These are waterbodies with well documented water quality problems that result in *precluded* or *impaired* uses (waters with *stressed* or *threatened* uses are not included in this category). This category includes *High* and *Medium Resolvability* segments where the Division considers the expenditure of additional resources to improve water quality to be worthwhile given public interest and/or the expectation that a measurable improvement can be achieved; and *Low Resolvability* segments with persistent/intractable problems on which the Division is not likely to spend any significant resources (e.g., segments affected by atmospheric deposition, etc.).

Waters with Minor Impacts: These are waterbodies where less severe water quality impacts are apparent but uses are still considered fully supported. These segments correspond to waters listed as having *stressed* uses.

Threatened Waterbodies: These are waterbodies for which uses are not restricted and no water quality problems exist but where specific land use or other changes in the surrounding watershed are known or strongly suspected of threatening water quality. Also included in this category are waterbodies where the support of a specific and/or distinctive use make the waterbody more susceptible to water quality threats.

Waterbodies with Impacts Needing Verification: These are segments that are thought to have water quality problems or impacts but for which there is not sufficient or definitive documentation. These segments require additional monitoring to determine whether uses are restricted.

Waterbodies Having No Known Impacts: These are segments where monitoring data and information indicate that there are no restrictions to overall uses, although minor impacts to component indicators (such as biological assessments) may be present.

UnAssessed Waterbodies: These are segments where there is insufficient water quality information available to assess the support of designated uses.

Taken together, *Impaired Waters*, *Waters with Minor Impacts* and *Threatened Waterbodies* comprise the Division of Water Priority Waterbodies List (PWL). These segments are the focus of remedial/corrective and resource protection activities by the division and its water quality partners.

***Waterbodies with Impacts Needing Verification, Waterbodies Having No Known Impacts* and *UnAssessed Waterbodies* are tracked on the comprehensive Waterbody Inventory, but are not considered to be included among waters on the Priority Waterbodies List.** For these waters, additional monitoring and assessment activities to document possible or potential future impacts, causes and sources are more appropriate than remedial/corrective action or resource protection efforts.

Maintaining a comprehensive Waterbody Inventory allows division staff to easily respond to questions – from both within and outside NYSDEC – concerning the water quality of specific rivers, lakes and watersheds. By segregating the database in the manner described above, the Division can also identify specific priorities where the coordination of limited resources can most effectively address water quality problems.

The Ramapo/Hackensack River Basin

Basin Description

The Ramapo and Hackensack River are part of the Passaic River Basin which is located primarily in northeastern New Jersey. However the northern headwaters of the basin lie within a small portion of southeastern New York State. The Hackensack River, Saddle River, Ramapo River and WanaqueRiver/Greenwood Lake are the primary tributary waters that make up the New York portion of the basin. The entire Passaic River Basin covers about 935 square miles before emptying into Newark Bay and then New York Harbor/Atlantic Ocean. Within New York state Passaic tributaries drain about 211 square miles in the southern Hudson River Highlands. The basin includes much of Rockland County and a small corner of Orange County.

Although the Ramapo/Hackensack River Basin is the smallest in New York State in area, it is also one of the most densely populated. The total population of the basin is 249,035 (2000), or about 1180 persons per square mile. Urban/suburban areas (New City, Spring Valley, Suffern, Nanuet) dominate the eastern (Hackensack) half of the watershed. In the western half of the basin the population is more scattered among larger tracts of forest and woodland.

There are about 320 miles of rivers and streams the basin and 80-90 lakes and ponds. Many of the ponds are too small to be individually assessed, but 35 significant* lake, pond and reservoir waterbody segments (covering 5162 acres) are included in the Ramapo/Hackensack River Basin Waterbody Inventory. The two largest tributaries – the Ramapo and Hackensack Rivers – account for 155 miles (or 47%) and 74 miles (23%) of river/stream miles in the basin, respectively. The largest lakes in the basin are Greenwood Lake (1,075 acres in New York State) and DeForest Lake (720 acres).

Water Quality Issues and Problems

Water quality impacts in the New York State portion of the Ramapo/Hackensack River Drainage Basin are primarily the result of extensive urbanization and suburban/commercial development in the eastern, Rockland County half of the drainage area. Urban/stormwater runoff is the dominant source of water quality impacts. Municipal discharges are a second source of nutrient and other pollutant loadings; not surprising given the heavy population of the basin. In areas not served by municipal wastewater facilities, failing and/or inadequate on-site septic systems are a concern. Industrial and past hazardous waste site disposal are also noted as the source of some water quality impacts in the basin.

In addition to addressing existing sources and restoring impacted waters, there is also widespread interest and support for protecting the highly valued water resources of the Ramapo/Hackensack River Basin. Of particular concern is the protection of drinking water resources. The larger tributaries in the basin – Hackensack, Ramapo and Mahwah Rivers – are Class A waters designated for use as water supplies. In addition to the water supply use of these waters in New York State, most all of the waters in the basin feed into significant water supply systems in New Jersey.

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* *Significant Lakes* are lakes of 6.4 acres (0.01 square miles) or larger and are included the New York State Lakes Gazeteer.

Urban/Industrial/CSO Runoff

Various recreational uses, aquatic life use support, and aesthetics in stretches of the urban/suburban waterways throughout the basin are significantly restricted by pollutants from various industrial, municipal, and commercial sources. The most significantly affected of these waterbodies are located in the highly developed New York City suburbs of Rockland County. Urban storm runoff transports a variety of pollutants and debris into the waterways. Contaminated sediments, inactive hazardous waste sites and other impacts attributed to past/historic discharges also limit waterbody uses.

Commercial Development/Suburban Sprawl

Impacts on water supply resources, aquatic life and other uses due to increasing commercial and suburban residential development is of particular concern in the Ramapo/Hackensack River Basin. Such development and the accompanying expansion of impervious surfaces results in more nonpoint runoff and increasing loadings of silt, nutrients and chlorides. Additional residential growth and accompanying wastewater impacts – be they individual on-site systems, cluster systems or smaller municipal facilities – also contribute to increased pollutant loadings.

Lake Eutrophication and Recreational Use Impacts

Eutrophication is a natural process that occurs as a lake ages and is not necessarily indicative of man-made pollution. However when human activities (e.g., shoreline erosion, urban/agricultrual runoff, wastewater discharges or septic seepage) accelerate this process, it is known as cultural eutrophication. Such accelerated changes can alter plant and animal life within the lake, shoreline and surrounding watershed, and decrease the water quality and recreational value of a lake. The population growth and preponderance of small lakes in the Ramapo/Hackensack River Basin result in the frequent occurrence of such impacts on recreational uses of basin lakes.

Groundwater Resources

Although groundwater resources are not specifically tracked through the WI/PWL, they are considered *Priority Waters* nonetheless. Groundwater provides drinking water for about one-third of the population of New York State and is the source of base flow for most rivers and streams in the state. Ground water resources are particularly at risk in the Ramapo/Hackensack River Basin where large populations – in both New York and New Jersey – rely on wells for drinking water supply. In the basin, the more significant threats to groundwater resources include urban/stormwater runoff, inactive hazardous waste sites, chemical spills, deep-well injection and failing/inadequate on-site wastewater treatment systems.

Ramapo/Hackensack River Basin Water Quality Assessment

The series of charts presented on the following pages provides an overall assessment of water quality conditions in the entire Ramapo/Hackensack River Basin. For each waterbody type (rivers/streams and lakes/reservoirs) the first chart shows the percentage of the miles/acres of waters in the basin that fall into the various water quality assessment categories. The **red** portion of the first pie indicates the percentage of waters characterized as *Not Supporting Uses*. The **purple** portion represents segments with *Minor Impacts/Threats*. Taken together, these categories of waters comprise the *Priority Waterbodies* for that waterbody type. The percentage of miles/acres for the other water quality assessment categories – waterbodies having *No Known Impacts*, *UnAssessed Waters*, and waterbodies with *Impacts Needing Verification* – are shown in **blue**, **light blue**, and **green** respectively.

The second pie chart shows the severity of the most significant use impact or restriction for waters in the two categories that comprise the Priority Waterbodies. The levels of severity are:

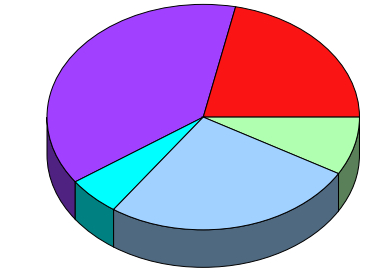
Precluded:	waters do not support appropriate uses;
Impaired:	waters frequently do not support appropriate uses;
Stressed:	waters support appropriate uses, but other water quality impacts are apparent; and
Threatened:	waters support uses and have no impacts, but activities threaten future use support.

More detailed descriptions of these levels of severity are outlined in *Appendix A - Assessment Methodology*.

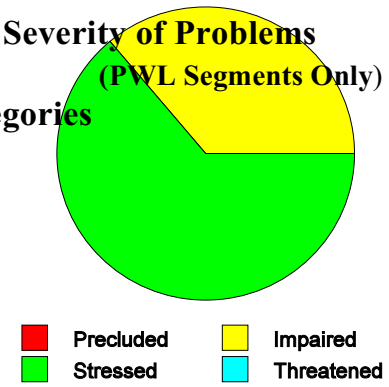
The bar charts indicate the pollutant sources that are most frequently cited as major contributors to the water quality impacts for Priority Waterbodies in the Ramapo/Hackensack River Basin. The charts reflect the percentage of miles/acres of the total waterbody area on the Priority Waterbodies List where a particular source is listed as a major contributor to the water quality impact. For each source, the color shading of the bar indicates the severity level (*Precluded*, *Impaired*, *Stressed*, *Threatened*) of the most significant water use impact to the waterbody.

Rivers/Streams

Water Quality Assessment Categories
(for ALL Waters in the Basin)



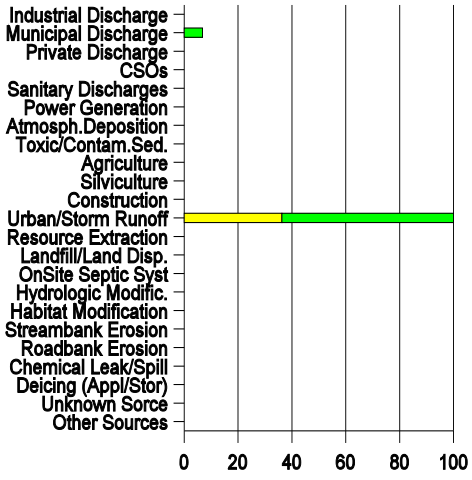
Severity of Problems
(PWL Segments Only)



Ramapo/Hackensack Basin

Total River Miles:	320
Total PWL Miles:	191

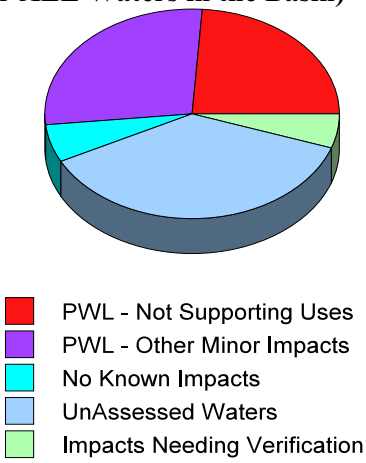
Major Sources of Impact
(PWL Segments Only)



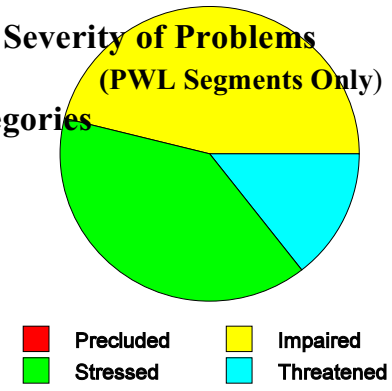
Percent of PWL Waters Affected

Lakes/Reservoirs

Water Quality Assessment Categories
(for ALL Waters in the Basin)

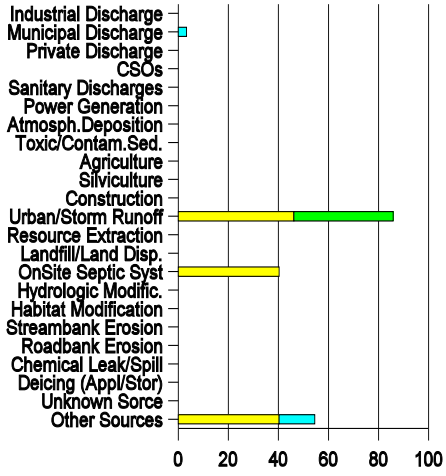


Severity of Problems
(PWL Segments Only)



Ramapo/Hackensack	Basin
Total Lake Acres:	5,162
Total PWL Acres:	2,667

Major Sources of Impact
(PWL Segments Only)



Percent of PWL Waters Affected

Basin Water Quality Summary

About sixty percent (60%, or 191 miles) of the 320 river miles in the Ramapo/Hackensack River Basin are included on the Priority Waterbodies List as either not supporting uses or having minor impacts or threats to water quality. Nearly two-thirds (63%) of these Priority Waterbody Listed river miles are considered *Stressed* or *Threatened* waters that fully support appropriate uses, but that have minor impacts/threats to uses. However nearly twenty-two percent (22%) of all river miles in this highly urbanized basin are *Impaired* and do not fully support appropriate uses.

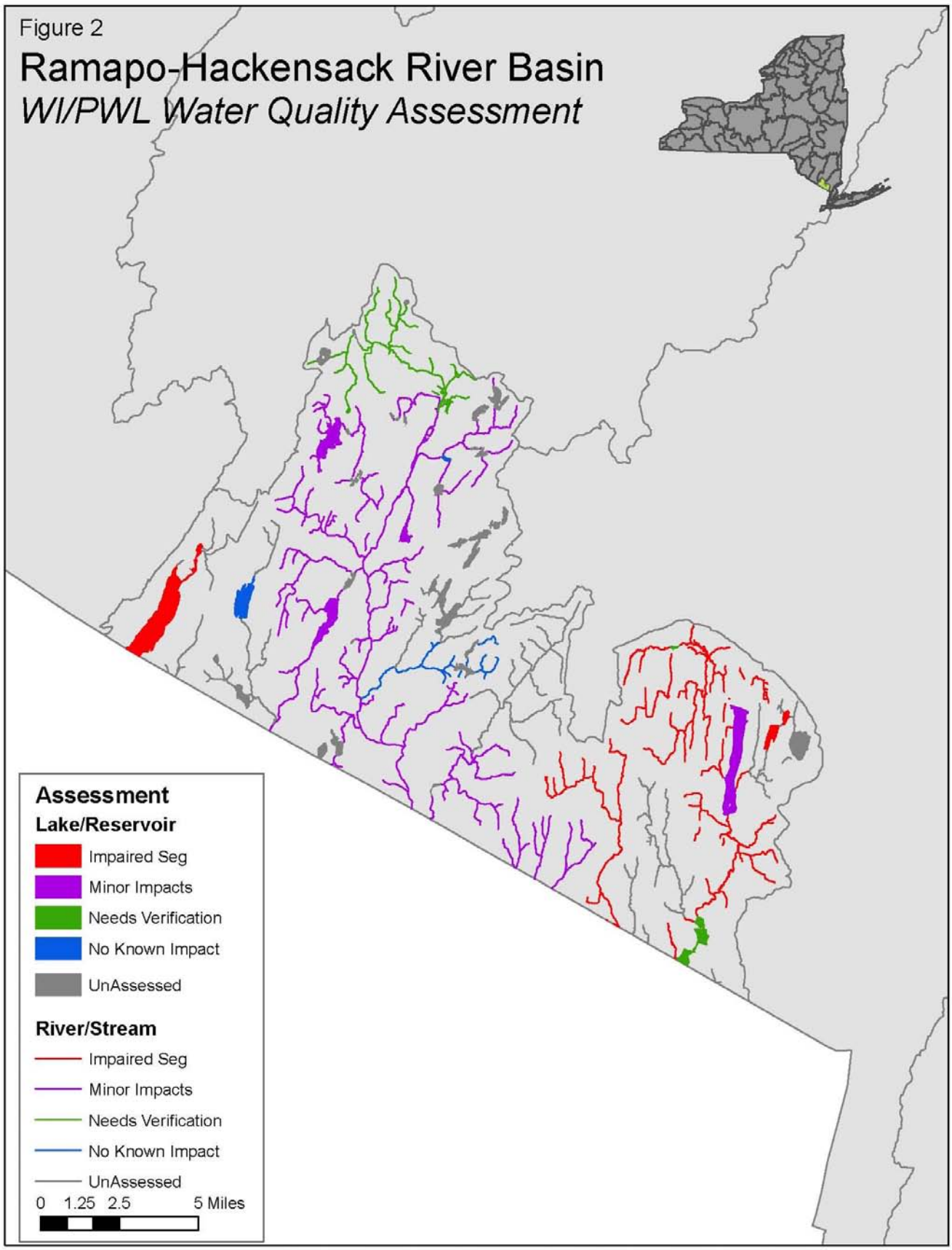
Six of the 35 separate lake segments in the basin are included on the PWL as having either impaired uses or minor impacts/threats to uses. However these six impaired/impacted lakes include the three largest lake waterbodies and represent over half (52%) of the total lake acres in the basin. Two of these lakes (totaling 1,233 acres, or 24% of basin lake acres) experience water quality impacts that result in uses not being fully supported.

The most frequently cited source affecting water quality in this highly developed basin is urban/stormwater runoff. Failing and/or inadequate on-site septic systems are also noted as a significant contributing source; however this source is cited for just one waterbody (Greenwood Lake, the largest lake in the basin). "Other Sources" are also frequently cited as contributing to impacts/threats. These other sources include in-lake nutrient recycling (Greenwood Lake) and unspecified other sources that represent possible future threats to drinking water supplies.

Figure 2

Ramapo-Hackensack River Basin

WI/PWL Water Quality Assessment



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The Ramapo/Hackensack River Basin Waterbody Inventory/Priority Waterbodies List

This compilation of water quality information includes individual waterbody *Data Sheets* describing the water quality conditions in the Ramapo/Hackensack River Basin of New York State. Causes (pollutants) and sources of water quality problems for those waterbodies with known or suspected impacts are also outlined.

The data sheets are presented in hydrologic order, beginning with the most downstream waters and continuing upstream through the basin. Waterbody data sheets are grouped by US Geological Survey Hydrologic Unit Code (HUC) basin and presented as separate sections of this report (see Figure 3). A Waterbody Inventory of the specific waterbody segments in each watershed is included at the beginning of each watershed section.

Data sheets are included for each waterbody that has been assessed; i.e., waterbodies listed as *Impaired Waters* (Not Supporting Uses), Waters with *Minor Impacts*, *Threatened Waters,* waters with water quality impacts ***Need Verification***, or waterbodies with *No Known Impact*. *UnAssessed* waterbodies are included in the Waterbody Inventory for each watershed, but because they have not been assessed data sheets for these waters have not been included.

The information outlined on the data sheets includes *Waterbody Location Information*, *Water Quality Problem/Issue Information*, *Resolution/Management Information* and *Further Details*. See *Appendix B – Waterbody Inventory Data Sheet Background Information* for more details about the data sheets.

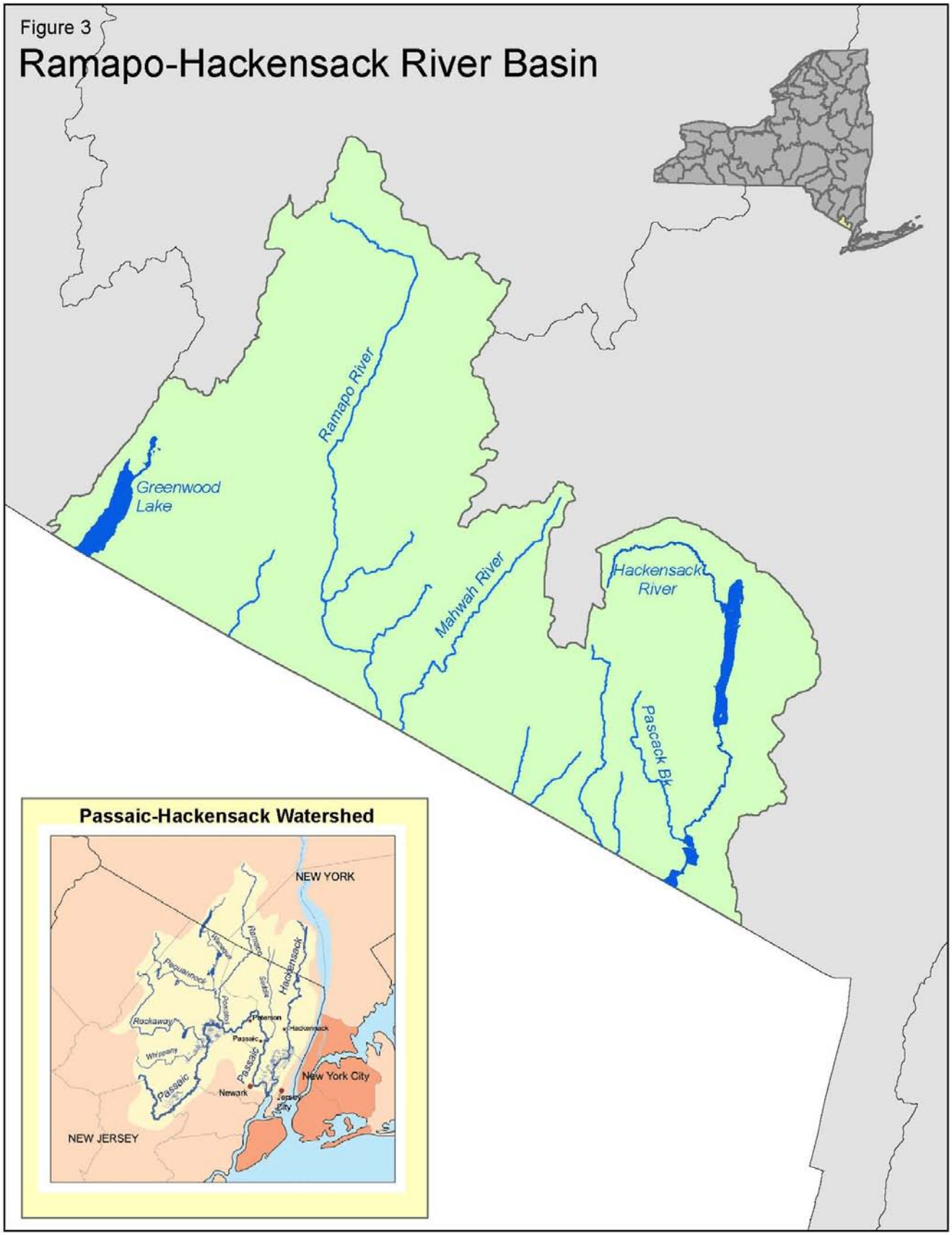
Note that the assessments in this report reflect the best available water quality information at the time of publication. Water quality information may be added or modified subsequent to the preparation of this edition of the Waterbody Inventory and Priority Waterbodies List. When information is updated, the data sheet for the corresponding waterbody segment is issued with the date of revision. More recently revised data sheets supercede the corresponding waterbody information in this listing.

