Appendix A

Section 305(b)
Assessment Methodology

Assessment Methodology refers to what monitoring activities are used and how resulting data and information are interpreted to arrive at an assessment of water quality and determine the level of support of designated uses. In some cases a lack of use support is apparent or can be directly evaluated (e.g., beaches closed to public bathing, acid rain lakes devoid of fish). However in most cases, designated use support is evaluated using standards or other 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, including the type of data and information generated (numerical, observational/narrative, anecdotal), the source of the data/information, and the level of confidence in the data/information. The methodology also includes specific criteria that, in the absence of more direct measurement, 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.

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 programs and activities directed by those agencies. While the restriction orders are based on monitoring data, the raw data itself is not usually considered by NYS DEC in making the use support decisions; rather the level of restriction drives the use support determination. Examples of use restriction orders include fish consumption advisories for specific waterbodies, 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 acceptable levels of substances in the waters of the state. These limits are designed to protect various water uses and are adopted in the state Code of Rules and Regulations. For many substances there exists a numeric standard based on observed effects levels on human health and/or aquatic life. For other parameters, the standard is more descriptive (narrative) in nature (e.g., *no increase in turbidity that will cause a substantial visible contrast to natural conditions*).

Surrogate Water Quality Indicators are indirect measures of the level of designated use support. Often a direct measurement 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, Section 319 nonpoint source assessments, source water assessments, dilution calculations and predictive models all provide measures of water quality 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

NYS DEC maintains use support/impairment information for the waters of the state through its *Waterbody Inventory/Priority Waterbodies List (WI/PWL)* database. The *Waterbody Inventory* refers to the listing of all waters, identified as specific individual waterbodies, within the state that are assessed. An inventory for each large drainage basin in the state will be established as one of the first steps in the WI/PWL update and water quality assessment effort for each drainage basin. The *Priority Waterbodies List* is the subset of waters in the Waterbody Inventory that have documented water quality impacts, impairments or threats. The Priority Waterbodies List provides the candidate list of waters to be considered for inclusion on the Section 303(d) List.

The Priority Waterbodies List provides the candidate list of waters to be considered for inclusion on the Section 303(d) List.

Segmentation of Waterbodies

The designation of waterbodies 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 the specific boundaries for individual waterbody segments is based on a number of considerations. These include:

Waterbody Type Different waterbody types cannot be combined into single waterbody segments. That is, lakes, reservoirs and ponds cannot be 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 segments.

Stream Classification A change in the stream class (A, B, C, D) of a waterbody usually necessitates the division of the waterbody into separate segments. This is necessary since the two different classes of waters will be assessed for the support of different designated uses. Differences regarding trout support (T, TS waters) or other classifications (I, AA, etc) that support uses similar to adjoining waters do not require designation of a separate segment.

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

Waterbody Length/Size As a practical matter, waterbodies should not be too large or too small. Generally, river segments include between 10 and 25 miles of stream. Lakes segments must be greater than 6.4 acres (0.01 square mile), the size threshold for inclusion in the New York State Lake Gazetteer. Lakes are generally listed as "entire lake." However, for some very large lakes (e.g., Lake Champlain) they may be segmented into separate portions. Conversely, some lake chains and/or smaller lakes in a watershed may be joined together as a single segment.

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.

Note also that waterbody segments are **not** defined based solely upon the length/size of area impacted by a water quality problem. Because estimates of the extent of water quality impacts are often inexact and may change regularly, 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. However some flexibility in the segmenting of waterbodies is allowed in order to provide sufficient protection of all designated uses.

WI/PWL Water Use Support

The assessment of New York State water resources contained in the WI/PWL 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 A, *New York State Water Quality Classifications*).

WI/PWL Water Uses

Drinking Water Supply
Shellfishing
Public Bathing
Recreation
Fish Consumption
Aquatic Life Support
Habitat/Hydrology
Aesthetics

The use support/impact information in the WI/PWL database is generated from a wide range of available sources and assessed using various criteria. These assessment criteria include use restriction orders (drinking water restrictions, bathing beach closures, fish consumption and shellfishing advisories) comparison of data (from NYS DEC ambient monitoring network as well as other agency, local or public/citizen monitoring program) with parameter-specific water quality standards, the use of surrogate indicators, and more 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 NYS DEC 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.

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;
Waterbody uses are not restricted and no water quality problems exists, but the support of a specific and distinctive use make the waterbody more susceptible to water quality threats.