Following the individual waterbody data sheets in the watershed sections, a *Summary Listing of Priority Waters* provides a brief overview of all *Priority Waterbodies*, i.e., waterbodies listed as *Impaired Waters* (Not Supporting Uses), Waters with *Minor Impacts* and *Threatened Waters*.

Indices of waterbody data sheets by both county and alphabetically by segment name are included as Appendix C and D, respectively.

Figure 3

Ramapo-Hackensack River Basin



Waterbody Inventory
for
Ramapo/Hackensack River Watershed

Water Index Number	Waterbody Segment	Category
Hackensack River Watershed		
NJ- 1 (portion 1)	Hackensack River/Lake Tappan (1501-0008)	**Need Verific**
NJ- 1 (portion 2)	Hackensack River, Lower, and minor tribs (1501-0026)	**Impaired Seg**
NJ- 1 (portion 3)/P977a	DeForest Lake (1501-0007)	**MinorImpacts**
NJ- 1- 4	Nauraushaun Brook, Lower, and tribs (1501-0010)	**Impaired Seg**
NJ- 1- 4	Nauraushaun Brook, Upper, and tribs (1501-0028)	UnAssessed
NJ- 1/P977a-	Minor Tribs to DeForest Lake (1501-0029)	**Impaired Seg**
NJ- 1/P977a-12	West Br.Hackensack, Upper, and tribs (1501-0009)	**Impaired Seg**
NJ- 1/P977a-12-P982b	Lake Lucille (1501-0017)	**Need Verific**
NJ- 1/P977a-13	East Br.Hackensack, Upper, and tribs (1501-0030)	UnAssessed
NJ- 1/P977a-13-P984,P984a	Congers Lake, Swartout Lake (1501-0019)	**Impaired Seg**
NJ- 1/P977a-13-P985	Rockland Lake (1501-0021)	UnAssessed
Tribs to New Jersey, Hackensack River to Mahwah River		
NJ- 1a thru e	Minor Tribs to New Jersey (1501-0032)	UnAssessed
NJ- 2 thru 4	Minor Tribs to New Jersey (1501-0014)	UnAssessed
NJ- 5	Pascack Brook and tribs, within NYS (1501-0015)	**Impaired Seg**
NJ- 6 thru 8	Saddle River and tribs (1501-0033)	**MinorImpacts**
NJ- 8-P995b	Lake Antrim/Island Lake (1501-0034)	UnAssessed
Mahwah River Watershed		
NJ-11	Mahwah River, Lower, and tribs (1501-0011)	**MinorImpacts**
NJ-11	Mahwah River, Upper, and tribs (1501-0035)	UnAssessed
Ramapo River Watershed		
NJ-12	Ramapo River, Lower, and minor tribs (1501-0012)	**MinorImpacts**
NJ-12	Ramapo River, Middle, and tribs (1501-0036)	**MinorImpacts**
NJ-12	Ramapo River, Upper, and tribs (1501-0037)	**Need Verific**
NJ-12- 5- 1a- 1-P1001,P1001a	Cranberry Pond, Potake Lake (1501-0038)	UnAssessed
NJ-12- 6	Stony Brook and tribs (1501-0039)	**NoKnownImpct**
NJ-12- 6- 3- P1002b,P1002d	Lake Wanoksink, Pine Meadow Lake (1501-0040)	UnAssessed
NJ-12- 6-P1002e	Lake Sebago (1501-0041)	UnAssessed
NJ-12- 6-P1002e-	Tribs to Lake Sebago (1501-0042)	UnAssessed
NJ-12- 6-P1002e..P1002e	Lake Askoti (1501-0043)	UnAssessed
NJ-12- 6-P1002e..P1002f	Lake Skemonto (1501-0044)	UnAssessed
NJ-12- 6-P1002e..P1003	Lake Kanawauke (1501-0045)	UnAssessed
NJ-12- 6-P1002e..P1003b	Little Long Pond (1501-0046)	UnAssessed
NJ-12- 6-P1002e..P1003d	Lake Skannatati (1501-0047)	UnAssessed
NJ-12-10-P1004	Mountain Lake (1501-0048)	UnAssessed
NJ-12-15-P1005	We Wah Lake (1501-0049)	UnAssessed

...Ramapo/Hackensack River Watershed

Water Index Number	Waterbody Segment	Category
Ramapo River Watershed (con't)		
NJ-12-15-P1007	Tuxedo Lake (1501-0050)	**Threat(Poss)**
NJ-12-17-P1008	Little Dam Lake (1501-0051)	UnAssessed
NJ-12-17-P1008- 3-P1009b	Lake Winape (1501-0052)	UnAssessed
NJ-12-17-P1008..P1010,P1010b	Mombasha Lake, Kloibers Pond (1501-0002)	**MinorImpacts**
NJ-12-18-P1011	Lake Stahahe (1501-0053)	**Threat(Poss)**
NJ-12-20-P1014	Echo Lake (1501-0054)	**NoKnownImpct**
NJ-12-20-P1014..P1014a,P1014b	Lake Cohasset, Upper Cohasset Lake (1501-0055)	UnAssessed
NJ-12-20-P1014..P1015	Cranberry Lake (1501-0056)	UnAssessed
NJ-12-20-P1014..P1016	Forest Lake (1501-0057)	UnAssessed
NJ-12-20-P1014..P1016a	Island Pond (1501-0058)	UnAssessed
NJ-12-23-P1016h,P1016k	Shadowmere Lake, Blythea Lake (1501-0059)	UnAssessed
NJ-12-23-P1016i	Lake Sapphire (1501-0060)	UnAssessed
NJ-12-25- 4-P1017d	Coronet Lake (1501-0061)	UnAssessed
NJ-12-P1019	Monroe Pond (1501-0062)	UnAssessed
NJ-12-P1021	Round Lake (1501-0063)	UnAssessed
Tribs to New Jersey Ramapo River to/including Greenwood Lake		
NJ-13	Ringwood River and tribs (1501-0064)	UnAssessed
NJ-13- 2	Trib of Sterling Forest Lake (1501-0065)	UnAssessed
NJ-13- 2-P1021c	Sterling Forest Lake (1501-0066)	UnAssessed
NJ-13- 2-P1022	Little Cedar Lake (1501-0067)	UnAssessed
NJ-13-P1025	Sterling Lake (1501-0068)	**NoKnownImpct**
NJ-14 thru 15	Jenning Creek and tribs (1501-0069)	UnAssessed
NJ-P1026	Greenwood Lake (1501-0001)	**Impaired Seg**
NJ-P1026-	Tribs to Greenwood Lake (1501-0070)	UnAssessed

Hackensack River/Lake Tappan (1501-0008) Need Verific

Waterbody Location Information

Revised: 07/14/2008

Water Index No: NJ- 1 (portion 1)
Hydro Unit Code: 02030103/160 **Str Class:** A
Waterbody Type: Lake
Waterbody Size: 251.8 Acres
Seg Description: entire lake, within NYS

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Rockland Co. (44)
Quad Map: NYACK (Q-25-4)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Suspected

Type of Pollutant(s)
Known: - - -
Suspected: - - -
Possible: OTHER POLLUTANTS, Nutrients

Source(s) of Pollutant(s)
Known: - - -
Suspected: URBAN/STORM RUNOFF
Possible: Streambank Erosion

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 1 (Waterbody Nominated, Problem Not Verified)
Lead Agency/Office: DOW/Reg3 **Resolution Potential:** Medium
TMDL/303d Status: n/a

Further Details

Overview
Water supply uses of Lake Tappan are thought to be threatened due to the considerable amount of urban, residential and commercial development in the watershed, resulting nonpoint source runoff and possible other discharges.

NYSDOH Source Waters Assessment
The NYSDOH Source Water Assessment Program (SWAP) compiles, organizes, and evaluates information regarding possible and actual threats to the quality of public water supply (PWS) sources. The information contained in SWAP assessment reports assists in the oversight and protection of public water systems. Lake Tappan serves as a source water reservoir for the United Water of New Jersey water supply. Although a NYSDOH assessment was not completed for Lake Tappan, an assessment was conducted for upstream water supply reservoirs. These assessments found an elevated susceptibility to contamination for this source of drinking water. The amount of residential land in the assessment area results in elevated potential for pathogens, turbidity, nutrients (and DBP precursors) and pesticides. (NYSDOH, Source Water Assessment Program, 2005)

Segment Description
This segment includes the portion of Lake Tappan in New York State.

Hackensack River, Lower, and minor tribs (1501-0026) Impaired Seg

Waterbody Location Information

Revised: 07/01/2008

Water Index No: NJ- 1 (portion 2) **Drain Basin:** Hackensack-Ramapo Rivers
Hydro Unit Code: 02030103/160 **Str Class:** A
Waterbody Type: River **Reg/County:** 3/Rockland Co. (44)
Waterbody Size: 17.2 Miles **Quad Map:** NYACK (Q-25-4)
Seg Description: stream and select tribs, from Lake Tappan to West Nyack

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Suspected
AQUATIC LIFE	Impaired	Known
RECREATION	Impaired	Known

Type of Pollutant(s)

Known: - - -
Suspected: UNKNOWN TOXICITY, D.O./Oxygen Demand, Nutrients, Silt/Sediment
Possible: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: URBAN/STORM RUNOFF, Industrial, Municipal
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 2 (Problem Verified, Cause Unknown)
Lead Agency/Office: DOW/Reg3 **Resolution Potential:** Medium
TMDL/303d Status: 3b*

Further Details

Overview
Aquatic life and recreational uses in this portion of the Hackensack River are impaired by unspecified pollutants attributed to municipal/industrial inputs and urban/stormwater runoff. Water supply uses of the river are also considered to be threatened due to the considerable amount of residential development, resulting nonpoint source runoff and possible other discharges.

Water Quality Sampling
A biological (macroinvertebrate) assessment of the Hackensack River in West Nyack (at Route 15) was conducted in 2002. Sampling results indicated moderately impacted water quality conditions. Biological communities were dominated by facultative caddisflies and midges. Impact Source Determination indicated municipal/industrial influences were the likely source of the impacts. (DEC/DOW, BWAM/SBU, June 2005)

NYSDOH Source Waters Assessment
The NYSDOH Source Water Assessment Program (SWAP) compiles, organizes, and evaluates information regarding

possible and actual threats to the quality of public water supply (PWS) sources. The information contained in SWAP assessment reports assists in the oversight and protection of public water systems. It is important to note that SWAP reports estimate the potential for untreated drinking water sources to be impacted by contamination. These reports do not address the safety or quality of treated finished potable tap water. Drinking water supplies in this waterbody include the Nyack Village Water Supply. This assessment found an elevated susceptibility to contamination for this source of drinking water. The amount of residential land in the assessment area results in elevated potential for pathogens, turbidity, nutrients (and DBP precursors) and pesticides. (NYSDOH, Source Water Assessment Program, 2005)

Section 303d Listing

The Hackensack River not is currently included on the NYS 2008 Section 303(d) List of Impaired Waters. However this updated assessment suggests it is appropriate to include this waterbody on the 2010 List. Due to the unknown nature of the specific pollutants causing the impairment, it is recommended that the listing be added to Part 3b, as a waterbody for which TMDL development is deferred pending the verification of the pollutant/cause. (DEC/DOW, BWAM/WQAS, June 2008)

Segment Description

This segment includes the portion of the stream and selected/smaller tribs from Lake Tappan at the New Jersey border to DeForest Lake in West Nyack. The waters of this portion of the stream are Class A. Tribs to this reach/segment are Class A,AA(T) and C,C(T). Nauraushaun Brook (-4) is listed separately.

DeForest Lake (1501-0007) MinorImpacts

Waterbody Location Information

Revised: 07/01/2008

Water Index No: NJ- 1 (portion 3)/P977a
Drain Basin: Hackensack-Ramapo Rivers
Hydro Unit Code: 02030103/160 **Str Class:** A
Waterbody Type: Lake
Reg/County: 3/Rockland Co. (44)
Waterbody Size: 720.1 Acres
Quad Map: HAVERSTRAW (Q-25-1)
Seg Description: entire lake

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Stressed	Suspected

Type of Pollutant(s)

Known: - - -
Suspected: NUTRIENTS, SILT/SEDIMENT
Possible: Pathogens, Salts

Source(s) of Pollutant(s)

Known: - - -
Suspected: URBAN/STORM RUNOFF, Streambank Erosion
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: ext/WQCC
Resolution Potential: Medium
TMDL/303d Status: n/a

Further Details

Overview
Water supply use of Lake Deforest are thought to experience threats from various pollutants attributed to urban/stormwater runoff and other nonpoint sources.

NYSDOH Source Waters Assessment
The NYSDOH Source Water Assessment Program (SWAP) compiles, organizes, and evaluates information regarding possible and actual threats to the quality of public water supply (PWS) sources. The information contained in SWAP assessment reports assists in the oversight and protection of public water systems. It is important to note that SWAP reports estimate the potential for untreated drinking water sources to be impacted by contamination. These reports do not address the safety or quality of treated finished potable tap water. Drinking water supplies in this waterbody includes the United Water NY water supply. This assessment found an elevated susceptibility to contamination for this source of drinking water. The amount of residential land in the assessment area results in elevated potential for pathogens, turbidity, nutrients (and DBP precursors) and pesticides. (NYSDOH, Source Water Assessment Program, 2005)

Nauraushaun Brook, Lower, and tribs (1501-0010) Impaired Seg

Waterbody Location Information

Revised: 07/01/2008

Water Index No: NJ- 1- 4 **Drain Basin:** Hackensack-Ramapo Rivers
Hydro Unit Code: 02030103/160 **Str Class:** A
Waterbody Type: River **Reg/County:** 3/Rockland Co. (44)
Waterbody Size: 0.4 Miles **Quad Map:** NYACK (Q-25-4)
Seg Description: stream and tribs, from mouth to Nauraushaun

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Suspected
AQUATIC LIFE	Impaired	Known
RECREATION	Impaired	Known

Type of Pollutant(s)
Known: - - -
Suspected: UNKNOWN TOXICITY, D.O./Oxygen Demand, Nutrients, Silt/Sediment
Possible: - - -

Source(s) of Pollutant(s)
Known: - - -
Suspected: URBAN/STORM RUNOFF
Possible: Industrial, Municipal

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 2 (Problem Verified, Cause Unknown)
Lead Agency/Office: DOW/Reg3 **Resolution Potential:** Medium
TMDL/303d Status: 3b*

Further Details

Overview
Aquatic life and recreational uses in this portion of Nauraushaun Brook are impaired by unspecified pollutants attributed to urban/stormwater runoff and other nonpoint sources. Water supply uses of the river are also considered to be threatened due to the considerable amount of residential development, resulting nonpoint source runoff and possible other discharges.

Water Quality Sampling
A biological (macroinvertebrate) assessment of Nauraushaun Brook in Nauraushaun (at Sickletown Road) was conducted in 2002. Sampling results indicated moderately impacted water quality conditions. Biological communities were heavily dominated by facultative caddisflies and midges. Impact Source Determination indicated nonpoint source nutrient enrichment as the likely source of the impacts. (DEC/DOW, BWAM/SBU, June 2005)

NYSDOH Source Waters Assessment
The NYSDOH Source Water Assessment Program (SWAP) compiles, organizes, and evaluates information regarding

possible and actual threats to the quality of public water supply (PWS) sources. The information contained in SWAP assessment reports assists in the oversight and protection of public water systems. It is important to note that SWAP reports estimate the potential for untreated drinking water sources to be impacted by contamination. These reports do not address the safety or quality of treated finished potable tap water. Drinking water supplies fed by this waterbody include the Nyack Village Water Supply. This assessment found an elevated susceptibility to contamination for this source of drinking water. The amount of residential land in the assessment area results in elevated potential for pathogens, turbidity, nutrients (and DBP precursors) and pesticides. (NYSDOH, Source Water Assessment Program, 2005)

Section 303d Listing

Nauraushaun Brook not is currently included on the NYS 2008 Section 303(d) List of Impaired Waters. However this updated assessment suggests it is appropriate to include this waterbody on the 2010 List. Due to the unknown nature of the specific pollutants causing the impairment, it is recommended that the listing be added to Part 3b, as a waterbody for which TMDL development is deferred pending the verification of the pollutant/cause. (DEC/DOW, BWAM/WQAS, June 2008)

Segment Description

This segment includes the portion of the stream and all tribs from the mouth to Sickletown/Blauvelt Road in Nauraushaun. The waters of this portion of the stream are Class A. Upper Nauraushaun Brook is listed separately.

Minor Tribs to DeForest Lake (1501-0029) Impaired Seg

Waterbody Location Information

Revised: 07/01/2008

Water Index No: NJ- 1/P977a-
Hydro Unit Code: 02030103/160 **Str Class:** A
Waterbody Type: River
Waterbody Size: 9.7 Miles
Seg Description: total length of selected tribs to lake

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Rockland Co. (44)
Quad Map: HAVERSTRAW (Q-25-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Suspected
AQUATIC LIFE	Impaired	Known
RECREATION	Impaired	Known

Type of Pollutant(s)

Known: - - -
Suspected: UNKNOWN TOXICITY, D.O./Oxygen Demand, Nutrients, Silt/Sediment
Possible: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: URBAN/STORM RUNOFF, Industrial, Municipal
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 2 (Problem Verified, Cause Unknown)
Lead Agency/Office: DOW/Reg3 **Resolution Potential:** Medium
TMDL/303d Status: 3b*

Further Details

Overview
Aquatic life and recreational uses in the West Branch Hackensack River are impaired by unspecified pollutants attributed to municipal/industrial inputs and urban/stormwater runoff. Water supply uses of the river are also considered to be threatened due to the considerable amount of residential development, resulting nonpoint source runoff and possible other discharges.

Water Quality Sampling
A biological (macroinvertebrate) assessment of the West Branch Hackensack River in Centenary (at Old Route 304) was conducted in 2002. Sampling results indicated moderately impacted water quality conditions. Biological communities were dominated by facultative caddisflies and midges. Impact Source Determination indicated municipal/industrial influences were the likely source of the impacts. (DEC/DOW, BWAM/SBU, June 2005)

NYSDOH Source Waters Assessment
The NYSDOH Source Water Assessment Program (SWAP) compiles, organizes, and evaluates information regarding

possible and actual threats to the quality of public water supply (PWS) sources. The information contained in SWAP assessment reports assists in the oversight and protection of public water systems. It is important to note that SWAP reports estimate the potential for untreated drinking water sources to be impacted by contamination. These reports do not address the safety or quality of treated finished potable tap water. Drinking water supplies fed by this waterbody include the United Water NY Water Supply. This assessment found an elevated susceptibility to contamination for this source of drinking water. The amount of residential land in the assessment area results in elevated potential for pathogens, turbidity, nutrients (and DBP precursors) and pesticides. (NYSDOH, Source Water Assessment Program, 2005)

Section 303d Listing

The waters of this minor tribs segment are not currently included on the NYS 2008 Section 303(d) List of Impaired Waters. However this updated assessment suggests it is appropriate to include this waterbody on the 2010 List. Due to the unknown nature of the specific pollutants causing the impairment, it is recommended that the listing be added to Part 3b, as a waterbody for which TMDL development is deferred pending the verification of the pollutant/cause. (DEC/DOW, BWAM/WQAS, June 2008)

Segment Description

This segment includes the total length of selected/smaller tribs to DeForest Lake. Tribs within this segment, including Lower West Branch Hackensack River (-12) and Lower East Branch Hackensack River (-13), are primarily Class A,A(T). Upper West and East Branches Hackensack River are listed separately.

West Br.Hackensack, Upper, and tribs (1501-0009) Impaired Seg

Waterbody Location Information

Revised: 07/01/2008

Water Index No: NJ- 1/P977a-12
Drain Basin: Hackensack-Ramapo Rivers
Hydro Unit Code: 02030103/160 **Str Class:** C(T)
Waterbody Type: River
Reg/County: 3/Rockland Co. (44)
Waterbody Size: 26.0 Miles
Quad Map: HAVERSTRAW (Q-25-1)
Seg Description: stream and tribs, above Centenary

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
AQUATIC LIFE	Impaired	Known
RECREATION	Impaired	Known

Type of Pollutant(s)

Known: - - -
Suspected: UNKNOWN TOXICITY, D.O./Oxygen Demand, Nutrients, Silt/Sediment
Possible: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: URBAN/STORM RUNOFF, Industrial, Municipal
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 2 (Problem Verified, Cause Unknown)
Lead Agency/Office: DOW/Reg3 **Resolution Potential:** Medium
TMDL/303d Status: 3b*

Further Details

Overview
Aquatic life and recreational uses in the West Branch Hackensack River are impaired by unspecified pollutants attributed to municipal/industrial inputs and urban/stormwater runoff.

Water Quality Sampling
A biological (macroinvertebrate) assessment of the West Branch Hackensack River just below this segment in Centenary (at Old Route 304) was conducted in 2002. Sampling results indicated moderately impacted water quality conditions. Biological communities were dominated by facultative caddisflies and midges. Impact Source Determination indicated municipal/industrial influences were the likely source of the impacts. (DEC/DOW, BWAM/SBU, June 2005)

NYSDOH Source Waters Assessment
The NYSDOH Source Water Assessment Program (SWAP) compiles, organizes, and evaluates information regarding possible and actual threats to the quality of public water supply (PWS) sources. The information contained in SWAP assessment reports assists in the oversight and protection of public water systems. It is important to note that SWAP reports estimate the potential for untreated drinking water sources to be impacted by contamination. These reports do

not address the safety or quality of treated finished potable tap water. Though not a Class A water, this waterbody feeds the United Water NY Water Supply. This assessment found an elevated susceptibility to contamination for this source of drinking water. The amount of residential land in the assessment area results in elevated potential for pathogens, turbidity, nutrients (and DBP precursors) and pesticides. (NYSDOH, Source Water Assessment Program, 2005)

Section 303d Listing

The West Branch Hackensack River not is currently included on the NYS 2008 Section 303(d) List of Impaired Waters. However this updated assessment suggests it is appropriate to include this waterbody on the 2010 List. Due to the unknown nature of the specific pollutants causing the impairment, it is recommended that the listing be added to Part 3b, as a waterbody for which TMDL development is deferred pending the verification of the pollutant/cause. (DEC/DOW, BWAM/WQAS, June 2008)

Segment Description

This segment includes the portion of the stream and all tribs above/including unnamed trib (-3) in Centenary. The waters of this portion of the stream are Class C,C(T). Tribs to this reach/segment are Class C,C(T). Lower West Branch Hackensack is listed with Tribs to DeForest Lake.

Lake Lucille (1501-0017) Need Verific

Waterbody Location Information

Revised: 07/02/2008

Water Index No: NJ- 1/P977a-12-P982b
Hydro Unit Code: 02030103/160 **Str Class:** B
Waterbody Type: Lake
Waterbody Size: 13.3 Acres
Seg Description: entire lake

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Rockland Co. (44)
Quad Map: HAVERSTRAW (Q-25-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Stressed	Possible
Recreation	Stressed	Possible

Type of Pollutant(s)

Known: - - -
Suspected: ALGAL/WEED GROWTH (aquatic vegetation), Nutrients, Silt/Sediment
Possible: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: ON-SITE/SEPTIC SYST, URBAN/STORM RUNOFF
Possible: Other Source (Waterfowl)

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 1 (Waterbody Nominated, Problem Not Verified)
Lead Agency/Office: DOW/BWAM **Resolution Potential:** Medium
TMDL/303d Status: n/a

Further Details

Overview
Public bathing and recreational uses in Lake Lucille may experience impacts from algal blooms and excessive aquatic weed growth. Excessive nutrient loadings failing and/or inadequate on-site septic systems serving lake shore camps and year-round residences and runoff from urban/suburban development in the watershed are likely contributors to impacts in the lake. Waterfowl (geese) are another possible source of pollutants.

Water Quality Sampling
Sampling of the lake through the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) was conducted until 1990. Results appear to support that eutrophic conditions occurred in the lake. However additional more recent sampling is recommended in order to verify current conditions. (DEC/DOW, BWAM/CSLAP, May 2008)

Lake Uses
This lake waterbody is designated class B, suitable for use as a public bathing beach, general recreation and aquatic life support, but not as a water supply. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condition and bathing use of the lake or to evaluate

contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program. Monitoring to assess potable water supply and public bathing use is generally the responsibility of state and/or local health departments.

Congers Lake, Swartout Lake (1501-0019) Impaired Seg

Waterbody Location Information

Revised: 07/14/2008

Water Index No: NJ- 1/P977a-13-P984,P984a
Hydro Unit Code: 02030103/160 **Str Class:** B
Waterbody Type: Lake
Waterbody Size: 158.6 Acres
Seg Description: total area of both lakes

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Rockland Co. (44)
Quad Map: HAVERSTRAW (Q-25-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
PUBLIC BATHING	Impaired	Known
Aquatic Life	Stressed	Suspected
RECREATION	Impaired	Known
Aesthetics	Stressed	Known

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH (vegetation,eutrophication), NUTRIENTS (phosphorus)
Suspected: Silt/Sediment
Possible: D.O./Oxygen Demand

Source(s) of Pollutant(s)

Known: URBAN/STORM RUNOFF
Suspected: Habitat Modification
Possible: Agriculture

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: DOW/Reg3 **Resolution Potential:** Medium
TMDL/303d Status: n/a->1*

Further Details

Overview

Public bathing and other recreational uses in Congers and Swartout Lakes are impaired by aquatic weed and algal growth, the result of high nutrient (phosphorus) concentrations ad other eutrophic conditions in the lake. Lake clarity is quite limited and silt/sediment loadings are also a concern. Urban runoff and other nonpoint sources are the most significant contributors to the water quality impacts.

Water Quality Sampling

Both Congers and Swartout Lakes were sampled as part of the NYSDEC Lake Classification and Inventory (LCI) Program in 2003. Results of this sampling indicate that the lakes are best characterized as eutrophic, or highly productive. Average phosphorus levels (120-140 ug/l) in the lakes easily exceed the state guidance values indicating impacted/stressed recreational uses (20 ug/l). Corresponding transparency measurements were less than one meter, failing to meet what is the recommended minimum for swimming beaches. Urban/stormwater runoff in this highly developed urban/suburban watershed are thought to be a significant source of nutrient and silt/sediment loadings. Some of the

remaining agriculture operations in the watershed may also contribute to the water quality impacts on the lake. Outflow from the lakes feed Lake DeForest, a significant reservoir water supply for the county. (DEC/DOW, BWAM/WQMS, October 2005)

Lake Uses

This lake waterbody is designated class B, suitable for use as a public bathing beach, general recreation and aquatic life support, but not as a water supply. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condition and bathing use of the lake or to evaluate contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program. Monitoring to assess potable water supply and public bathing use is generally the responsibility of state and/or local health departments.

Section 303d Listing

Conger and Swartout Lakes are not currently included on the NYS 2006 Section 303(d) List of Impaired Waters. However this updated assessment suggests it is appropriate to include this waterbody on the 2008 List. It is recommended that the listing for pathogens also be added to Part 1 of the List as Waterbody Requiring TMDL Development (or other strategy to attain water quality standards).

Segment Description

Congers Lake its the larger of the two lakes; it is about 3 times the size of Swartout Lake.

Pascack Brook and tribs, within NYS (1501-0015) Impaired Seg

Waterbody Location Information

Revised: 07/01/2008

Water Index No: NJ- 5
Hydro Unit Code: 02030103/160 **Str Class:** C*
Waterbody Type: River
Waterbody Size: 16.2 Miles
Seg Description: entire stream and tribs

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Rockland Co. (44)
Quad Map: PARK RIDGE, NJ (Q-24-3)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
AQUATIC LIFE	Impaired	Known
RECREATION	Impaired	Known

Type of Pollutant(s)

Known: - - -
Suspected: SILT/SEDIMENT, UNKNOWN TOXICITY, D.O./Oxygen Demand, Nutrients
Possible: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: URBAN/STORM RUNOFF, Industrial, Municipal
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 2 (Problem Verified, Cause Unknown)
Lead Agency/Office: DOW/Reg3 **Resolution Potential:** Medium
TMDL/303d Status: 3b*

Further Details

Overview
Aquatic life and recreational uses in Pascack Brook are impaired by unspecified pollutants attributed to municipal/industrial inputs and urban/stormwater runoff.

Water Quality Sampling
A biological (macroinvertebrate) assessment of Pascack Brook in Pearl River (at West Washington Street) was conducted in 2002. Sampling results indicated moderately impacted water quality conditions. Biological communities were dominated by facultative filter-feeding caddisflies and species richness was low. Impact Source Determination indicated municipal/industrial influences were the likely source of the impacts. (DEC/DOW, BWAM/SBU, June 2005)

Section 303d Listing
Pascack Brook not is currently included on the NYS 2008 Section 303(d) List of Impaired Waters. However this updated assessment suggests it is appropriate to include this waterbody on the 2010 List. Due to the unknown nature of the specific pollutants causing the impairment, it is recommended that the listing be added to Part 3b, as a waterbody for which TMDL development is deferred pending the verification of the pollutant/cause. (DEC/DOW, BWAM/WQAS,

June 2008)

Segment Description
This segment includes the entire stream and all tribs. The waters of the stream are primarily Class C,C(T), with the lower 100 feet designated Class A. Tribs to this reach/segment are also/primarily Class C.

Saddle River and tribs (1501-0033) MinorImpacts

Waterbody Location Information

Revised: 06/23/2008

Water Index No: NJ- 6 thru 8
Hydro Unit Code: 02030103/130 **Str Class:** C*
Waterbody Type: River
Waterbody Size: 13.0 Miles
Seg Description: entire stream and tribs, within NYS

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Rockland Co. (44)
Quad Map: PARK RIDGE, NJ (Q-24-3)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Aquatic Life	Stressed	Known

Type of Pollutant(s)

Known: - - -
Suspected: NUTRIENTS
Possible: D.O./Oxygen Demand

Source(s) of Pollutant(s)

Known: - - -
Suspected: MUNICIPAL, URBAN/STORM RUNOFF
Possible: Other Sanitary Disch

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 3 (Cause Identified, Source Unknown)
Lead Agency/Office: ext/WQCC **Resolution Potential:** Medium
TMDL/303d Status: n/a

Further Details

Overview
Aquatic life in Saddle River is known to experience minor impacts. These impacts are thought to be the result of nutrient loadings and other pollutants from municipal/industrial inputs and nonpoint urban runoff.

Water Quality Sampling
A biological (macroinvertebrate) assessment of Saddle River just across the state line in Upper Saddle River, New Jersey (at Lake Road) was conducted in 2002. Sampling results indicated slightly impacted water quality conditions. The fauna was heavily dominated by facultative filter-feeding midges and caddisflies. Municipal/industrial sources were identified as the most likely influence on the sample. (DEC/DOW, BWAM/SBU, June 2005)

Segment Description
This segment includes the length of Pine Brook (-6), Saddle River (-7) and West Branch Saddle River (-8), within NYS, and all tribs. The waters of the stream are primarily Class C, with the lower 100 feet designated Class A(TS). Tribs to this reach/segment are also primarily Class C.

Mahwah River, Lower, and tribs (1501-0011) MinorImpacts

Waterbody Location Information

Revised: 07/01/2008

Water Index No: NJ-11
Drain Basin: Hackensack-Ramapo Rivers
Hydro Unit Code: 02030103/090 **Str Class:** A
Waterbody Type: River
Reg/County: 3/Rockland Co. (44)
Waterbody Size: 13.4 Miles
Quad Map: RAMSEY, NJ (Q-24-4)
Seg Description: stream and tribs, from state line to Monfebello

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Suspected
Aquatic Life	Stressed	Known
Recreation	Stressed	Known

Type of Pollutant(s)

Known: - - -
Suspected: NUTRIENTS, Silt/Sediment
Possible: D.O./Oxygen Demand, Pathogens, Salts

Source(s) of Pollutant(s)

Known: - - -
Suspected: URBAN/STORM RUNOFF
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: ext/WQCC
Resolution Potential: Medium
TMDL/303d Status: n/a

Further Details

Overview
Aquatic life and recreational uses in the Mahwah River are known to experience impacts from unspecified pollutants attributed to municipal/industrial inputs and urban/stormwater runoff. Water supply uses of the river are also considered to be threatened due to the considerable amount of residential development, resulting nonpoint source runoff and possible other discharges.

Water Quality Sampling
A biological (macroinvertebrate) assessment of the Mahwah River in Antrim (at Montebello Road) was conducted in 2002. Sampling results indicated Slightly impacted water quality conditions. Biological communities were dominated by facultative midges, although hellgrammites were also numerous. Impact Source Determination indicated nonpoint nutrient enrichment was the likely source of the impacts. High measurements of specific conductance were also noted, likely reflecting urban/stormwater runoff. (DEC/DOW, BWAM/SBU, June 2005)

Segment Description
This segment includes the portion of the stream and all tribs from the state line to/including unnamed tribs (-5) in Montebello. The waters of this portion of the stream are Class A. Tribs to this reach/segment are Class B and C,C(T). Upper Mahwah River is listed separately.

Ramapo River, Lower, and minor tribs (1501-0012) MinorImpacts

Waterbody Location Information

Revised: 07/02/2008

Water Index No: NJ-12 **Drain Basin:** Hackensack-Ramapo Rivers
Hydro Unit Code: 02030103/080 **Str Class:** A(T)
Waterbody Type: River **Reg/County:** 3/Rockland Co. (44)
Waterbody Size: 34.7 Miles **Quad Map:** SLOATSBURG (Q-24-1)
Seg Description: stream and select tribs, from state line to Tuxedo Park

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Known
Aquatic Life	Stressed	Known
Recreation	Stressed	Known

Type of Pollutant(s)

Known: - - -
Suspected: NUTRIENTS, PATHOGENS, SILT/SEDIMENT
Possible: Metals, Priority Organics

Source(s) of Pollutant(s)

Known: - - -
Suspected: URBAN/STORM RUNOFF
Possible: Landfill/Land Disp., Municipal (Orange County SD #1)

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 3 (Cause Identified, Source Unknown)
Lead Agency/Office: DOW/Reg3 **Resolution Potential:** Medium
TMDL/303d Status: n/a

Further Details

Overview
Water supply use, aquatic life and recreational use in this portion of the Ramapo River are known to experience threats and minor impacts due to nutrients, pathogens, siltation and other pollutants from upstream wastewater discharges, urban/stormwater runoff and other nonpoint sources. Toxic contaminants from past industrial operations are also a concern.

Water Quality Sampling
NYSDEC Rotating Intensive Basin Studies (RIBS) Intensive Network monitoring of Ramapo River in Hillburn, Rockland County, (at Fourth Street) was conducted in 2003. Intensive Network sampling typically includes macroinvertebrate community analysis, water column chemistry, sediment and invertebrate tissues analysis and toxicity evaluation. During this sampling the biological (macroinvertebrate) sampling results indicated slightly impacted water quality conditions. Water column sampling revealed lead, pH (low) and coliform to be parameters of concern. The coliform results were occasionally quite high, while lead results ranged slightly above the criteria for a parameter of concern. Sampling was limited to only 5-6 events, so follow-up monitoring is recommended. Bottom sediment sampling results revealed several

metals and PAHs to be exceeding the Threshold Effects levels. Toxicity testing of the water column showed no significant mortality or reproductive impacts. Based on the consensus of these established assessment methods, overall water quality at this site is considered to support aquatic life, but is thought to be stressed. Water supply uses are also considered to be supported but stressed. (DEC/DOW, BWAM/RIBS, January 2005)

A biological (macroinvertebrate) assessment of the Ramapo River at this site was also conducted in 2002 during the Biological Screening effort in the basin. Sampling results also indicated slightly impacted water quality conditions, however nutrient biotic evaluation determined these effects on the fauna to be minor. Aquatic life support is considered to be fully supported in the stream. (DEC/DOW, BWAM/SBU, January 2005)

Drinking Water Supply
Water supply uses of the Ramapo River experience impacts and threats due to various activities in the watershed. The Ramapo feds a significant water supply reservoir just downstream other the state border in New Jersey. There are also some concerns about potential impacts on groundwater quality in the watershed. A number of public water supply wells serving the Village of Suffern are located near the river. The Ramapo/Mahwah Aquifer has been designated a "primary aquifer" by NYSDEC. (DEC/DOW, BWRM, January 2008)

Previous Sampling
Since the mid 1980s, biological (macroinvertebrate) assessments of the Ramapo have shown steady improvement in water quality in the river attributed to upgrades at the Orange County Sewer District #1 WWTP in Harriman. However the most recent sampling (in 1998) still revealed a minor and short-lived impact on the river below the WWTP to Arden. A measurable impact was also noted above the treatment plant; possible sources include urban runoff in Monroe, golf course runoff, and other upstream point discharges. The lower reach of the river (from Tuxedo Park to Hillburn shows slightly impacted conditions and appears primarily influenced by siltation and nutrient enrichment. (Ramapo River Biological Assessment Report, Bode et al, DEC/DOW BWAR, September 1998)

Past industrial discharges of metals and toxics that are now found in stream sediments are also a concern. One such discharge is paint sludge found in the Torne Brook, from the Ford Motor Company operations at a former plant in Mahwah that operated from 1955 to 1980. In addition The 96-acre Ramapo Town Landfill located along the Ramapo River and Torne Brook is designated a federal (ID no: NYD000511493) and state Superfund site (Site ID: 34-4-004). Substances reportedly disposed of at the landfill include industrial sludge and other wastes from a pharmaceutical company, sewage sludge, municipal refuse, asbestos, construction and demolition debris, yard debris, paint sludge and liquid wastes from a paper company. A leachate collection and treatment system was constructed in the 1980s and regular monitoring to assess possible impacts to surface or groundwater are in place. (DEC/DER, Environmental Site remediation Database, June 2008)

Segment Description
This segment includes the portion of the stream and select/smaller tribs from the New Jersey state line to/including Parker Cabin Hollow Creek (-14). The waters of this portion of the stream are Class A,A(T). Tribs to this reach/segment, including Torne Brook (-3), Black Ash Creek (-12) and Parker Cabin Hollow Creek (-14), are Class A,B and C,C(T). Stony Brook (-6) and Middle/Upper Ramapo River are listed separately.

Ramapo River, Middle, and tribs (1501-0036) MinorImpacts

Waterbody Location Information

Revised: 07/02/2008

Water Index No: NJ-12
Drain Basin: Hackensack-Ramapo Rivers
Hydro Unit Code: 02030103/080 **Str Class:** A(T)
Waterbody Type: River
Reg/County: 3/Orange Co. (36)
Waterbody Size: 60.6 Miles
Quad Map: MONROE (P-24-4)
Seg Description: stream and tribs, from Tuxedo Park to Newburg Jct

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Known
Aquatic Life	Stressed	Known
Recreation	Stressed	Known

Type of Pollutant(s)

Known: NUTRIENTS (phosphorus)
Suspected: Silt/Sediment
Possible: - - -

Source(s) of Pollutant(s)

Known: URBAN/STORM RUNOFF
Suspected: Municipal
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: ext/WQCC **Resolution Potential:** Medium
TMDL/303d Status: n/a

Further Details

Overview
Aquatic life and recreational use in this portion of the Ramapo River are known to experience minor impacts due to nutrients, siltation and other pollutants from upstream wastewater discharges, urban/stormwater runoff and other nonpoint sources. Water supply uses are also considered to be threatened by these same pollutants.

Water Quality Sampling
A biological (macroinvertebrate) survey of the Ramapo River at multiple site from Hillburn to Harriman was conducted in 1998. Sampling results indicated water quality to be slightly impacted at the one site in this reach (in Arden) and at a site below the reach (in Tuxedo Park). The nutrient biotic evaluation determined these effects on the fauna to be minor, and aquatic life support is considered to be fully supported in the stream. (DEC/DOW, BWAM/SBU, January 2005)

Since the mid 1980s, biological (macroinvertebrate) assessments of the Ramapo have shown steady improvement in water quality in the river attributed to upgrades at the Orange County Sewer District #1 WWTP in Harriman. However the most recent sampling (in 1998) still revealed a minor and short-lived impact on the river below the WWTP to Arden.

A measurable impact was also noted above the treatment plant; possible sources include urban runoff in Monroe, golf course runoff, and other upstream point discharges. The lower reach of the river (from Tuxedo Park to Hillburn shows slightly impacted conditions and appears primarily influenced by siltation and nutrient enrichment. (Ramapo River Biological Assessment Report, Bode et al, DEC/DOW BWAR, September 1998)

Drinking Water Supply
Water supply uses of the Ramapo River experience impacts and threats due to various activities in the watershed. The Ramapo feds a significant water supply reservoir just downstream other the state border in New Jersey. There are also some concerns about potential impacts on groundwater quality in the watershed. A number of public water supply wells serving the Village of Suffern are located near the river. The Ramapo/Mahwah Aquifer has been designated a "primary aquifer" by NYSDEC. (DEC/DOW, BWRM, January 2008)

Segment Description
This segment includes the portion of the stream and all tribs from Parker Cabin Hollow Brook (-14) to Sapphire Lake Outlet (-23). The waters of this portion of the stream are Class A(T). Tribs to this reach/segment, including Warwick Brook (-15), Indian Kill Brook (-16), Stahahe Brook (-18), are Class A,B and C,C(T). Lower/Upper Ramapo River are listed separately.