After all readily available water quality information is collected, judgements 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 correspond 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 definitions in box on page 13). The water use impact and level of severity are also identified as *Known*, *Suspected* or *Possible* (see definitions in box at right) 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.

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 judgement 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.

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 comparison to standards or other criteria, in-stream concentrations may be below, near, at, above or well above applicable water quality standards. 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.

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%. In general, 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/extent is between 10 and 25%, the level of documentation is considered *Suspected*. If greater than 25%, the impact is considered *Known*.

However, the use of the 10%/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 to determine the degree of certainty that a condition exists. Such statistical confidence depends upon a number of factors – including the monitoring design, the number of samples collected, and the variability of results – 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.

Waterbody 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 are outlined below and on Table 1.

Water Quality Impacted Segments are waterbodies with documented water quality problems or impacts. These are defined as having a severity of *Precluded*, *Impaired* or *Stressed* (*Threatened* uses are not included in this category) and a level of documentation of *Known* or *Suspected*.

Threatened Waterbody Segments are waterbodies for which uses are not restricted and no water quality problems currently 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.

Waterbody Impacts Needing Verification are segments 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*. Such waterbodies require additional monitoring to determine whether uses are restricted.

Waterbodies Having No Known Impacts are segments where monitoring data and information indicate that there are no use restrictions or other water quality impacts/issues.

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

The WI/PWL Water Quality Assessment Categories differ somewhat from the national Use Attainment Categories used by USEPA to report on water quality. Whereas the national categories are designed to answer 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 provide support for a myriad of NYS DEC water quality management programs.

Perhaps the most significant difference between the two frameworks involves the WI/PWL's inclusion of *Stressed* waters within Water Quality Impacted Segments category. The *Stressed* 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 considered necessary to maintain use support into the future.

The tracking of these *Stressed* waters – while not readily accommodated in the national Use Attainment Category scheme – supports the NYS DEC water quality management programs and is an integral component of the *Watershed Restoration and Protection Strategies*. Because of limited resources, NYS DEC focuses it restoration and protection activities on waters that do not support uses (*Precluded*, *Impaired*) or that may not support uses in the future (*Threatened*). *Stressed* waters, on the other hand, often become the focus of restoration and protection by other/local watershed partners in the state.

The tracking of *Stressed* waters – while not readily accommodated in the national Use Attainment Category scheme – supports the NYS DEC water quality management programs and is an integral component of the *Watershed Restoration and Protection Strategies*.

Although the current national Use Attainment Categories differ from the WI/PWL Assessment Categories, the two schemes share significant similarities. As a result it is possible to relate waters assigned to certain WI/PWL Assessment Categories to corresponding USEPA groupings. A detailed discussion of the linkage between the Water Quality Assessment Categories outlined above and the national use Attainment Categories is presented in the Listing Methodology (see Table 9, page 33).

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

Severity of Problem	Level of Problem Documentation		
	Known	**Suspected**	**Possible**
Precluded	Water Quality Impacted Segments	N/A*	N/A*
Impaired	Water Quality Impacted Segments	Water Quality Impacted Segments	N/A*
Stressed	Water Quality Impacted Segments	Water Quality Impacted Segments	Waterbody Impacts Needing Verification
Threatened	Threatened Waterbody Segments	Waterbody Impacts Needing Verification	Threatened (Possible) Waterbody Segments
No Known Impacts	Waterbodies Having No Known Impacts		
UnAssessed	UnAssessed Waterbodies		

* For more severe water quality problems (*Precluded*, *Impaired*) a greater *Level of Documentation* is required.

Use-Specific Assessment Criteria

More 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. These discussions include assessment criteria tables for specific designated water uses which are intended to provide some guidance to insure a more consistent evaluation of water quality indicators. ***The criteria in the tables are not intended to be all inclusive, but merely represent examples intended to provide a sense of the type of water quality data and information used and interpreted.*** Individual waterbody assessments are evaluated on a case-by-case basis, taking into account all available information, including some considerations not captured in the assessment criteria tables.

Also recognize that the guidelines in these tables are crafted to indicate the point(s) at which the corresponding severity of impact is obvious. In some cases, **more** severe use impacts/impairments may be assigned to waters where use restriction orders, water quality data or other indicators do not clearly indicate such a level of water quality impact. This approach allows the use of *best professional judgement* to identify impacts/impairments that otherwise would not be listed; but limits the use of judgement to not list waters.

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 their 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 (NYS DOH) and/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 criteria is most directly related to the use, it is not very sensitive to impacts.