Ramapo River, Upper, and tribs (1501-0037) Need Verific

Waterbody Location Information

Revised: 07/02/2008

Water Index No: NJ-12
Hydro Unit Code: 02030103/080 **Str Class:** B
Waterbody Type: River
Waterbody Size: 26.6 Miles
Seg Description: stream and tribs, above Newburg Jct

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Orange Co. (36)
Quad Map: MONROE (P-24-4)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
AQUATIC LIFE	Impaired	Suspected
RECREATION	Impaired	Suspected

Type of Pollutant(s)

Known: NUTRIENTS (phosphorus)
Suspected: D.O./Oxygen Demand, Silt/Sediment
Possible: - - -

Source(s) of Pollutant(s)

Known: MUNICIPAL (Orange County SD#1), URBAN/STORM RUNOFF
Suspected: - - -
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 1 (Waterbody Nominated, Problem Not Verified)
Lead Agency/Office: DOW/BWAM **Resolution Potential:** Medium
TMDL/303d Status: n/a

Further Details

Overview
Aquatic life and recreational use in this portion of the Ramapo River are known to experience minor impacts due to nutrients, siltation and other pollutants from municipal wastewater discharges, urban/stormwater runoff and other nonpoint sources. It is possible these impact rise to the level of impairment, however additional monitoring to verify current conditions in the stream is recommended.

Water Quality Sampling
A biological (macroinvertebrate) survey of the Ramapo River at multiple site from Hillburn to Harriman was conducted in 1998. Sampling results in this reach indicated water quality to be moderately impacted. Impact Source Determination suggests multiple municipal/industrial sources and the likely cause of impacts. These could include urban/stormwater runoff, golf course runoff and other nonpoint sources. Previous sampling along this reach were also thought to be influenced by impoundment effects. Impacts from the Orange County Sewer District #1 WWTP are evident below Harriman, but these effects appear to be minor and short-lived. The nutrient biotic evaluation determined these effects on the fauna to be minor, and aquatic life support is considered to be fully supported in the stream. (Ramapo River Biological Assessment Report, Bode et al, DEC/DOW BWAR, September 1998)

Section 303d Listing

This portion of the Ramapo River not is currently included on the NYS 2008 Section 303(d) List of Impaired Waters. It is possible that impacts to the stream rise to the level of impairment and warrant inclusion on the List. However the most current water quality data is ten years old and additional monitoring to verify current conditions in the stream is necessary to make a listing determination. (DEC/DOW, BWAM/WQAS, June 2008)

Segment Description

This segment includes the portion of the stream and all tribs above Sapphire Lake Outlet (-23). The waters of this portion of the stream are Class C unnamed pond (P1016m), Class B to Monroe Pond (P1019) and Class C for the remainder of the reach. Tribs to this reach/segment are Class C,C(T). Lower/Middle Ramapo River are listed separately.

Stony Brook and tribs (1501-0039) NoKnownImpct

Waterbody Location Information

Revised: 06/23/2008

Water Index No: NJ-12- 6
Hydro Unit Code: 02030103/080 **Str Class:** C(T)*
Waterbody Type: River
Waterbody Size: 18.4 Miles
Seg Description: entire stream and tribs

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Rockland Co. (44)
Quad Map: SLOATSBURG (Q-24-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
NO USE IMPAIRMNT		

Type of Pollutant(s)

Known: - - -
Suspected: - - -
Possible: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: - - -
Possible: - - -

Resolution/Management Information

Issue Resolvability: 8 (No Known Use Impairment)
Verification Status: (Not Applicable for Selected RESOLVABILITY)
Lead Agency/Office: n/a **Resolution Potential:** n/a
TMDL/303d Status: n/a

Further Details

Water Quality Sampling
A biological (macroinvertebrate) assessment of Stony Brook in Sloatsburg (at Seven Lakes Road) was conducted in 2002. Sampling results indicated non-impacted water quality conditions. The fauna was dominated by clean-water mayflies, with stoneflies, caddisflies and dragon flies also present. (DEC/DOW, BWAM/SBU, June 2005)

Segment Description
This segment includes the entire stream and all tribs. The waters of the stream are primarily Call C(T), with small portions (below the dam near unnamed trib (-1) and above Diamond Creek (-5)) designated Class B. Tribs to this reach/segment, including Spring Brook (-2), Pine Meadow Brook (-3) and Diamond Creek (-5), are Class B and C(T).

Tuxedo Lake (1501-0050) Threat(Poss)

Waterbody Location Information

Revised: 07/14/2008

Water Index No:	NJ-12-15-P1007	**Drain Basin:**	Hackensack-Ramapo Rivers
Hydro Unit Code:	02030103/080 **Str Class:** AA(T)		
Waterbody Type:	Lake	**Reg/County:**	3/Orange Co. (36)
Waterbody Size:	290.9 Acres	**Quad Map:**	SLOATSBURG (Q-24-1)
Seg Description:	entire lake		

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Possible

Type of Pollutant(s)

Known: - - -
Suspected: - - -
Possible: OTHER POLLUTANTS

Source(s) of Pollutant(s)

Known: - - -
Suspected: - - -
Possible: OTHER SOURCE (unspecified)

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/WQCC **Resolution Potential:** High
TMDL/303d Status: n/a

Further Details

Overview
Water supply use of Tuxedo Lake may experience threats from various pollutants attributed to urban/stormwater runoff and other nonpoint sources.

NYSDOH Source Water Assessment
The NYSDOH Source Water Assessment Program (SWAP) compiles, organizes, and evaluates information regarding possible and actual threats to the quality of public water supply (PWS) sources. The information contained in SWAP assessment reports assists in the oversight and protection of public water systems. It is important to note that SWAP reports estimate the potential for untreated drinking water sources to be impacted by contamination. These reports do not address the safety or quality of treated finished potable tap water. This water supply reservoir provides water to Tuxedo Park Village. This assessment found a moderate susceptibility to contamination for this source of drinking water. Land cover and its associated activities within the assessment area does not increase the potential for contamination. Non-sanitary wastewater discharges may contribute to contamination, but there are no noteworthy contamination threats associated with other discrete contaminant sources. (NYSDOH, Source Water Assessment Program, 2005)

Drinking Water Protection

The designation of this waterbody as a threatened water is reflective of a need to protect its particular resource value, rather than specifically identified threats. Although there are no specific water quality impacts, the segment is considered a highly valued water resource due to its [drinking water supply classification as a AA(T) water. The inclusion of this waterbody on the DEC/DOW Priority Waterbodies List as a Threatened water is a reflection of the particular resource value reflected in this designation and the need to provide additional protection, rather than any specifically identified threats.

Mombasha Lake, Kloibers Pond (1501-0002) MinorImpacts

Waterbody Location Information

Revised: 07/11/2008

Water Index No: NJ-12-17-P1008..P1010,P1010b
Hydro Unit Code: 02030103/080 **Str Class:** A
Waterbody Type: Lake
Waterbody Size: 335.0 Acres
Seg Description: total area of both lakes

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Orange Co. (36)
Quad Map: MONROE (P-24-4)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Stressed	Suspected
Recreation	Stressed	Suspected

Type of Pollutant(s)

Known: - - -
Suspected: NUTRIENTS (phosphorus), Silt/Sediment
Possible: Pathogens, Salts

Source(s) of Pollutant(s)

Known: - - -
Suspected: URBAN/STORM RUNOFF, On-Site/Septic Syst
Possible: Deicing (stor/appl), Streambank Erosion

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: ext/WQCC **Resolution Potential:** Medium
TMDL/303d Status: n/a

Further Details

Overview
Recreational uses in Mombash Lake are thought to experience minor impacts/threats due to nutrient loads and other pollutants from various nonpoint sources.

Water Quality Sampling
Mombasha Lake was sampled as part of the NYSDEC Lake Classification and Inventory (LCI) Program in 2003. Results of this sampling indicate that the lake is be best characterized as mesoeutrophic, or moderately to highly productive. Average phosphorus levels in the lake for the sampling period (26 ug/l) slightly exceeded the state guidance values indicating impacted/stressed recreational uses (20 ug/l). Corresponding transparency measurements typically meet what is the recommended minimum for swimming beaches. Potential sources of pollutants include runoff from urban/suburban development, failing and/or inadequate on-site septic systems serving lake shore residences, and other nonpoint sources. These sources may also contribute pathogens to the lake, however sampling to investigate this possibility has not been conducted. (DEC/DOW, BWAM/CSLAP, October 2005)

Drinking Water Assessment

The NYSDOH Source Water Assessment Program (SWAP) compiles, organizes, and evaluates information regarding possible and actual threats to the quality of public water supply sources. This information - which is contained in SWAP assessment reports - assists in the oversight and protection of public water systems. It is important to note that SWAP assessments evaluate the potential for untreated drinking water sources to be impacted by contamination. These assessments do not address the safety or quality of treated finished potable tap water. Drinking water supplies taken from this waterbody include the Village of Monroe. This assessment found no significant sources of contamination in this watershed and the overall susceptibility of this watershed to potential sources of contamination was found to be low. (NYSDOH, Source Water Assessment Program, 2005)

Segment Description

Mombasha Lake comprises most (96%) of the lake area of this segment; Kloibers Pond is less than 10 acres.

Lake Stahahe (1501-0053) Threat(Poss)

Waterbody Location Information

Revised: 07/14/2008

Water Index No: NJ-12-18-P1011
Hydro Unit Code: 02030103/080 **Str Class:** A
Waterbody Type: Lake
Waterbody Size: 88.1 Acres
Seg Description: entire lake

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Orange Co. (36)
Quad Map: SLOATSBURG (Q-24-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Water Supply	Threatened	Possible

Type of Pollutant(s)

Known: - - -
Suspected: - - -
Possible: OTHER POLLUTANTS (unspecified), Pathogens

Source(s) of Pollutant(s)

Known: - - -
Suspected: - - -
Possible: MUNICIPAL, OTHER SOURCE (unspecified), Private/Comm/Inst

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/WQCC **Resolution Potential:** High
TMDL/303d Status: n/a

Further Details

Overview
Water supply use of Lake Stahahe is thought to experience threats from various pollutants attributed to wastewater discharges, urban/stormwater runoff and other nonpoint sources.

NYSDOH Source Water Assessment
The NYSDOH Source Water Assessment Program (SWAP) compiles, organizes, and evaluates information regarding possible and actual threats to the quality of public water supply (PWS) sources. The information contained in SWAP assessment reports assists in the oversight and protection of public water systems. It is important to note that SWAP reports estimate the potential for untreated drinking water sources to be impacted by contamination. These reports do not address the safety or quality of treated finished potable tap water. This assessment found an elevated susceptibility to contamination for this source of drinking water. Land cover and its associated activities within the assessment area does not increase the potential for contamination. There is also a moderate density of sanitary wastewater discharges which results in elevated susceptibility for numerous contaminant categories. In addition, it is appears that the total amount of wastewater discharged to surface water in this assessment area is high enough to further raise the potential for contamination (NYSDOH, Source Water Assessment Program, 2005)

Echo Lake (1501-0054) NoKnownImpct

Waterbody Location Information

Revised: 07/14/2008

Water Index No: NJ-12-20-P1014
Hydro Unit Code: 02030103/080 **Str Class:** A
Waterbody Type: Lake
Waterbody Size: 17.9 Acres
Seg Description: entire lake

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Orange Co. (36)
Quad Map: MONROE (P-24-4)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
NO USE IMPAIRMNT		

Type of Pollutant(s)

Known: - - -
Suspected: - - -
Possible: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: - - -
Possible: - - -

Resolution/Management Information

Issue Resolvability: 8 (No Known Use Impairment)
Verification Status: (Not Applicable for Selected RESOLVABILITY)
Lead Agency/Office: n/a **Resolution Potential:** n/a
TMDL/303d Status: n/a

Further Details

NYSDOH Source Water Assessment
The NYSDOH Source Water Assessment Program (SWAP) compiles, organizes, and evaluates information regarding possible and actual threats to the quality of public water supply (PWS) sources. The information contained in SWAP assessment reports assists in the oversight and protection of public water systems. It is important to note that SWAP reports estimate the potential for untreated drinking water sources to be impacted by contamination. These reports do not address the safety or quality of treated finished potable tap water. This assessment found a moderate potential risks to drinking water quality. Land cover within the assessment area does not increase the susceptibility ratings (to contamination). Permitted discharges do not represent an important risk to drinking water quality. There are no noteworthy contamination risks associated with other discrete contaminant sources. Additional sources of potential contamination include septic tanks and oil tanks (NYSDOH, Source Water Assessment Program, 2005)

Sterling Lake (1501-0068) NoKnownImpct

Waterbody Location Information

Revised: 07/14/2008

Water Index No: NJ-13-P1025
Hydro Unit Code: 02030103/060 **Str Class:** A
Waterbody Type: Lake
Waterbody Size: 293.7 Acres
Seg Description: entire lake

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Orange Co. (36)
Quad Map: GREENWOOD LAKE (Q-23-2)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
NO USE IMPAIRMNT		

Type of Pollutant(s)
Known: - - -
Suspected: - - -
Possible: - - -

Source(s) of Pollutant(s)
Known: - - -
Suspected: - - -
Possible: - - -

Resolution/Management Information

Issue Resolvability: 8 (No Known Use Impairment)
Verification Status: (Not Applicable for Selected RESOLVABILITY)
Lead Agency/Office: n/a **Resolution Potential:** n/a
TMDL/303d Status: n/a

Further Details

NYSDOH Source Water Assessment
The NYSDOH Source Water Assessment Program (SWAP) compiles, organizes, and evaluates information regarding possible and actual threats to the quality of public water supply (PWS) sources. The information contained in SWAP assessment reports assists in the oversight and protection of public water systems. It is important to note that SWAP reports estimate the potential for untreated drinking water sources to be impacted by contamination. These reports do not address the safety or quality of treated finished potable tap water. This water supply reservoir provides water to Sterling Lake. Based on the analysis of available information, this drinking water source does not have an elevated susceptibility to contamination. There are no regulated facilities within this watershed and the corresponding land cover does not pose any substantial risks to the source water quality. (NYSDOH, Source Water Assessment Program, 2005)

Greenwood Lake (1501-0001) Impaired Seg

Waterbody Location Information

Revised: 07/01/2008

Water Index No: NJ-P1026
Hydro Unit Code: 02030103/060 **Str Class:** A(T)?
Waterbody Type: Lake
Waterbody Size: 1074.7 Acres
Seg Description: entire lake, within NYS

Drain Basin: Hackensack-Ramapo Rivers
Reg/County: 3/Orange Co. (36)
Quad Map: GREENWOOD LAKE (Q-23-2)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Stressed	Known
RECREATION	Impaired	Known
Aesthetics	Stressed	Known

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH (algal blooms, vegetation), NUTRIENTS (phosphorus)
Suspected: Silt/Sediment
Possible: - - -

Source(s) of Pollutant(s)

Known: ON-SITE/SEPTIC SYST, OTHER SOURCE (nutrient recycling), URBAN/STORM RUNOFF
Suspected: - - -
Possible: - - -

Resolution/Management Information

Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: ext/WQCC **Resolution Potential:** Medium
TMDL/303d Status: 4a (TMDL Complete, Being Implemented, Not Listed)

Further Details

Overview
Recreational uses in Greenwood Lake are impaired by are impaired by algal blooms and excessive aquatic weed growth, the result of elevated phosphorus loadings. The sources of these loads include nonpoint urban/stormwater runoff, residential on-site wastewater treatment systems and in lake recycling of nutrients.

Water Quality Sampling
Various water quality studies have been conducted on the lake. These studies show that the annual in-lake concentration of phosphorus between 1981 and 2001 ranged from about 20 to 40 ug/l, with an average concentration of 32 ug/l of total phosphorus. These results compare well with the results of a modeling effort conducted by NJDEP to support TMDL development for the lake. Additional monitoring to evaluate the contributions of various sources to nutrient loads in the lake is continuing. (Greenwood Lake TMDL, DEC/DOW, BWAM/WQMS, September 2005)

Water Quality Management
Complementary Section 319(h) Nonpoint Source Grants in New York and New Jersey were funded in 2004 develop and

implement a Lake Characterization and Restoration Plan for Greenwood Lake. The grant will provide monitoring data for the development of a Phase II TMDL, prioritization of stormwater issues on a sub-watershed basis, and in-the-ground installation of stormwater BMPs based on the prioritization. The effort will also provide refined source estimates based on the monitoring, reduction efficiencies, and address the ecological nuances of the shallow NJ portion of the lake and the deeper NY portion. (DEC/DOW, BWAM/WQMS, September 2005)

Section 303d Listing

Greenwood Lake was included on the NYS 2004 Section 303(d) List of Impaired Waters. However a TMDL was established for the lake in September 2005 and the lake was delisted during development of the 2008 Section 303(d) List. (DEC/DOW, BWAM/WQAS, May 2006)

Segment Description

This segment includes the northern portion of the lake that lies within New York State. This represents about 57% of the 1,884 acre lake, the remainder of the lake lies in New Jersey.

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Summary Listing of Priority Waters

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Water Index Number	Waterbody/Segment Name (ID) Use Impairment(s)	County	Seg Size	Type	Class	W.B.Category Cause/Source Information
NJ- 1 (portion 2)	Hackensack R, Lower, and minor tribs (1501-0026) Aquatic Life KNOWN to be IMPAIRED Recreation KNOWN to be IMPAIRED Water Supply SUSPECTED of being THREATENED	Rockland	17.2 Mile	River	A	Impaired Seg Causes: Unknown Toxicity Sources: Urban/Storm Runoff
NJ- 1 (portion 3)/P977a	DeForest Lake (1501-0007) Water Supply SUSPECTED of being STRESSED	Rockland	720.1 Acre	Lake	A	MinorImpacts Causes: Nutrients, Silt/Sediment Sources: Urban/Storm Runoff
NJ- 1- 4	Nauraushaun Brook, Lower, and tribs (1501-0010) Aquatic Life KNOWN to be IMPAIRED Recreation KNOWN to be IMPAIRED Water Supply SUSPECTED of being THREATENED	Rockland	0.4 Mile	River	A	Impaired Seg Causes: Unknown Toxicity Sources: Urban/Storm Runoff
NJ- 1/P977a-	Minor Tribs to DeForest Lake (1501-0029) Aquatic Life KNOWN to be IMPAIRED Recreation KNOWN to be IMPAIRED Water Supply SUSPECTED of being THREATENED	Rockland	9.7 Mile	River	A	Impaired Seg Causes: Unknown Toxicity Sources: Urban/Storm Runoff
NJ- 1/P977a-12	West Br.Hackensack, Upper, and tribs (1501-0009) Aquatic Life KNOWN to be IMPAIRED Recreation KNOWN to be IMPAIRED	Rockland	26.0 Mile	River	C(T)	Impaired Seg Causes: Unknown Toxicity Sources: Urban/Storm Runoff
NJ- 1/P977a-13-P984,P984a	Congers Lake, Swartout Lake (1501-0019) Public Bathing KNOWN to be IMPAIRED Recreation KNOWN to be IMPAIRED Aesthetics KNOWN to be STRESSED Aquatic Life SUSPECTED of being STRESSED	Rockland	158.6 Acre	Lake	B	Impaired Seg Causes: Algal/Weed Growth, Nutrients Sources: Urban/Storm Runoff
NJ- 5	Pascack Brook and tribs, within NYS (1501-0015) Aquatic Life KNOWN to be IMPAIRED Recreation KNOWN to be IMPAIRED	Rockland	16.2 Mile	River	C*	Impaired Seg Causes: Silt/Sediment, Unknown Toxicity Sources: Urban/Storm Runoff

Water Index Number	Waterbody/Segment Name (ID) Use Impairment(s)	County	Seg Size	Type	Class	W.B.Category Cause/Source Information
NJ- 6 thru 8	Saddle River and tribs (1501-0033) Aquatic Life KNOWN to be STRESSED	Rockland	13.0 Mile	River	C*	MinorImpacts Causes: Nutrients Sources: Municipal, Urban/Storm Runoff
NJ-11	Mahwah River, Lower, and tribs (1501-0011) Aquatic Life KNOWN to be STRESSED Recreation KNOWN to be STRESSED Water Supply SUSPECTED of being THREATENED	Rockland	13.4 Mile	River	A	MinorImpacts Causes: Nutrients Sources: Urban/Storm Runoff
NJ-12	Ramapo River, Lower, and minor tribs (1501-0012) Aquatic Life KNOWN to be STRESSED Recreation KNOWN to be STRESSED Water Supply KNOWN to be THREATENED	Rockland	34.7 Mile	River	A(T)	MinorImpacts Causes: Nutrients, Pathogens, Silt/Sediment Sources: Urban/Storm Runoff
NJ-12	Ramapo River, Middle, and tribs (1501-0036) Aquatic Life KNOWN to be STRESSED Recreation KNOWN to be STRESSED Water Supply KNOWN to be THREATENED	Orange	60.6 Mile	River	A(T)	MinorImpacts Causes: Nutrients Sources: Urban/Storm Runoff
NJ-12-15-P1007	Tuxedo Lake (1501-0050) Water Supply POSSIBLY THREATENED	Orange	290.9 Acre	Lake	AA(T)	Threat(Poss) Causes: Other Pollutants Sources: Other Source
NJ-12-17-P1008..P1010,P1010b	Mombasha Lake, Kloibers Pond (1501-0002) Public Bathing SUSPECTED of being STRESSED Recreation SUSPECTED of being STRESSED	Orange	335.0 Acre	Lake	A	MinorImpacts Causes: Nutrients Sources: Urban/Storm Runoff
NJ-12-18-P1011	Lake Stahahe (1501-0053) Water Supply POSSIBLY THREATENED	Orange	88.1 Acre	Lake	A	Threat(Poss) Causes: Other Pollutants Sources: Municipal, Other Source

Water Index Number	Waterbody/Segment Name (ID) Use Impairment(s)	County	Seg Size	Type	Class	W.B.Category Cause/Source Information
NJ-P1026	Greenwood Lake (1501-0001) Recreation KNOWN to be IMPAIRED Public Bathing KNOWN to be STRESSED Aesthetics KNOWN to be STRESSED	Orange	1074.7 Acre	Lake	A(T)?	Impaired Seg Causes: Algal/Weed Growth, Nutrients Sources: On-Site/Septic Syst, Other Source, Urban/Storm Runoff

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The Waterbody Inventory Priority Waterbodies List Assessment Methodology

Appendix A

Assessment Methodology refers to what monitoring tools are used and how resulting data and information are interpreted to determine the level of support of designated uses and to arrive at an overall assessment of water quality. In some cases a lack of use support is apparent (e.g., beaches closed to public bathing or acid rain lakes devoid of fish). However, in most cases, designated use support is evaluated using established water quality criteria or surrogate indicators of water quality. The assessment methodology presented here outlines various water quality monitoring tools and considers other aspects of the resulting data and information, such as the type of data and information generated (numerical, observational/narrative or anecdotal), the source of the data/information, and the level of confidence in the data/information. The methodology also outlines specific criteria that relates water quality monitoring data and information to the degree of use support. Such criteria are critical to providing a balanced and consistent assessment of the quality of waters throughout New York State.

Types of Assessment Criteria

The methodology outlined here relies on a combination of three categories of assessment criteria:

- Use Restriction Orders,
- Numerical and Narrative Standards and Criteria, and
- Surrogate Water Quality Indicators

Use Restriction Orders are administrative restrictions or closures of waters to specific uses. These orders are issued by regulatory agencies charged with protecting particular aspects of public health and are based on data collected through monitoring activities directed by those agencies. While the restriction orders are based on monitoring data, the raw data itself is not usually re-interpreted by NYSDEC in making the use support decisions; rather the level of restricted use already in place drives the use support determination. Examples of use restriction orders include fish consumption advisories, closed shellfishing areas, seasonal or conditional shellfishing areas, public bathing beach closures, etc.

Numerical (and narrative) Water Quality Standards and Criteria represent parameter-specific thresholds for establishing limits regarding the discharge of substances to the waters of the state such that various water uses are protected. In New York State, such standards are adopted in the state Code of Rules and Regulations while criteria are established through development of formal DEC guidance. For many substances the standard or criterion exists as a numeric value; for other parameters, the standard/criterion is more descriptive (narrative) in nature (e.g., *no increase in turbidity that will cause a substantial visible contrast to natural conditions*). Although the use of standards and criteria (particularly numeric standards/criteria) would seem to be directly applicable to determining use support in ambient waters, an assessment methodology is necessary to address issues such as appropriate sampling methods, location, frequency or sample size, natural or background conditions, mixing zones, and so on.

Surrogate Water Quality Indicators are other measures of water quality conditions that are not established in standards or formal criteria. These are often used when an exact determination of use support is not possible. For example, it is difficult to say exactly when a waterbody moves from supporting to not supporting recreational activities. The use of water quality indicators, such as nutrient levels and Secchi disc measurements, bring added consistency to the evaluation. Biological assessments, sediment toxicity evaluations, Section 319 nonpoint source assessments, source water assessments, dilution calculations and predictive models all reflect levels of water quality condition and use support without reliance on standards. Even where these indicators are more subjective, indicator-specific criteria help to maintain a degree of consistency and allow for the incorporation of additional information/data sets into water quality assessments.

Waterbody Inventory/Priority Waterbodies List

NYSDEC maintains information regarding use support, including impaired waters and lesser water quality impacts, through its *Waterbody Inventory/Priority Waterbodies List (WI/PWL)* database. The *Waterbody Inventory* refers to a listing of all waters, identified as specific individual waterbodies or Assessment Units, within the state. The Waterbody Inventory includes both assessed and currently unassessed waters. The *Priority Waterbodies List* is the subset of waters in the Waterbody Inventory that have documented water quality impairments, minor impacts and/or threats. The WI/PWL assessments provide the foundation for both the compilation of the biennial Section 305(b) Water Quality Report on all waters of the state, and for the development of the state Section 303(d) List, which is comprised of waters that do not meet water quality standards and do not support water uses and require development of a TMDL. More detail regarding the WI/PWL assessment effort can be found at http://www.dec.ny.gov/chemical/23846.html.

As well as providing the basis of the New York State Section 305(b)/303(d) integrated assessment, the water quality assessment information in the WI/PWL is also instrumental in directing other water quality efforts. The methodology outlined here goes beyond Section 305(b)/303(d) integrated reporting and reflects the use of the WI/PWL in supporting these additional needs.

As well as providing the basis of the New York State Section 305(b)/303(d) integrated assessment, the water quality assessment information in the WI/PWL is also instrumental in directing other water quality efforts. It is used to prioritize monitoring, permitting and compliance activities, to provide a comprehensive inventory of water quality conditions suitable for establishing funding priorities, to enlist participation of other agencies and local partners, and to track progress toward improving the state's water resources. The methodology outlined here goes beyond Section 305(b)/303(d) Integrated Reporting and reflects the use of the WI/PWL in supporting these additional needs. The methodology specific to developing the Section 303(d) List of Impaired/TMDL waters is discussed in more detail in the Section 303(d) *Listing Methodology*.

To accommodate a thorough evaluation including public participation, the review and updating of the WI/PWL follows a continuing rotating basin schedule in which two or three of the 17 drainage areas in the state are scheduled for reassessment each year. These basin reassessments typically follow the same basin five year rotation schedule employed by the NYSDEC Rotating Integrated Basin Studies (RIBS) monitoring program (http://www.dec.ny.gov/chemical/30951.html). This continuous rotating basin schedule allows for comprehensive solicitation of available data and information, meaningful public participation and review, and more thoughtful dialogue and consideration of water quality assessments. In addition, it is easier to manage than a biennial review of all waters of the state.

To incorporate recent well-documented information, particularly for waters that have not undergone a WI/WPL update during the two-year Integrated Reporting cycle, **NYSDEC will establish September 30 of the year prior to the issuing of a Section 305(b)/303(d) Integrated Report as the cut-off date to receive data and information to be considered for inclusion in the Section 305(b)/303(d) assessment.** Establishing a September 30 "cut-off" date (6 months before the Integrated Report is due) allows both an opportunity for consideration of additional data as well as sufficient time for consideration and comment by all parties on any proposed revisions to existing water quality assessments, and time for a public review component comparable to the WI/PWL process.

Segmentation of Waterbodies

The delineation of waterbodies (Assessment Units) must strike a balance between being too specific (resulting in more segments than can be assessed with finite resources) and too general (resulting in segments that are too large and diverse and difficult to assess accurately). Determining specific boundaries for individual waterbody segments is based on a number of considerations. These factors, which correspond to those outlined in *EPA Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act* (July 21, 2003), include:

Waterbody Type Different waterbody types are not combined into single waterbody segments. That is, lakes (including reservoirs and ponds) are not combined with river reaches to form one segment. Similarly, estuary waters, ocean coastline and Great Lakes shoreline are distinct waterbody types that must be tracked as separate Assessment Units.

Stream Classification A change in the stream class (A, B, C) of a waterbody usually necessitates the division of the waterbody into separate segments, since the two different classes of waters will be assessed for the support of different designated uses. However, differences regarding trout support (T, TS waters) do not require designation of a separate segment. In the case of trout/trout spawning and non-trout portions of the same segment, the assessment reflects the support of the appropriate corresponding fish community. Similarly, Class AA, AA-Spcl or A-Spcl may be grouped with Class A waters in one segment, and Class I waters may be combined with Class SC waters which support similar uses. Note however that some small reaches of Class A or B waters might be combined with a Class C waterbody (and vice versa), if these small reaches are unlikely to be assessed separately.

Hydrologic Drainage Waterbodies that cross 8-digit Hydrologic Unit Code (HUC) and 11-digit watershed boundaries are usually broken into separate waterbody segments at the boundaries.

Waterbody Length/Size As a practical matter, waterbodies should not be too large or too small. There should also be some consistency with regard to segment size. Length/size of particular types of waterbody segments are outlined below.

Rivers and Streams - River and stream segments may be limited to main stem waters, or may include tributaries. Typically 5th order streams and above – which are significantly larger than their direct tributaries – are listed as main stem segments and tributary waters are listed as separate segments. Larger tributaries (or portions of tributaries) are considered as separate segments but in most cases include smaller tributary waters. Occasionally, smaller tributary waters to a larger main stem or lake are combined into one segment, where land use, hydrologic boundaries and other commonality indicate this is appropriate. Generally, river segments include between 10 and 25 miles of stream.

Lakes and Reservoirs - Lakes/reservoirs must be greater than 6.4 acres (0.01 square mile) to be included in the Waterbody Inventory. This is consistent with the threshold for inclusion in the New York State Lake Gazetteer. Lakes are generally listed as "entire lake." However, some very large lakes (e.g., Lake Champlain) may be segmented into separate portions. Conversely, some lake chains and/or smaller lakes in more remote watersheds may be joined together as a single segment, if land use and other commonality indicate this is appropriate.

Estuary Waters - Estuary segments are defined by physical features and stream classification with less consideration to consistency of size. Homogeneity of the waters within a segment is a key consideration.

Great Lakes/Ocean Coastline - Segments are delineated to reflect classification, hydrologic unit boundaries, and political boundaries, with an attempt to be consistent in regard to size.

Land Use and Character In addition, all waters within a single waterbody segment should drain areas of generally similar land use and character. If land use and other character changes, a separate segment is considered.

Waterbody segments are **not** defined solely upon the length/size of area impacted by a water quality problem. Estimates of the extent of water quality impacts are often inexact and may change regularly. Therefore, using this information to establish segment boundaries would make the Waterbody Inventory/Priority Waterbodies List considerably more difficult to manage and update, while providing little added benefit. Flexibility in the segmenting of waterbodies is allowed in order to provide sufficient protection of all designated uses.

WI/PWL Water Uses
- Drinking Water Supply
- Shellfishing
- Public Bathing
- Recreation
- Fish Consumption
- Aquatic Life
- Habitat/Hydrology
- Aesthetics

Evaluation of Water Use Support

The assessment of New York State water resources is based on the ability of waters to support a range of specific designated uses (see box). The particular uses that a specific waterbody is expected to support are dependent upon the classification of that waterbody. For example, only specifically designated waterbodies are considered to have best uses of *Drinking Water Supply* (Class A, AA), *Shellfishing* (Class SA) and *Public Bathing* (Class A, SA, B, SB). (See Appendix B, *New York State Water Quality Classifications*.)

The determination of use support and degree of water quality impact is drawn from a wide range of available data sources and relies on various criteria. These sources and criteria include use restriction orders (drinking water restrictions, bathing beach closures, fish consumption and shellfishing advisories), comparison of data (from NYSDEC ambient monitoring network as well as other agency, local or public/citizen monitoring program) with parameter-specific criteria that reflect water quality standards, the use of surrogate indicators, and qualitative perception and observational information (stream habitat assessments, recreational use or fishery resource surveys, citizen complaints). Given the growing involvement of local agency and citizen volunteers in water quality monitoring, the WI/PWL updating process has expanded to include a significant public participation and outreach component. This effort relies on a network of local Water Quality Coordinating Committees working in conjunction with the NYSDEC staff to capture additional available water quality information. To help ensure consistency in the assessments, basin update efforts begin with a regional WI/PWL workshop with other agency and local partners to introduce the assessment methodology and solicit water quality information.

After all readily available water quality information is collected, judgments and evaluations are made regarding:
- what specific use(s), if any, is/are affected,
- the severity of the impact on the use(s), and
- the level of documentation that corresponds to the use impact/impairment.

The focus of a water quality assessment is based on whether a specific use is restricted. If this is the case, then the severity of use impact (i.e., the degree to which the use is restricted) is evaluated as either *Precluded*, *Impaired*, *Stressed* or *Threatened* (see box). The water use impact and level of severity are also identified as *Known*, *Suspected* or *Possible* (see box) based upon available documentation. The severity of use impacts and the corresponding levels of documentation are dependent upon a number of factors, including the *magnitude* of the impact, the *frequency* of occurrence or *extent* of affected area, and *confidence* of data.

The *magnitude* of water quality impacts or degrees of use restrictions are reflected in the WI/PWL level of severity; the more significant the impact, the greater the severity. For example, fish consumption advisories may recommend eating no more than one fish per week (*Stressed*), eating no more than one meal per month (*Impaired*), or eating no fish at all (*Precluded*). With regard to water quality monitoring and its evaluation against criteria, in-stream concentrations may be below, near, at, above or well above applicable water quality criteria. Such conditions correspond to varying degrees of impact ranging from *No Known Impact*, *Threatened*, *Stressed*, *Impaired* or *Precluded*.

The *frequency* with which water quality conditions occurs, is also reflected in the WI/PWL level of severity. The more frequently a specific condition occurs, the more significant – or severe – the effect on related water resource uses. Similarly, the spatial *extent* of the water quality condition (i.e., the percent of total waterbody affected) is also reflected in the severity. For example, a bay where shellfishing is restricted in one small cove is less severely impacted than if shellfishing were restricted in the entire bay.

WI/PWL Level of Documentation

Known - Water quality monitoring data and/or *studies have been completed and conclude* that the use of the waterbody is restricted to the degree indicated by the listed severity.

Suspected - Reasonably strong evidence, supported by best professional judgment of DEC staff, *suggests* the use of the waterbody is impacted. However, water quality data/studies that establish an impact *have not been completed* or there is *conflicting information*.

Possible - Anecdotal evidence, public perception and/or specific citizen complaints indicate that the use of the waterbody *may be restricted*. However, there is *currently very little, if any, documentation* of an *actual* water quality problem.

WI/PWL Severity of Use Impact

PRECLUDED
Frequent/persistent water quality, or quantity, conditions and/or associated habitat degradation *prevents all aspects* of a specific waterbody use.

IMPAIRED
Occasional water quality, or quantity, conditions and/or habitat characteristics *periodically prevent* specific uses of the waterbody, or;
Waterbody uses are not precluded, but some aspects of the use are *limited or restricted*, or;
Waterbody uses are not precluded, but *frequent/persistent* water quality, or quantity, conditions and/or associated habitat degradation *discourage* the use of the waterbody, or;
Support of the waterbody use *requires additional/advanced* measures or treatment.

STRESSED
Waterbody uses are not significantly limited or restricted (i.e. uses are *Fully Supported*), but *occasional* water quality, or quantity, conditions and/or associated habitat degradation *periodically discourage* specific uses of the waterbody.

THREATENED
Water quality supports waterbody uses and ecosystem exhibits no obvious signs of stress, however *existing or changing land use patterns* may result in restricted use or ecosystem disruption, or;
Data reveals decreases in water quality or presence of toxics below the level of concern, or;

Frequency of occurrence and spatial extent also influence the WI/PWL level of documentation. For example, if a specific condition occurs less than 10% of the time (or in less than 10% of the waterbody), the overall water quality impacts for the total waterbody are less certain than if the frequency/extent of the condition is greater than 50%. As general guidelines, if frequency/extent of conditions are less than 10%, the level of documentation for impacts to uses corresponding to that condition is considered *Possible*. If the frequency or extent is between 10 and 25%, the level of documentation should be considered *Suspected*. If greater than 25%, the impact should be considered *Known*.

However, the use of the 10% and 25% thresholds outlined above assumes that the frequency/extent of a condition is well-established. For some measures of impact, this is not very difficult (e.g., fish consumption advisories are in effect 100% of the time, for beaches that are closed 14 days out of a 100 day season the frequency is 14%, for estuary segments where shellfishing is restricted in 40 of 200 acres the extent is 20%). However, for other water quality monitoring the determination of frequency/extent depends upon a number of factors, including the level of data confidence.

Data confidence refers to statistical measures that help determine the degree of certainty that a condition exists. Such statistical confidence depends upon a number of factors (monitoring design, number of samples collected, variability of analysis) and is an important factor in determining the WI/PWL level of documentation. Other considerations, such as quality and age of data, also influence the level of documentation.

Though they are related, it is important not to confuse data confidence with the frequency/extent of a condition. For example a single data point might show exceedence of a standard. While this represents high frequency of a condition (100%), the level of data confidence based on just one sample is usually quite low.

WI/PWL Assessment Categories

Based on the degree of use support, severity of impact/impairment and level of documentation, all waterbodies in the WI/PWL are assigned to one of five possible *Water Quality Assessment Categories*. These categories are outlined below and in Table 1.

Impaired Waters are waterbodies with well documented water quality problems that result in *Precluded*, or *Impaired* uses and, in most cases, a level of documentation of *Known* (occasionally *Suspected*). Waters with *Stressed, Threatened* uses are not included in this category.

Waters with Minor Impacts are waterbodies where less severe water quality impacts are apparent, but uses are considered fully supported. These waters correspond to waters listed as having *Stressed* uses and a level of documentation of *Known* or *Suspected*.

Threatened Waters are waterbodies for which uses are not restricted and no water quality problems currently exist, but where data suggests declining water quality trends or specific land use or other changes in the surrounding watershed are *Known* to be threatening water quality. Also included in this category are waterbodies where the support of a specific and/or distinctive use make the waterbody more susceptible to *Possible* water quality threats.

Waters with Impacts Needing Verification are waterbodies that are thought to have water quality problems or impact, but for which there is not sufficient or definitive documentation. These segments include waters with *Stressed* uses and a level of documentation of *Possible* and waters with *Threatened* uses and a *Suspected* level of documentation Such waterbodies require additional monitoring to determine whether uses are restricted or threatened.

Waters Having No Known Impacts are waterbodies where monitoring data and information indicate that there are no use restrictions or other water quality impacts, threats or issues.

UnAssessed Waters are waterbodies where there is no available water quality information to assess the support of designated uses.

Table 1 Relationships Between WI/PWL Severity/Documentation and Water Quality Assessment Categories

Severity of Problem	Level of Problem Documentation		
	Known	Suspected	Possible
Precluded	Impaired Water	N/A*	N/A*
Impaired		Impaired Water	N/A*
Stressed	Minor Impacts but Fully Supporting	Minor Impacts but Fully Supporting	Needs Verification (Considered Minor Impacts But Fully Supporting)
Threatened	Threatened, but Fully Supporting	Needs Verification (Considered Threatened)	Threatened (Poss) (But Fully Supporting)
None	No Known Impairment - Fully Supporting Uses		
Unknown	UnAssessed Water		

* For more severe impacts (*Precluded, Impaired*) a greater level of documentation is needed.

The WI/PWL Water Quality Assessment Categories differ somewhat from the national Use Attainment Categories suggested by USEPA in their Integrated Reporting guidance for reporting on water quality. Whereas the Integrated Reporting Use Attainment Categories are more narrowly tailored to focus on questions concerning the attainment of water quality standards and the appropriateness of TMDLs to address water quality impairments, the WI/PWL categories are crafted to better provide support for a myriad of NYSDEC water quality management programs.

Perhaps the most significant difference between the two frameworks involves the WI/PWL's inclusion of *Waters with Minor Impacts* (*Stressed* waters). This category allows the WI/PWL to track waters that fully support uses but with less than ideal water quality. Conditions in these waters are considered stable, have been well documented and additional protection activities are not necessarily needed to maintain use support into the future.

The tracking of waters with minor impacts – while not readily accommodated in the national Use Attainment Category scheme – supports the NYSDEC water quality management programs and is an integral component of its overall watershed restoration and protection efforts. The emphasis at the federal government level regarding water quality efforts continues to be focused on the restoration of waters that do not support uses (*Precluded*, *Impaired*). However in New York – at both the state and local levels – there is growing interest and support for directing

The tracking of waters with minor impacts – while not readily accommodated in the national Use Attainment Category scheme – supports the NYSDEC water quality management programs and is an integral component of its overall watershed restoration and protection efforts.

resources to protection efforts as well. Maintaining non-impacted waters and improving waters with lesser impacts is often a more effective use of limited resources for the advancing of water quality goals and progress. The more comprehensive framework of WI/PWL assessment categories better supports efforts to benefit these waters.

Although the current national Integrated Reporting Use Attainment Categories differ from the WI/PWL Assessment Categories, the two schemes share significant similarities. As a result waters assigned to WI/PWL Assessment Categories translate easily to corresponding USEPA designations. A more detailed discussion of the linkage between the WI/PWL Assessment Categories and the national Integrated Reporting Categories is presented in the Listing Methodology.

Monitored and *Evaluated* Waters

In compiling water quality information for 305(b) Reporting, states are to distinguish between water quality assessments based on monitoring data, and assessments based on other information. The distinctions between *Monitored* and *Evaluated* Waters in New York State are outlined below.

Monitored Waters are those waterbodies for which the use support assessment is based primarily on current (i.e., less than 5 years old) site-specific ambient monitoring data. Such data includes biological monitoring (macroinvertebrate assessment, toxicity testing) and/or chemical/physical monitoring results. Because fixed-station chemical/physical monitoring represents only a "snapshot" in time, such monitoring should be conducted quarterly or more frequently if it is to accurately portray water quality conditions at the site.

Evaluated Waters are those waterbodies for which the use support assessment is based on information other than current site-specific ambient monitoring data. Such assessments may rely on land use data, identification of sources, predictive modeling and/or surveys of water quality and natural resource staff. Also, assessments based on older ambient monitoring data are generally considered to be "evaluated."

Use-Specific Assessment Criteria

Detailed guidelines regarding the relationships between the results of various monitoring and assessment indicators and corresponding levels of support for specific water uses are discussed on the following pages. Assessment criteria tables for specific designated water uses, which are intended to provide guidance to insure consistent evaluation of water quality, are included in these guidelines. The criteria in the tables are intended to define general boundaries between levels of impact (severity) and degrees of confidence (documentation). Individual waterbody assessments are evaluated on a case-by-case basis. These assessments may take into account additional or alternative indicators not captured in the assessment criteria tables and may require the application of best professional judgment. Multiple water quality indicators that may suggest conflicting levels of impacts also require careful consideration (see also *Independent Applicability and Weight of Evidence*).

In establishing assessment criteria to determine what uses are supported in a waterbody, New York State takes into consideration a number of factors. The starting point for the criteria is often based on established NYS water quality standards and/or guidance values. These standards and guidance values are integral to many water quality activities, including – and perhaps most prominently – the derivation of water quality-based effluent limitations for SPDES discharge permits. The NYS water quality standards and accompanying guidance recognize that the application of standards to the derivation of permit limits and the determination of compliance or noncompliance of discharges with the standards require additional interpretation and instruction, as approved by the department. This additional guidance is necessary to address issues such as appropriate sampling methods, sampling location, flow variability, averaging periods, frequency of sampling or sample size, natural or background conditions, mixing zones, and so on.

Similarly, the application of water quality standards and guidance values to determine use support and levels of impact/impairment also requires some interpretation and additional guidance. The most recent USEPA Integrated Reporting Guidance notes specifically the need for states to address issues of data quality, data quantity and data representativeness in making assessment decisions. The guidance speaks at some length on the issue of data representativeness, and recognizes that the "...spatial and temporal representativeness of data and information should be considered by states as they attempt to characterize conditions..." The guidance continues to note that:

> "...state methodologies should describe, in general terms, the decision logic used to determine the temporal and spatial extent a grab sample can be construed to represent. In order to make credible assessment determinations, states should employ approaches that strike a balance between the extremes of: (1) considering every grab sample to be representative of merely the instant in which, and the drop of water from which, each was taken, or (2) assuming that each such sample is representative of conditions over several years, and covering hundreds of stream miles of hundreds of lake acres."

This New York State Assessment Methodology, and the associated Listing Methodology attempts to strike the balance called for in the USEPA guidance through the use of established water quality standards and guidance values, other criteria and indicators and the application of best professional judgment. However, NYDEC recognizes that achieving this balance is a work in progress and is continuing to work together with USEPA to improve the transparency of decision-making based on different types of data collected from numerous monitoring programs.

Drinking Water Supply Use

Only those waters where *Drinking Water Supply* is designated as the best usage (i.e., Class A, AA, A/AA-Special surface and Class GA groundwaters) are evaluated for support of this use. The evaluation of *Drinking Water Supply* use support is driven largely by water quality information and monitoring data generated by the New York State Department of Health (NYSDOH) or local health departments, which are primarily responsible for the protection of public health in the state.

A comprehensive evaluation of *Drinking Water Supply* use must consider the use on a number of levels. The first of these considerations focuses on administrative closures or restrictions on a *Drinking Water Supply* use. However, while this criterion is most directly related to the use, it is not sensitive to impacts.

Consequently, a secondary level of assessment uses the degree of treatment necessary for a water supply to be used for drinking water. The intent of this assessment criterion is to categorize as *Impaired* any water supply that requires "extra-ordinary" treatment measures. Given national filtration rules and other considerations, defining "extra-ordinary" is somewhat difficult. The criteria language – *"additional treatment beyond conventional processes (coagulation, sedimentation, filtration, disinfection) is required to remove any impurities that are not naturally present"* – reflects similar language used in the New York State Water Quality Regulations for classification of waters.

Because of the human health implications, threats to and protection of the *Drinking Water Supply* use take on added significance. Therefore, it is also appropriate to evaluate these waters prior to and without consideration of final treatment. This level of assessment evaluates contaminant concentrations relative to standards for the protection of Health (Water Source). In addition, other information regarding nutrient levels, precursors to Trihalomethane (THM) formation and other contaminants that may affect *Drinking Water Supply* use and quality is reflected in measures of natural sensitivity and susceptibility as determined through the NYSDOH Source Water Assessment Program (SWAP).

Table 2 Drinking Water Supply Use Assessment Criteria

Use Assessment Criteria	WI/PWL Use Impact	
	Severity	**Documentation**
Frequent/Persistent Conditions Prevent Use • NYS/local Health Department water supply closures lasting >30 days.	Precluded	Known
Occasional Conditions Prevent Use • NYS/local Health Department water supply closures lasting up to 30 days.	Impaired	Known
Frequent/Persistent Conditions Discourage Use • Impacts do not require closure or advisories but adversely affect the quality of the finished water and/or treatment costs (e.g., taste/odors, color, turbidity, activated charcoal filtration, etc.), or • Monitoring data show exceedence of *Impaired* criteria* for cryptosporidium, coliform, or • Monitoring data show exceedence of *Impaired* parameter-specific criteria* for other substances more than 10% (*suspected*) or 25% (*known*) of time.	Impaired	Known or Suspected
Occasional Conditions Discourage Use • SWAP determination of *very high susceptibility* [1] • Monitoring data show exceedence of *Stressed* criteria* for cryptosporidium, coliform, or • Monitoring data show exceedence of *Stressed* parameter-specific criteria* for other substances more than 10% (*suspected*) or 25% (*known*) of time.	Stressed	Known or Suspected [1]
Conditions Support Use, but Threats Noted • SWAP determination of *high susceptibility* [1] • Monitoring data show exceedence of *Threatened* parameter-specific criteria* more than 10% (*suspected*) or 25% (*known*) of time.	Threatened	Known or Suspected [1]
No Known Impairment or Imminent Threat • No drinking water restrictions, and • No additional treatment required, and • No significant contaminants/threats present.	No Known Impact	Assessment Level *Monitored or Evaluated*

***Parameter-Specific Criteria**	*Impaired*	*Stressed*	*Threatened*	
Cryptosporidium (average)	7.5	3.0	–	oocysts/100 L
Cryptosporidium (individual)	–	7.5	3.0	oocysts/100 L
Coliform, Total (median)[2]	50/2,400	–	–	per 100 ml
Coliform, Fecal (geometric mean)	200	–	–	per 100 ml
Ammonia/Ammonium	20	10	5	mg/l
Nitrate, as N	10	5	2	mg/l
other substances (source water) [3]	Standard	50% of Std.	20% of Std.	
other substances (finished water) [4]	MCL	50% of MCL	20% of MCL.	

[1] Impacts/impairments based on SWAP susceptibility determinations should be listed as *Suspected*.
[2] Refers to Class AA and A respectively.
[3] Refers to substances for which there are NYS water quality standards for protection of *Health (Water Source)*.
[4] Refers to substances for which there are Maximum Contaminant Levels (MCL) for finished drinking water.

The relationship between drinking water supply advisories, monitoring data, SWAP determinations and other information and the level of *Drinking Water Supply* use support is outlined in Table 2.

Shellfishing Use

Support of *Shellfishing* use is assessed for Class SA marine waters only. These assessments reflect the level of certification of the waters for the taking of shellfish as determined by DEC Division of Fish, Wildlife and Marine Resources and based on NYSDEC regulations (6NYCRR, Part 47, *Certification of Shellfish Lands*) and National Shellfish Sanitation Program requirements. Shellfishing waters that are not certified may be closed year-round, seasonally, or conditionally (after rainfalls events of a specific magnitude). Other restrictions on the use include requirements to transplant the shellfish to certified waters for cleansing prior to harvesting for human consumption. More information regarding the NYSDEC Shellfishing program can be found at http://www.dec.ny.gov/outdoor/345.html.

Table 3 Shellfishing Use Assessment Criteria

Use Assessment Criteria	WI/PWL Use Impact	
	Severity	Documentation
Frequent/Persistent Conditions Prevent Use • NYSDEC Division of Fish, Wildlife and Marine Resources (DFWMR) has designated more than 25% of the waterbody area as uncertified year-round for shellfishing based on water quality conditions and contaminants, or • DFWMR has designated more than 10% of the area as uncertified year-round AND shellfishing in remaining area is restricted (i.e., only *seasonally* or *conditionally* certified) based on water quality conditions..	Precluded	Known
Occasional Conditions Prevent Use • DFWMR has designated 10 to 25% of the waterbody area as uncertified year-round based on water quality conditions, or • DFWMR has designated more than 25% of the waterbody area as restricted (i.e., only *seasonally* or *conditionally* certified) based on water quality conditions.	Impaired	Known
Occasional Conditions Discourage Use • DFWMR has designated up to 25% of the waterbody area as restricted (i.e., only *seasonally* or *conditionally* certified) based on water quality conditions, or • DFWMR has designated more than 10% of the waterbody area as uncertified based on administrative guidelines (nearby outfall, marina).	Stressed	Known
Conditions Support Use, but Threats Noted • DFWMR has designated < 10% of the waterbody area as uncertified, or • DFWMR has designated the entire waterbody as certified, but significant trib waters are uncertified due to water quality conditions.	Threatened	Known or Suspected
No Known Impairment or Imminent Threat • DFWMR has designated the entire waterbody as certified for the taking of shellfish and all significant trib waters are also certified.	No Known Impact	Assessment Level: *Monitored*

* For large estuary segments where 10-25% of the waterbody area represents a significant closure or restriction, a greater severity of use impact may be assigned to the waterbody.

Shellfishing restrictions may be driven by either water quality or by administrative requirements. Water quality-based closures are the result of actual bacteriological monitoring and subsequent findings that the waters do not support safe consumption of shellfish. Administrative closures are precautionary; they are not necessarily reflective of water quality conditions but are issued for areas where the *potential* for contamination of shellfish exists. Administrative closures are generally issued for areas in close proximity to WWTP discharges and for waters around marinas. Generally closures based on actual water quality monitoring correspond to *Precluded/Impaired* uses, depending on the type of restriction (year-round, seasonal, conditional) and the percent of waterbody area affected. If the area affected by a water quality-based closure is relatively small, the severity of impact may be listed as *Stressed*. Administrative closures – because they are more precautionary in nature – correspond to *Shellfishing* that is *Stressed* or *Threatened.* The relationship between certification and level of *Shellfishing* use support is reflected in Table 3.

> Generally, closures based on actual water quality monitoring correspond to *Precluded/Impaired* uses. Administrative closures – because they are more precautionary in nature – correspond to a *Shellfishing* use that is *Stressed* or *Threatened*.

Waters that are designated Class SB or SC are not assessed for *Shellfishing* use support, even if they have been evaluated by the National Shellfish Sanitation Program. However, because shellfishing is arguably the most sensitive of the uses assessed, if any Class SB, SC waters are certified for shellfishing they will be assessed as having *No Known Impairment* to other uses (unless additional/other water quality data indicates an impairment). If these waters are uncertified (due to water quality) then *Public Bathing/Recreation* are considered to be *Stressed*. A more severe level of impact to *Public Bathing/Recreation* requires monitoring data corresponding to those uses.

Public Bathing and Recreation Uses

Swimming and other recreational activities are important and popular uses for the waters of the state. The assessment of these activities involves two separate use categories: *Public Bathing* and *Recreation*. While the assessment of both *Public Bathing* and *Recreation* uses rely on similar water quality indicators, these two distinct uses are evaluated separately.

Evaluation of *Public Bathing* use is limited to those waters classified by New York State for primary contact recreation (i.e., Class B, SB, A, AA, A/AA-Special and SA). This classification applies to waters specifically designated as suitable for public beaches and bathing areas, which see an increased level of swimming use and are more regularly monitored by public health agencies. State and local/county health departments conduct regular bacteriological sampling programs and perform sanitary surveys at designated public bathing areas. Based on the findings of these surveys, bathing use may be restricted either permanently or periodically. Localized closings may also occur due to contamination by spills, waterfowl, or runoff from wet-weather events. It should be noted although Class C, D and SC waters also include primary contact recreation as a specified designated use, because of their natural physical characteristics, these waters are generally not suitable as public beaches and bathing areas.

> As a practical matter, not all waters of the state are regularly monitored to assess swimming use support to the degree that designated public bathing areas are. Therefore, general precautions should be taken regarding recreation in these other waters.

Evaluation of the *Public Bathing* use focuses primarily on public health concerns, particularly bacteriological contamination and water clarity. Consequently the Public Bathing Use Assessment Criteria are linked primarily to these parameters as well as beach closures.

The relationship between bathing restrictions, water quality monitoring and other indicators (including the closely-related *Recreation* use assessment) and the level of *Public Bathing* use support is reflected in 4.

Table 4 Public Bathing Use Assessment Criteria

Use Assessment Criteria	WI/PWL Use Impact	
	Severity	**Documentation**
Frequent/Persistent Conditions Prevent Use • NYS/local Health Department has closed the waterbody to swimming for the entire season, based on water quality (bacteriological) monitoring data.	Precluded	Known
Periodic/Occasional Conditions Prevent Use • NYS/local Health Department has issued temporary closures of the waterbody to swimming, based on water quality (bacteriological) monitoring data, or • Sufficient stream flow/water level necessary to support swimming uses are artificially restricted.	Impaired	Known
Frequent/Persistent Conditions Discourage Use • Swimming use requires additional measures (e.g., aquatic weed harvesting/control). • Monitoring data show exceedence of *Impaired* criteria* (bacteriological, clarity) more than 10% (*suspected*) or 25% (*known*) of time.	Impaired	Known or Suspected
Occasional (Other) Conditions Discourage Use • *Recreation* uses are assessed as *Impaired/Precluded*[1], or • Monitoring data show exceedence of *Stressed* criteria* (clarity) more than 10% (*suspected*) or 25% (*known*) of time.	Stressed	Known or Suspected[1]
Conditions Support Use, but Threats Noted • Monitoring data show exceedence of *Threatened* criteria* (clarity, phosphorus) more than 10% (*suspected*) or 25% (*known*) of time.	Threatened	Known or Suspected
No Known Impairment or Imminent Threat • NYS/local Health Department has not restricted swimming, and • Swimming use does not require any additional measures, and • Monitoring data does not exceed criteria* (>10% of time), and • *Recreation* uses are not *Impaired/Precluded*.	No Known Impact	Assessment Level: *Monitored*

*** Monitoring Data Criteria**	*Impaired*	*Stressed*	*Threatened*	
Coliform, Total (geometric mean)	2,400	–	–	per 100 ml
Coliform, Fecal (geometric mean)	200	–	–	per 100 ml
Entericocci (geometric mean)	See below [2]			
Clarity (Secchi Disc)	1.2	1.5	2.0	meters
Total Phosphorus [3,4]	–	–	20	µg/l

[1] *Public Bathing* assessments based on *Recreation* use support should be listed as *suspected*.

[2] For marine waters (excluding tributaries), the enterococci criteria is 35/100 ml. For Great Lakes waters (excluding tributaries), the enterococci criteria is 126/100 ml.

[3] Application of the Total Phosphorus criteria is limited to lakes and ponded waters.

[4] Based on current New York State criteria indicative of elevated nuisance conditions and slight impacts to recreation; other state/national nutrient criteria currently being developed will be incorporated into the Assessment Methodology once adopted.

Table 5 Recreation Use Assessment Criteria

Use Assessment Criteria	WI/PWL Use Impact	
	Severity	**Documentation**
Frequent/Persistent Conditions Prevent Use • NYS/local Health Department has closed the waterbody to swimming, boating or other recreational use for the entire season, due to water quality concerns.	Precluded	Known
Periodic/Occasional Conditions Prevent Use • NYS/local Health Department has issued temporary closures of the waterbody or portions of the waterbody to swimming, boating or other recreational use due to water quality concerns, or • Sufficient stream flow/water level necessary to support recreational uses are artificially restricted.	Impaired	Known
Frequent/Persistent Conditions Discourage Use • Recreational uses of water require additional measures (e.g., weed harvesting/control), or • *Public Bathing* uses are assessed as *Impaired/Precluded*, or • Monitoring data show exceedence of *Impaired* criteria* more than 10% (*suspected*) or 25% (*known*) of time, or • Observational criteria* indicating restricted recreational uses are noted more than 50% of the time.	Impaired	Known or Suspected [4]
Occasional (Other) Conditions Discourage Use • *Public Bathing* uses are assessed as *Stressed*, or • Monitoring data shows exceedence of *Stressed* criteria* more than 10% (*suspected*) or 25% (*known*) of time, or • Observational criteria** indicating restricted recreational uses are noted more than 25% of the time.	Stressed	Known or Suspected [4]
Conditions Support Use, but Threats Noted • Monitoring data shows exceedence of *Threatened* criteria* more than 10% (*suspected*) or 25% (*known*) of time. • Observational criteria** indicating restricted recreational uses are noted more than 10% of the time.	Threatened	Known or Suspected [4]
No Known Impairment or Imminent Threat • *Public Bathing* uses are not *Stressed, Impaired, Precluded*, and • Recreation uses not restricted, nor require additional measures, and • Monitoring data does not exceed criteria* (>10% of time), and • Observational criteria** for restricted use not noted (>10% of time).	No Known Impact	Assessment Level: *Monitored*

*** Monitoring Data Criteria**	*Impaired*	*Stressed*	*Threatened*		
Total Phosphorus [1, 2]	–	20	–	µg/l	
Chlorophyl a [1]	15	12	8	µg/l	
Clarity (Secchi Disc) [1]	1.2	1.5		2.0	meters

**** Observational Data Criteria** [3, 4]

Swimming/recreation slightly (or more) restricted by specifically identified causes (algae, clarity, etc).

[1] Application of the Total Phosphorus criteria is limited to lakes and ponded waters.

[2] State/national nutrient criteria to be developed and incorporated into the Assessment Methodology.

[3] *Observational Criteria* refers to responses on ***CSLAP Field Observation Forms***. Specifically, *Condition of Lake* notes presence of algae, *Suitability for Recreation* notes some impacts/impairment, and *Opinion of Recreational Use* notes weeds and/or clarity problems.

[4] Impacts/impairments based on observational criteria should be listed as *suspected*.

The category of *Recreation* tracks impacts and impairments to a more expansive list of recreational activities, such as fishing, boating, water skiing, rafting, wading and other primary/secondary contact activities, including swimming. The requirement of all waters to support *Recreation* uses addresses the federal Clean Water Act goal that all waters be *swimmable*.[6] However, while all waters of the state are to be swimmable, as a practical matter not all waters of the state are regularly monitored to assess swimming use support to the same degree that designated public bathing areas are. As a result of differing criteria and the varying levels of monitoring, *Public Bathing* (Class B, SB, A, AA, A/AA-Special and SA) waters are evaluated more rigorously than other *Recreation* use waters.

Whereas the *Public Bathing* use assessment has a greater focus on public health concerns, *Recreation* uses are assessed more broadly. The evaluation of *Recreation* use support places emphasis on excessive weed growth, silty/muddy lake bottoms, color, odors and other conditions that discourage recreational activity. In those cases where certain Class C, D, and SC waters have been assessed for bacteria, these results will be incorporated into the overall assessment of the *Recreation* use for these waters.

Excessive nutrient levels – which may increase turbidity, lower dissolved oxygen, and promote aquatic plant and algal growth – may also discourage the use of lakes, ponds and reservoirs for recreation activities. Recognizing this, NYSDEC derived a total phosphorus criterion of 20 µg/l for the protection of recreational uses in lakes. However the criterion is based on lake user surveys and was developed to be indicative of *elevated nuisance conditions and slight impacts to recreation*. Such impacts are more closely aligned with Stressed/Threatened uses than with Impaired uses. Because of its basis, the criterion is more appropriate in assessing more general *Recreation* use support than *Public Bathing* use. However, since conditions resulting from elevated nutrients and weed/algal growth also may threaten swimming, this indicator is included in the *Public Bathing* use assessment as indicating *Threatened* uses.

The relationship between water quality monitoring and other indicators and the severity and documentation of an impact to *Recreation* use is reflected in Table 5. For various nutrient parameters, Table 5 refers to *"state/national criteria to be developed and incorporated into the Assessment Methodology."* This flexibility of language reflects a need to accommodate the ongoing efforts by NYSDEC (and USEPA) to develop and implement nutrient criteria, including the use of different ecoregion-specific criteria for various regions of the state. Once these criteria are established, the Assessment Methodology will be revised to reflect them. Until then the surrogate indicators outlined in Table 5 will be used to assess recreational use support.

Fish Consumption Use

The assessment of *Fish Consumption* use is based on NYSDOH advisories regarding the catching and eating of sportfish, and contaminant monitoring in fish tissue, other biological tissue and surficial bottom sediments. The advisories reflect federal government standards for chemicals in food that is sold commercially, including fish. The NYSDEC Division of Fish Wildlife and Marine Resources routinely monitors contaminant levels in fish and game. Based on this monitoring data, NYSDOH issues advisories for specific waterbodies and species when contaminant levels in sportfish exceed the federal standards.

These advisories are updated and published annually. In addition to the waterbody-specific advisories, a general advisory recommends eating no more than one meal (one-half pound) per week of fish taken from New York

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[6] In order to meet the federal Clean Water Act goal that all waters be "swimmable," water quality of New York State waters Class C, SC (and above) "shall be suitable for primary and secondary contact recreation." However, other factors (such as flow/depth, access, conflicting use) may limit this use. (See NYS Classifications for Surface Waters, Part 701.1 thru 701.14.)

State freshwaters and some marine water at the mouth of the Hudson River. These general advisories are to protect against eating large amounts of fish that have not been tested or that may contain unidentified contaminants. Because the general statewide and marine waters advisories are precautionary and not based on any actual contaminant monitoring data, it does not represent any documented impairment of *Fish Consumption* use. Consequently, the general statewide advisories are not reflected in the assessment of *Fish Consumption* use. Current statewide advisories regarding snapping turtles and wild waterfowl are not reflected in the methodology for similar reasons.

Other general advisories recommend limiting the consumption of striped bass, bluefish and eels taken from marine waters due to specific habits or characteristics that make these species more likely to accumulate contaminants (particularly PCBs). Because these marine water advisories (outside of New York Harbor and Western Long Island Sound) are also more precautionary in nature and no more significant than the statewide advisory for freshwaters, they correspond to *Stressed* rather than *Impaired* use.

The relationship between the waterbody-specific fish consumption advisories and the severity and documentation of an impact/impairment to *Fish Consumption* use is reflected in Table 6.

Table 6 Fish Consumption Use Assessment Criteria

Use Assessment Criteria	WI/PWL Use Impact	
	Severity	**Documentation**
Frequent/Persistent Conditions Prevent Use • NYSDOH advisory recommends eating no fish (or none of sub-species) from a specific waterbody.	Precluded	Known
Periodic/Occasional Conditions Prevent Use • NYSDOH advisory recommends limiting consumption of fish (no more than one meal per month) from a specific waterbody.	Impaired	Known
Occasional (Other) Conditions Discourage Use • Monitoring of fish tissue shows contaminant levels that exceed levels of concern, but NYSDOH advisory has not been issued. • NYSDOH general advisory recommends limiting consumption of fish (no more than one meal per week) from certain marine waters. • Monitoring of macroinvertebrate tissue or surficial bottom sediment shows contaminant levels that exceed levels of concern.	Stressed	Known or Suspected
Conditions Support Use, Threats Noted • Monitoring of fish (known) or macroinvertebrate tissue/bottom sediment (suspected) shows contaminant levels present but not exceeding levels of concern.	Threatened	Known or Suspected
No Known Impairment or Imminent Threat • No fish consumption advisory beyond the NYSDOH *General Advisory for Eating Gamefish*, and • Monitoring data revealing no contaminants in fish, macroinvertebrate tissue or surficial bottom sediment above background levels.	No Known Impact	Assessment Level: *Monitored*

Aquatic Life Use Support

A primary focus of the Statewide Waters Monitoring Program (SWMP) involves determining the degree to which waters support aquatic life. There are a number of reasons for this emphasis:

- *Aquatic Life* use support must be maintained in all waters, regardless of classification, and
- *Aquatic Life* use support is one of the most sensitive of national use support categories, and
- *Aquatic Life* use support can be assessed easily and economically using biological sampling techniques.

The evaluation of *Aquatic Life* use support represents a recent change to the WI/PWL. Prior to 1999, the WI/PWL tracked waterbody support of *Fish Propagation* and *Fish Survival* rather than *Aquatic Life* use support. This was a reflection of the designated uses outlined in New York State standards. However, the change to the broader category of *Aquatic Life* use support better represents the results of the macroinvertebrate sampling used to assess water quality. The change from *Fish Propagation/Survival* to *Aquatic Life* use support also provides greater flexibility in reporting water quality and allows tracking of aquatic impacts that are not sufficiently severe as to be apparent in the fishery. The revised category also corresponds more closely to the USEPA national use support category.

Different types of monitoring data may be used to determine *Aquatic Life* use support use. The SWMP relies on biological sampling. The assemblage most frequently used is macroinvertebrates, however the program has recently incorporated some periphyton and, to a lesser degree, fish community assessments. The relationship between biological (macroinvertebrate) assessment, as described in the *Quality Assurance Work Plan for Biological Stream Monitoring in New York State* (*Bode, et.al., 2002*) and the impact/impairment to *Aquatic Life* use support is shown in Table 7.

Table 7 Aquatic Life Use Support Assessment Criteria

Biological (Macroinvertebrate) Assessment		WI/PWL Use Impact	
		Severity	Documentation
Severely Impacted (Very Poor)		Precluded	Known
Moderately Impacted (Poor)		Impaired	Known
*Slightly Impacted** (Good)	Other indications of impact present	Stressed	Suspected or Known
	No other indications of impact	No Known Impact	Assessment Level: *Evaluated*
Non-Impacted (Very Good)		No Known Impact	Assessment Level: *Monitored*

* *Slightly Impacted* represents a broad category ranging from generally good water quality to conditions causing minor impacts, but still providing adequate support of aquatic life.

Independent Applicability and Weight of Evidence

A comprehensive evaluation of *Aquatic Life* use support must consider all available biological, physical/chemical and toxicity monitoring data. Biological assessment of the macroinvertebrate community is a good integrator of these monitoring components. Consequently, when biological macroinvertebrate community assessment data is available and considered definitive, *Aquatic Life* use support is generally determined as outlined in Table 7. For instances in which assessment of the macroinvertebrate community is inconclusive and/or other indicators suggest different levels of use support, aquatic life use support determination is made by further consideration of all available monitoring data and comparison of monitoring data results against the applicable water quality standards and criteria for the protection of aquatic life.

To address the possibility of conflicting results, USEPA developed a policy of *Independent Applicability*. This policy states that where there are conflicting and equally valid data sets no one type of assessment (biological, physical/chemical, toxicity) can be used to override a finding of water quality impact/impairment that is based on another type of assessment. However, while no one assessment type routinely takes precedence over others, the evaluation of conflicting assessments must take into account levels of documentation, quality and overall confidence in the data, other artifacts of monitoring data (e.g., analytic methods, sampling techniques, etc.), how representative the sampling is of conditions in the larger waterbody segment and the relationship of the indicator to the actual use being assessed. These considerations (or *weight of evidence*) may, in fact, lead to favoring one assessment over others in arriving at an assessment for a specific waterbody. Because biological sampling is a good integrator of water quality conditions and it is a direct measurement of aquatic life use support, it is often the deciding factor in assessment decisions for this use.

Assessment of Naturally Occurring Low Dissolved Oxygen Waters

NYS water quality standards for dissolved oxygen for the protection of aquatic life specify that dissolved oxygen in waters should not be less than the standard "at any time." In some instances this "never less than" condition is qualified to except waters where low dissolved oxygen is the result of natural conditions (Class AA-Special, AA, A, B and C trout spawning waters); for other waters, the natural conditions exception is not explicit. However, whether explicitly stated or not, assessments of use support based on dissolved oxygen should recognize that low dissolved oxygen at lower depths of non-flowing waters (i.e., lakes and impoundments) or in areas of poor aeration, circulation or natural organic loadings are likely to occur.

A review of the assessment methodologies of other northeastern states finds that most recognize and allow for natural conditions of low dissolved oxygen that do not result in designation of the water as not supporting uses.[7] These states allow for the application of "best professional judgment" in determining whether low dissolved oxygen values are naturally occurring, whether they are representative of the waterbody as a whole, and how they should be considered in light of biological sampling results and other available information. In fact, USEPA in earlier *Guidelines for the Preparation of the Comprehensive State Water Quality Assessments (305(b) Reports) and Electronic Updates* (USEPA, 1997) includes low dissolved oxygen (and low pH) caused by poor aeration or natural organic materials among its examples of what might be considered naturally occurring conditions.

Water quality assessment for the determination of *Aquatic Life* use support applies an approach to the evaluation of dissolved oxygen results that recognizes that morphology and other natural conditions may contribute to the occurrence of low dissolved oxygen in some waters. Specifically, data will be evaluated on a case-by-case basis to determine whether impacts result in impairments to aquatic life and/or other uses, and the degree to which natural conditions contribute to the impacts. This evaluation will be made using best professional judgement, with attention to other available physical/chemical indicators and particular emphasis on biological assessments which are a more direct measurement of aquatic life use support. As the triennial water quality standards rule-making effort moves forward, NYSDEC will evaluate the current dissolved oxygen standards for freshwater in light of available research and adopt a criterion that might better reflect the natural occurrence of low dissolved oxygen in deeper waters and its impact on use support. (See also *Impacts Due to Natural Conditions/Conflicting Uses* in the Listing Methodology.) A general relationship between dissolved oxygen data, water chemistry and aquatic biology and assessed impacts to aquatic life use support is shown in Table 8.

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[7] Both Vermont and Pennsylvania allow for seasonal and periodic variations in hypolimnetic dissolved oxygen (perhaps as low as 0 mg/l) if biological sampling reveals a healthy aquatic (marcoinvertebrate, fish) community. Rhode Island also recognizes that D.O. measurements should not exceed the criteria "except as naturally occurs." And New Hampshire states that "exceedances of most water quality criteria due to naturally occurring conditions are not considered violations of water quality standards."

Impacts from Low/High pH on *Aquatic life Use Support*

One important chemical indicator for evaluating *Aquatic Life* use support is pH. Specific criteria regarding the use of pH data to determine *Aquatic Life* use support is applied to waterbodies, particularly lakes and ponds, that are subject to atmospheric deposition/acid rain. Because of the extent and significance of this issue, extensive chemical sampling efforts to monitor the pH of streams, lakes and ponds in the state have long been in place. The *Aquatic Life* use support/pH criteria takes advantage of the considerable amount of study and available chemical (pH) data. These efforts provide strong evidence that pH levels that fall somewhat outside the 6.5 to 8.5 range specified in NYS water quality standards are still supportive of aquatic life. As is the case with low dissolved oxygen (cited above), other states as well as USEPA have recognized the occurrence of natural conditions that may result in low pH levels.

Table 8 Aquatic Life Use Support/D.O. Assessment Criteria

Lake/River Conditions (Dissolved Oxygen, Water Chemistry, Aquatic Biology)	WI/PWL Use Impact	
	Severity	Documentation
Dissolved Oxygen not meeting standards is consistent over depth, season and/or area.	Impaired	Known
Dissolved Oxygen not meeting standards periodically and/or not consistent over depth, season and/or area, and other indicators (water chemistry, aquatic biology) suggest impairment.	Impaired	Known
Dissolved Oxygen not meeting standards periodically and/or not consistent over depth, season and/or area, and no other indicators or use support/impairment are available.	Stressed *	Possible *
Dissolved Oxygen not meeting standards periodically and/or not consistent over depth, season and/or area, and other indicators more representative of conditions suggest no impairment. Possible natural condition	Stressed or No Known Impact	Known Suspected, or Possible
Dissolved Oxygen typically meets standards (> 90%), and other indicators (chemistry, aquatic biology) suggest no impairment.	No Known Impact	Known, or Suspected
Dissolved Oxygen not meeting standards, but limited data (single sampling event or single point not representing whole waterbody)	Stressed *	Possible *
Dissolved Oxygen standards are consistently met.	No Known Impact	Assessment: *Monitored*

* Waters assessed as Stressed/Possible are listed as *Waters Needing Verification of Impact* and reported as *Integrated Reporting Category 3 - Waters with Insufficient Data*.

Water quality assessment for the determination of *Aquatic Life* use support with regard to pH results also relies on best professional judgment. As with dissolved oxygen data, pH data will be evaluated in light of all other available data (including biological assessments) on a case-by-case basis using best professional judgment. (See also *Natural Conditions* in the Listing Methodology.)

The general relationship between pH monitoring data and the assessed impacts to aquatic life is shown in Table 9. Note that waters having pH between 6.0 and the minimum pH water quality standard of 6.5, but where biological sampling suggests that aquatic life is supported, may be listed as *Waters Needing Verification of Impact*. This is consistent with the *weight of evidence* approach (outlined above) and recognizes that because biological samples represent an integrator of all water quality conditions and are also a direct measurement of aquatic life, biological assessments are often given more weight in evaluating *Aquatic Life* use support.

Table 9 Aquatic Life Use Support/pH Assessment Criteria		
Lake pH/Fishery Assessment	**WI/PWL Use Impact**	
	Severity	**Documentation**
pH values less than 5.0 or greater than 10.0	Precluded	Known
pH values between 5.0 and 6.0 or between 9.0 and 10.0	Impaired	Known
pH values between 6.0 and 6.5 or between 8.5 and 9.0, and fish/biological surveys indicate a fishery/aquatic life impact.	Impaired	Known or Suspected
pH values between 6.0 and 6.5 or between 8.5 and 9.0, but fish/biological surveys indicate no fishery/aquatic life impact	Stressed	Known Suspected, or Possible *
pH values greater than 6.5 and less than 8.5	No Known Impact	Assessment: *Evaluated*

* Waters that have pH above 6.0 and below 6.5 and where biological sampling suggests that aquatic life is supported may be listed as *Waters Needing Verification of Impact.*

Note about *Episodic Acidification*

Episodic Acidification refers to short-term decreases in acid neutralizing capacity (ANC) that may occur during high streamflow events (i.e., spring runoff, snowmelt). Although these events are periodic, bioassays and other fish studies show that the impact on the fishery can be significant and longer lasting. The severity of the impact may result in precluded–rather than merely *impaired*–aquatic life, even though episodic acidification occurs over a short time period. This situation represents an exception to the strict application of the Priority Waterbodies List (PWL) definitions for a precluded use (frequent/persistent water quality condition) and an impaired use (occasional water quality conditions).

Site Specific Factors

The USEPA policy also recognizes the difficulty and time involved in resolving conflicting results that might be due to site-specific environmental factors. In these cases, site-specific criteria, use attainability analysis or re-evaluation of a standard may be needed to determine use support. Because these efforts may require additional monitoring, USEPA suggests use of an assessment category of *Monitoring Insufficient to Determine Impairment*. This category corresponds to the WI/PWL category of *Segments Needing Verification of Impact/Impairment*, and allows for the deferring of a use support decision until appropriate evaluation is complete.

Natural Resources Habitat/Hydrologic Uses

In an effort to better incorporate wetlands and other natural resources concerns into the water quality assessments, the water use category of *Natural Resources Habitat/Hydrology* uses was recently added to the list of uses to be assessed. This category recognizes that, in some waterbodies, water quality may be appropriate to support uses, but various other conditions, such as habitat, streamflow, invasive species, and so on, result in degradation of natural resources (i.e., fish and wildlife populations). Additionally, hydrologic conditions can have a negative impact on wetland uses such as flood protection, erosion control, nutrient recycling and surface and groundwater recharge. This category may also be used to capture impacts to various water quantity and flooding/flood plain issues including excessively low flows, increased peak flows, alterations to the frequency, duration and timing of floods and loss of flood storage.

For many impacts to *Natural Resources Habitat/Hydrology* use support, the situation is more clearly defined by the cause or source of the problem, than by the use affected. Such causes/sources include dredging, draining, excavation and/or filling of wetlands, stream channels, lakes/ponds; stream widening; stream downcutting; sediment embedded-ness; other losses of wetlands; habitat fragmentation; loss of riparian vegetation or upland buffer zones. Generally, *Natural Resources Habitat/Hydrology* use impacts and impairments are more likely attributed to *"pollution"* (i.e., a condition related to the waterbody) rather than a *"pollutant"* (i.e., a substance/contaminant in the waterbody).

While waterbody assessments include impacts to *Natural Resources Habitat/Hydrology*, specific criteria for *Natural Resources Habitat/Hydrology* use support have not yet been developed.

Aesthetics

An evaluation of waterbody support of *Aesthetics* is much more subjective than those for the other assessed uses. Because of this subjectivity and the difficulty in assigning a level of severity of impacts to aesthetics, available choices for the assessment of aesthetics are limited to *No Known Impact* and *Stressed*. Due to the subjectivity and the limitations on the level of severity, there is no specific assessment criteria to determine support of aesthetics. Instead, the assessment of *Aesthetics* use support should reflect available objective information (CSLAP Lake Perception Surveys, preponderance of citizen complaints, etc).

Presumed Assessments

While the great majority of waters in New York State are thought to support a variety of uses, because of limited monitoring resources and the emphasis on monitoring in priority/problem waters documentation of good quality waters has been generally lacking. This shortcoming was addressed in previous 305(b) assessments by assuming that waterbodies were fully supporting uses, unless there was information to the contrary. However, USEPA has determined such "presumed" assessments to be unacceptable. NYSDEC also recognizes the need to increase efforts to document water quality in the great number of waterbodies that do support uses in order to provide a more balanced picture of water quality in the state.

Recent modifications to the NYSDEC Division of Water Statewide Waters Monitoring Program (SWMP) include an expanded biological screening component. This effort uses a fairly simple but effective set of on-site assessment criteria based on the presence/absence of key macroinvertebrate indicator species. Where the assessment criteria are met, the waterbody is assessed as having *No Known Impacts*. Where the criteria are not met, possible water quality problems are evaluated using more intensive sampling methods to collect more complete data.

A similar effort is being developed and implemented to evaluate all currently unassessed lakes in the state. This effort relies on basic water chemistry sampling in conjunction with visual assessments of aesthetics and recreational use support.

These screening efforts, which greatly increase the number of sites assessed in a basin study area, reflect the incorporation of a "census" approach into the SWMP and are key components in the state's goal of providing a comprehensive assessment of its waters.

Pollutants (Causes) and Sources of Water Quality Impacts

In addition to providing assessments of designated use support, the WI/PWL assessments also includes information regarding the likely pollutants/causes and sources that are responsible for water use impacts. These pollutant and source identifications are derived from a number of information sources including Impact Source Determinations conducted during biological sampling, water chemistry data collected during Intensive Network Monitoring, or other available monitoring data. In many cases, monitoring focused on the specific pollutants and sources is not available. In the absence of any such data, best professional judgment based on surrounding land use may be used to identify possible causes and sources.

The listing of specific pollutants and sources includes an indication of the degree to which they are thought to contribute to water quality problems. The impact of all listed pollutants and sources are characterized as being *Known*, *Suspected*, or *Possible*. Since it is common for multiple pollutants and sources to be indicated as contributing to a water quality impact, each identified pollutant and source is also listed as either a *major* or *minor* contributor to the impact, based on best professional judgment. Note that the designation *major* is assigned to pollutants and sources that significantly contribute to the most severe water quality impacts/impairments affecting the segment; pollutants and sources contributing to lesser impacts are listed as *minor*.

National (USEPA) reporting guidance suggests that state databases specify which uses are affected by which pollutants, and which sources contribute each pollutant. However the New York Statewide Water Monitoring Program does not routinely focus on pollutant identification and source trackdown to a degree that this level of precision is known for most waters. Pollution identification and source trackdown is typically a more resource-intensive effort reserved for special situations. In its national reporting to USEPA, New York State provides data that links sources to pollutants and pollutants to use impacts. But these linkages are usually broadly interpreted and typically reflect that most sources contribute varying degrees of each pollutant and each pollutant has some influence on all impacted uses.

Resolution/Management Information

The WI/PWL database also allows for the tracking of information relating to management and status regarding the resolution of water quality impacts for each waterbody. This information includes:

- Resolvability indicates where a waterbody needs additional study, the development of a strategy, implementation of a strategy, or verification of the effectiveness of an implemented strategy. In some cases a water quality impact may be deemed *Not Resolvable* at this time due to technical and/or economic limitations or if the impact is the result of natural conditions or conflicting uses.
- Status of Verification refers to the specific aspect of the waterbody that needs further study. The verification effort may need to focus on the existence of an impact, the pollutant/cause of a known impact, the source of a known pollutant, or the development of a management strategy to address the problem.
- Lead Agency/Office indicates the specific government agency, office or other group that has primary responsibility for managing/addressing the impact to the waterbody.
- Resolution Potential is used to reflect the degree to which the expenditure of available NYSDEC resources on the waterbody or water quality issue is appropriate. Resolution Potential reflects the level of public interest, the expectation that measurable improvements can be reasonably achieved, and the appropriate role for NYSDEC.
- TMDL Note indicates the status of planned and/or ongoing Total Maximum Daily Load activities, if any.

Such information allows NYSDEC to better prioritize monitoring, restoration and protection activities, target the expenditure of limited resources to those waters where there is greatest public interest and/or the expectation that measurable improvements can be achieved, and track progress toward water quality improvement and problem resolution.

Waterbody Inventory Data Sheet
Background Information

Waterbody Location Information

Water Index Number (WIN): The stream identification number used in the Stream Classification Regulations (Title 6 - Conservation, Vols. B-F of the Official Compilation of Codes, Rules and Regulations for the State of New York).

Hydrologic (Watershed) Unit Code: Eleven digit code found on USDA-SCS (NRCS) *Hydrologic Watershed Unit Map - 1980 State of New York.*

Waterbody Type: River, Canal, Lake, Lake(Reservoir), Bay, Great Lake Shoreline, Estuary, or Ocean Coastline. NOTE: Bays refer to freshwater bays, saltwater bays and tidal waters should be designated as *Estuary*.

Affected Length/Area: The estimated length of segment with the noted impairment in miles (rivers, canals), Shore/coastal miles (great lakes, ocean) or acres (lakes, bays, reservoirs, estuaries).

Describe Waterbody Segment: Narrative description locating the beginning and endpoint (from downstream to upstream) of the segment.

Waterbody Classification: Current classification of the waterbody as specified in the Stream Classification Regulations (Title 6 - Conservation, Vols. B-F of the Official Compilation of Codes, Rules and Regulations for the State of New York).

Flow Category: Minimum Average Seven Consecutive Day Flow-10 year recurrence (MA7CD/10) flow range, from table.

Category	MA7CD/10 Range
H (for high)	Streams/Rivers over 150 cfs
M (for medium)	Stream/Rivers between 20-150 cfs
L (for Low)	Streams/Rivers under 20 cfs
0	Not Applicable (lake, estuary, shore/coastline, etc.)

Drainage Basin and Sub-Basin: One of 17 major hydrologic basins in New York and the associated sub-basin.

Region: NYSDEC Region in which the waterbody is located.

County: Primary county (and county ID number) of waterbody location. NOTE: Waterbody segments which form the border between or cross two or more counties are listed only once. This is done to avoid double counting the number of segments and/or the length/affected area of the segment. PWL segments that are located in more than one county are indicated by "..." after the *primary* county name. (Listings of PWL segments within each county are included as Appendix C.)

Quad Map: The name of the primary topographic quadrangle map on which the segment appears. NOTE: PWL segments that are located in more than one quadrangle are indicated by "..." after the *primary* quad map name.

Water Quality Problem Information

Use Impacts/Impairments:
All specific uses that are restricted by water quality impacts/impairments are listed.

Problem Severity: For each waterbody use impairment, the degree of severity of water quality problem/diminished use (i.e., use precluded, impaired, stressed, or threatened) is listed. The severity is determined using the following criteria.

PRECLUDED (P):
Frequent/persistent water quality, or quantity, conditions and/or associated habitat degradation prevents all aspects of the waterbody use (e.g., the Health Department does not allow swimming at the Onondaga Lake Outlet public park beach - *bathing precluded*; consumption advisory recommends eating no fish from Upper Hudson due to PCB contamination - *fish consumption precluded*; Sacandaga River below the dam is periodically dry and devoid of benthic organisms due to flow extremes from power dam releases - *fish propagation precluded*)

IMPAIRED (I):
Occasional water quality, or quantity, conditions and/or habitat characteristics periodically prevent the use of the waterbody (e.g., beaches in marine waters are closed after storm events due to high coliform levels from CSOs's and stormwater runoff - *bathing impaired*) or;

Waterbody uses are not precluded, but some aspects of the use are limited or restricted (e.g., a fish consumption advisory for lake trout from Canandaigua Lake recommends eating no more than one meal per month - *fish consumption impaired*) or;

Waterbody uses are not precluded, but frequent/persistent water quality, or quantity, conditions and/or associated habitat degradation discourage the use of the waterbody (algal blooms and heavy rooted aquatic vegetation deter swimming in Oneida Lake - *bathing/swimming impaired*) or;

Support of the waterbody use requires additional/advanced measures or treatment (e.g., the City of Rochester is to build a filtration plant due to high turbidity in the Hemlock Lake water supply - *water supply impaired*, aquatic vegetation control--mechanical harvesting, herbicides--are required in Upper Cassadaga Lake to allow swimming and boating - *bathing/ swimming* and *boating impaired*).

STRESSED (S):
Waterbody uses are not significantly limited or restricted, but occasional water quality, or quantity, conditions and/or associated habitat degradation periodically discourage the use of the waterbody (e.g., high tubidity that occurs after rains reduce clarity and deter swimmers in Babcock Lake - *bathing/ swimming stressed*, ambient water column analyses indicate occasional aquatic standard violations but impaired use not evident - *fish survival/ propagation stressed*; localized areas of debris along the shore - *aesthetic stressed)*

THREATENED (T):
Water quality currently supports waterbody uses and the ecosystem exhibits no obvious signs of stress, however existing or changing land use patterns may result in restricted use or ecosystem disruption (e.g., numerous proposals for residential development in the Schoharie Creek headwaters create a concern - *fish propagation, aesthetics threatened*) or,

Water quality currently supports waterbody uses and the ecosystem exhibits no obvious signs of stress, however monitoring data reveals a declining trend in water quality which, if it continues, would result in a use impairment, or

Waterbody uses are not restricted and no water quality problems exists, but the support of a specific and distinctive use or uses make the waterbody more susceptible to water quality threats. Note: Such situations are the only instances where a threatened use can have a documentation level of *possible*, other threatened waterbodies (i.e., those related to changing land use activities) must correspond to *known* or *suspected* (planned) land use changes.

Problem Documentation: Each diminished/impacted use is listed according to the level of documentation for the problem/impairment. The level of problem documentation is determined using the following criteria.

Known (K): Water quality monitoring data and/or studies (biologic macro-invertebrate surveys, fishery studies, water column chemistry, beach closures, fish consumption advisories, shellfishing restrictions) have been completed and conclude that the use of the waterbody is restricted to the degree indicated by the listed *severity*.

Suspected (S): Anecdotal evidence, public perception and/or specific citizen complaints indicate that the use of the waterbody may be restricted. However, water quality data/studies that establish an impairment have not been completed or there is conflicting information.

Possible (P): Land use or other activities in the watershed are such that the use of the waterbody could be affected. However, there is currently very little, if any, documentation of an actual water quality problem.

Type of Pollutant: Each pollutant contributing to the water quality problem is listed according to the level of documentation for the pollutant. The criteria for *known*, *suspected*, or *possible* pollutants the same as outlined above. Those pollutants that contribute to the most significant impact/impairment are "major" pollutants and are is listed in CAPITAL LETTERS.

Source(s) of Pollutant: Each source of pollution contributing to the water quality problem is listed according to the level of documentation for the source. The criteria for *known*, *suspected*, or *possible* pollutants the same as outlined above. Those sources that contribute to the most significant impact/impairment are "major" sources and are is listed in CAPITAL LETTERS.

Waterbody Problem Description/Documentation/History/Notes: This narrative description contains more detailed information about the waterbody segment and its water quality problem/impairment. This section may include:

1)a detailed description of the waterbody and surrounding area,
2) specific examples/instances of water use impairments, e.g., what water supply is affected? how often are beaches closed? what species of fish are restricted for consumption?
3) details regarding the specific pollutant and source of the impairment, and
4) references for specific reports, studies, monitoring data and/or other documentation that supports the impairment, pollutant and source information.

For some segments, an expected date of completion for a sampling effort, report, facility or other activity that will affect the segment or provide additional segment information may be noted in the **Next Update** field. The **Next Update** information will help ensure the segment information is kept up-to-date.

Resolution/Management Information (to be completed by NYSDEC staff)

18. Resolvability: Note with an "X" the one most appropriate *resolvability* class for the segment from the list below.

    1. Needs Verification/Study (see *Status*): The confirmation of a use impairment, the evaluation of possible solutions and/or the development of management action (tailored specifically to the segment) need to be completed. See also *Status of Problem Verification/Study*.)

    2. Strategy Exists, Funding/Resources Needed: Study of the problem is complete, but funding or other resources are needed to implement the management strategy.

    3. Strategy Being Implemented: The recommended strategy for the remediation of the segment is currently underway.

    4. Problem Not Resolvable (technical/economic limitations): Technical, legal, social, political concerns preclude resolution of the impairment for the foreseeable future (e.g., low pH in lakes due to acid rain).

    5. Problem Not Resolvable (natural condition): Limitations to use of a waterbody is attributed to naturally occurring characteristics of the water/watershed (e.g., high sediment load in the Genesee River).

    6. Problem Thought to be Abated, Needs Verification: The prime cause of the use impairment to the waterbody has been brought under control but the expected improvement to the waterbody needs to be confirmed.

    7. Problem Abated, Waterbody Deleted: The waterbody use has been restored and the segment has been marked as *deleted.* Although deleted and not included in the list, the segment and information will remain in the Waterbody Inventory.

19. Status of Problem Verification/Study: Note with an "X" the one most appropriate *status* class for the segment from the list below.

    1. Waterbody Nominated, but Problem Not Verified: It has been suggested that a waterbody use impairment exists for the segment, however there is insufficient (or no) available information to confirm that the use is being affected to the degree indicated.

    2. Problem Verified/Documented, Cause Unknown: The waterbody use impairment (and severity) is sufficiently documented, however identification of the cause (pollutant) requires more study.

    3. Cause of Problem Identified, Source Unknown: The specific pollutant(s) causing the use impairment have been sufficiently documented, however the source of the pollutant requires more study.

    4. Source of Problem Identified, Management Strategy Needed: Most details about the problem (use impairment, cause, source) are known/sufficiently documented. A management strategy to address the situation and restore the designated use of the waterbody needs to be developed.

    5. Management Strategy has been Developed: Necessary study of the situation is complete.

20. Lead Agency/Office: Indicate the primary party, either within DEC (division and bureau or office) or outside/external to DEC, responsible for the next steps in the study/strategy implementation concerning the segment. (e.g., DOW/BWAR, DOW/Reg6, DEC/F&W, DOH/PWS, ext/WQCC, ext/SWCD, etc)

21. Resolution Potential: Indicate as *High, Medium,* or *Low,* using the following criteria.

High: The waterbody or water quality issue has been deemed to be worthy of the expenditure of available resources (time and dollar) because of the level of public interest and the expectation that the commitment of these resources will result in either a measurable improvement in the situation or additional information necessary for the management of the water resource.

Medium: The resources necessary to address the problem are beyond what are *currently* available. With additional resources, these segments could become High *resolution potential* segments.

Low: Segments with water quality problems so persistent/intractable that improvements are expected to require an unrealistically high commitment of resources, not likely to become available (e.g., acid rain lakes).

NOTE: This field may be left blank if further verification/study of the impairment, pollutant and/or source is necessary to determine the *Resolution Potential* of the segment.

22. Total Maximum Daily Load (TMDL)/303d Status: Note with an "X" the most appropriate *TMDL* note (or notes) for the segment from the list below.

Impaired Water, TMDL Development Needed
- Part 1 - High Priority for TMDL
- Part 2 - Multiple Segment/Categorical TMDL Waters
  - o Acid Rain Waters
  - o Fish Consumption Waters
  - o Restricted Shellfishing Waters
- Part 3 - Water Requiring Re-Evaluation

Impaired Water, TMDL Development NOT Needed
- Part 4a - TMDL Complete, being Implemented
- Part 4b - *Pollution* Impairment, Not *Pollutants*
- Part 4c - Other Controls More Suitable.

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Waterbody Inventory Data Sheets
By County, Segment Name

Waterbody/Segment (ID)	Water Index Number	Category
Orange County		
Coronet Lake (1501-0061)	NJ-12-25- 4-P1017d	UnAssessed
Cranberry Lake (1501-0056)	NJ-12-20-P1014..P1015	UnAssessed
Echo Lake (1501-0054)	NJ-12-20-P1014	UnAssessed
Forest Lake (1501-0057)	NJ-12-20-P1014..P1016	UnAssessed
Greenwood Lake (1501-0001)	NJ-P1026	Impaired Seg
Island Pond (1501-0058)	NJ-12-20-P1014..P1016a	UnAssessed
Jenning Creek and tribs (1501-0069)	NJ-14 thru 15	UnAssessed
Lake Cohasset, Upper Cohasset Lake (1501-0055)	NJ-12-20-P1014..P1014a,P1014b	UnAssessed
Lake Sapphire (1501-0060)	NJ-12-23-P1016i	UnAssessed
Lake Stahahe (1501-0053)	NJ-12-18-P1011	UnAssessed
Lake Winape (1501-0052)	NJ-12-17-P1008- 3-P1009b	UnAssessed
Little Cedar Lake (1501-0067)	NJ-13- 2-P1022	UnAssessed
Little Dam Lake (1501-0051)	NJ-12-17-P1008	UnAssessed
Mombasha Lake, Kloibers Pond (1501-0002)	NJ-12-17-P1008..P1010,P1010b	Need Verific
Monroe Pond (1501-0062)	NJ-12-P1019	UnAssessed
Mountain Lake (1501-0048)	NJ-12-10-P1004	UnAssessed
Ramapo River, Middle, and tribs (1501-0036)	NJ-12	MinorImpacts
Ramapo River, Upper, and tribs (1501-0037)	NJ-12	Need Verific
Ringwood River and tribs (1501-0064)	NJ-13	UnAssessed
Round Lake (1501-0063)	NJ-12-P1021	UnAssessed
Shadowmere Lake, Blythea Lake (1501-0059)	NJ-12-23-P1016h,P1016k	UnAssessed
Sterling Forest Lake (1501-0066)	NJ-13- 2-P1021c	UnAssessed
Sterling Lake (1501-0068)	NJ-13-P1025	UnAssessed
Trib of Sterling Forest Lake (1501-0065)	NJ-13- 2	UnAssessed
Tribs to Greenwood Lake (1501-0070)	NJ-P1026-	UnAssessed
Tuxedo Lake (1501-0050)	NJ-12-15-P1007	UnAssessed
We Wah Lake (1501-0049)	NJ-12-15-P1005	UnAssessed
Rockland County		
Congers Lake, Swartout Lake (1501-0019)	NJ- 1/P977a-13-P984,P984a	MinorImpacts
Cranberry Pond, Potake Lake (1501-0038)	NJ-12- 5- 1a- 1-P1001,P1001a	UnAssessed
DeForest Lake (1501-0007)	NJ- 1 (portion 3)/P977a	MinorImpacts
East Br.Hackensack, Upper, and tribs (1501-0030)	NJ- 1/P977a-13	UnAssessed
Hackensack River, Lower, and minor tribs (1501-0026)	NJ- 1 (portion 2)	Impaired Seg
Hackensack River/Lake Tappan (1501-0008)	NJ- 1 (portion 1)	Need Verific
Lake Antrim/Island Lake (1501-0034)	NJ- 8-P995b	UnAssessed
Lake Askoti (1501-0043)	NJ-12- 6-P1002e..P1002e	UnAssessed
Lake Kanawauke (1501-0045)	NJ-12- 6-P1002e..P1003	UnAssessed
Lake Lucille (1501-0017)	NJ- 1/P977a-12-P982b	Need Verific
Lake Sebago (1501-0041)	NJ-12- 6-P1002e	UnAssessed
Lake Skannatati (1501-0047)	NJ-12- 6-P1002e..P1003d	UnAssessed
Lake Skemonto (1501-0044)	NJ-12- 6-P1002e..P1002f	UnAssessed
Lake Wanoksink, Pine Meadow Lake (1501-0040)	NJ-12- 6- 3- P1002b,P1002d	UnAssessed
Little Long Pond (1501-0046)	NJ-12- 6-P1002e..P1003b	UnAssessed

Waterbody/Segment (ID)	Water Index Number	Category
Rockland County (con't)		
Mahwah River, Lower, and tribs (1501-0011)	NJ-11	MinorImpacts
Mahwah River, Upper, and tribs (1501-0035)	NJ-11	UnAssessed
Minor Tribs to DeForest Lake (1501-0029)	NJ- 1/P977a-	Impaired Seg
Minor Tribs to New Jersey (1501-0032)	NJ- 1a thru e	UnAssessed
Minor Tribs to New Jersey (1501-0014)	NJ- 2 thru 4	UnAssessed
Nauraushaun Brook, Lower, and tribs (1501-0010)	NJ- 1- 4	Impaired Seg
Nauraushaun Brook, Upper, and tribs (1501-0028)	NJ- 1- 4	UnAssessed
Pascack Brook and tribs, within NYS (1501-0015)	NJ- 5	Impaired Seg
Ramapo River, Lower, and minor tribs (1501-0012)	NJ-12	MinorImpacts
Rockland Lake (1501-0021)	NJ- 1/P977a-13-P985	UnAssessed
Saddle River and tribs (1501-0033)	NJ- 6 thru 8	MinorImpacts
Stony Brook and tribs (1501-0039)	NJ-12- 6	NoKnownImpct
Tribs to Lake Sebago (1501-0042)	NJ-12- 6-P1002e-	UnAssessed
West Br.Hackensack, Upper, and tribs (1501-0009)	NJ- 1/P977a-12	Impaired Seg

Waterbody Inventory Data Sheets
By Segment Name

Waterbody/Segment (ID)	Water Index Number	Category
Congers Lake, Swartout Lake (1501-0019)	NJ- 1/P977a-13-P984,P984a	MinorImpacts
Coronet Lake (1501-0061)	NJ-12-25- 4-P1017d	UnAssessed
Cranberry Lake (1501-0056)	NJ-12-20-P1014..P1015	UnAssessed
Cranberry Pond, Potake Lake (1501-0038)	NJ-12- 5- 1a- 1-P1001,P1001a	UnAssessed
DeForest Lake (1501-0007)	NJ- 1 (portion 3)/P977a	MinorImpacts
East Br.Hackensack, Upper, and tribs (1501-0030)	NJ- 1/P977a-13	UnAssessed
Echo Lake (1501-0054)	NJ-12-20-P1014	UnAssessed
Forest Lake (1501-0057)	NJ-12-20-P1014..P1016	UnAssessed
Greenwood Lake (1501-0001)	NJ-P1026	Impaired Seg
Hackensack River, Lower, and minor tribs (1501-0026)	NJ- 1 (portion 2)	Impaired Seg
Hackensack River/Lake Tappan (1501-0008)	NJ- 1 (portion 1)	Need Verific
Island Pond (1501-0058)	NJ-12-20-P1014..P1016a	UnAssessed
Jenning Creek and tribs (1501-0069)	NJ-14 thru 15	UnAssessed
Lake Antrim/Island Lake (1501-0034)	NJ- 8-P995b	UnAssessed
Lake Askoti (1501-0043)	NJ-12- 6-P1002e..P1002e	UnAssessed
Lake Cohasset, Upper Cohasset Lake (1501-0055)	NJ-12-20-P1014..P1014a,P1014b	UnAssessed
Lake Kanawauke (1501-0045)	NJ-12- 6-P1002e..P1003	UnAssessed
Lake Lucille (1501-0017)	NJ- 1/P977a-12-P982b	Need Verific
Lake Sapphire (1501-0060)	NJ-12-23-P1016i	UnAssessed
Lake Sebago (1501-0041)	NJ-12- 6-P1002e	UnAssessed
Lake Skannatati (1501-0047)	NJ-12- 6-P1002e..P1003d	UnAssessed
Lake Skemonto (1501-0044)	NJ-12- 6-P1002e..P1002f	UnAssessed
Lake Stahahe (1501-0053)	NJ-12-18-P1011	UnAssessed
Lake Wanoksink, Pine Meadow Lake (1501-0040)	NJ-12- 6- 3- P1002b,P1002d	UnAssessed
Lake Winape (1501-0052)	NJ-12-17-P1008- 3-P1009b	UnAssessed
Little Cedar Lake (1501-0067)	NJ-13- 2-P1022	UnAssessed
Little Dam Lake (1501-0051)	NJ-12-17-P1008	UnAssessed
Little Long Pond (1501-0046)	NJ-12- 6-P1002e..P1003b	UnAssessed
Mahwah River, Lower, and tribs (1501-0011)	NJ-11	MinorImpacts
Mahwah River, Upper, and tribs (1501-0035)	NJ-11	UnAssessed
Minor Tribs to DeForest Lake (1501-0029)	NJ- 1/P977a-	Impaired Seg
Minor Tribs to New Jersey (1501-0032)	NJ- 1a thru e	UnAssessed
Minor Tribs to New Jersey (1501-0014)	NJ- 2 thru 4	UnAssessed
Mombasha Lake, Kloibers Pond (1501-0002)	NJ-12-17-P1008..P1010,P1010b	Need Verific
Monroe Pond (1501-0062)	NJ-12-P1019	UnAssessed
Mountain Lake (1501-0048)	NJ-12-10-P1004	UnAssessed
Nauraushaun Brook, Lower, and tribs (1501-0010)	NJ- 1- 4	Impaired Seg
Nauraushaun Brook, Upper, and tribs (1501-0028)	NJ- 1- 4	UnAssessed
Pascack Brook and tribs, within NYS (1501-0015)	NJ- 5	Impaired Seg
Ramapo River, Lower, and minor tribs (1501-0012)	NJ-12	MinorImpacts
Ramapo River, Middle, and tribs (1501-0036)	NJ-12	MinorImpacts
Ramapo River, Upper, and tribs (1501-0037)	NJ-12	Need Verific
Ringwood River and tribs (1501-0064)	NJ-13	UnAssessed
Rockland Lake (1501-0021)	NJ- 1/P977a-13-P985	UnAssessed
Round Lake (1501-0063)	NJ-12-P1021	UnAssessed

Waterbody/Segment (ID)	Water Index Number	Category
Saddle River and tribs (1501-0033)	NJ- 6 thru 8	MinorImpacts
Shadowmere Lake, Blythea Lake (1501-0059)	NJ-12-23-P1016h,P1016k	UnAssessed
Sterling Forest Lake (1501-0066)	NJ-13- 2-P1021c	UnAssessed
Sterling Lake (1501-0068)	NJ-13-P1025	UnAssessed
Stony Brook and tribs (1501-0039)	NJ-12- 6	NoKnownImpct
Trib of Sterling Forest Lake (1501-0065)	NJ-13- 2	UnAssessed
Tribs to Greenwood Lake (1501-0070)	NJ-P1026-	UnAssessed
Tribs to Lake Sebago (1501-0042)	NJ-12- 6-P1002e-	UnAssessed
Tuxedo Lake (1501-0050)	NJ-12-15-P1007	UnAssessed
We Wah Lake (1501-0049)	NJ-12-15-P1005	UnAssessed
West Br.Hackensack, Upper, and tribs (1501-0009)	NJ- 1/P977a-12	Impaired Seg