Consequently a secondary level of assessment looks at the degree of treatment necessary for a water supply to be used for drinking water. The intent of this assessment criteria 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 NYS 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 water in 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 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 NYS DOH Source Water Assessment Program (SWAP).

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.

Table 2 Drinking Water Supply Use Assessment Criteria

Use Assessment Criteria	WI/PWL Use Impact	
	Severity	**Documentation**
Frequent/Persistent Conditions Prevent Use o NYS/local Health Department drinking water supply closures lasting supply for more than 30 days.	Precluded	Known
Occasional Conditions Prevent Use • NYS/local Health Department drinking water supply closures lasting for 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* for other substances 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	

*** 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)	2,400	–	–	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) [2]	Standard	50% of Std.	20% of Std.	
other substances (finished water) [3]	MCL	50% of MCL	20% of MCL.	

[1] Impacts/impairments based on SWAP susceptibility determinations should be listed as *Suspected*.

[2] Refers to substances for which there are NYS water quality standards for protection of *Health (Water Source)*.

[3] Refers to substances for which there are Maximum Contaminant Levels for treated/finished drinking water.

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 NYS DEC 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.

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.

Table 3 Shellfishing Use Assessment Criteria

Use Assessment Criteria	WI/PWL Use Impact	
	Severity	**Documentation**
Frequent/Persistent Conditions Prevent Use • NYS DEC 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 (w.q.) AND shellfishing in remaining area is restricted	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 Discourge 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 (outfall, marina)	Stressed	Known
Conditions Support Use, but Threats Noted • DFWMR has designated less than 10% of the waterbody area as uncertified, or • DFWMR has designated entire the 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*

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*. (See *Segmentation of Waterbodies* in Listing Methodology.) 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 DEC 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 designated at 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 stormwater runoff.

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. However 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, NYS DEC derived a total phosphorus criterion of 20 μg/l for the protection of recreational uses in lakes. The criterion is based on lake user surveys and is indicative of *elevated nuisance conditions and slight impacts to recreation*. Because of its basis, the criterion is more appropriate in assessing more general *Recreation* uses. However since conditions resulting from elevated nutrients and weed/algal growth also may threaten swimming, these indicators suggest *Public Bathing* use is *Threatened*. Considerable effort is also currently underway in New York State and nationally to establish appropriate additional nutrient criteria for the protection of swimming and recreational uses. Once established, these new criteria will be incorporated into the Assessment Methodology as well.

The relationship between bathing restrictions, water quality monitoring and other indicators (including the *Recreation* use assessment) and the level of *Public Bathing* use support is reflected in Table 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, clarity) 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, clarity) 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* (coliform, 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 (median)	2,400	–	–	per 100 ml
Coliform, Fecal (geometric mean)	200	–	–	per 100 ml
Clarity (Secchi Disc)	1.2	1.5	2.0	meters
Total Phosphorus [2, 3]	–	–	20	µg/l

[1] *Public Bathing* assessments based on *Recreation* use support should be listed as *suspected*.
[2] Application of the Total Phosphorus criteria is limited to lakes and ponded waters.
[3] Based on currently 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.

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*.** 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 with greater emphasis on aesthetics. 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.

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 NYS DEC (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 below will be used to assess recreational use support.

Fish Consumption Use

The assessment of *Fish Consumption* use is based on NYS DOH 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 NYS DEC Division of Fish Wildlife and Marine Resources routinely monitors contaminant levels in fish and game. Based on this monitoring data, NYS DOH 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 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.

Because the general advisory for eating sportfish is precautionary and is not based on any actual contaminant monitoring data, it does not represent any documented impairment of *Fish Consumption* use. Consequently, the general statewide advisory is not reflected in this assessment of *Fish Consumption* use.

** 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.)

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] State/national nutrient criteria to be developed and incorporated into the Assessment Methodology.
[2] Application of the Total Phosphorus criteria is limited to lakes and ponded waters.
[3] *Observational Criteria* refers to responses on ***CSLAP Field Observation Forms***. (See Appendix B) 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*.

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 • NYS DOH advisory recommends eating no fish (or none of sub-species) from a specific waterbody.	Precluded	Known
Periodic/Occasional Conditions Prevent Use • NYS DOH 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 NYS DOH advisory has not been issued. • NYS DOH 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 NYS DOH *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 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 Support* must be maintained in all waters, regardless of classification, and
- *Aquatic Life Support* is one of the most sensitive of national use support categories, and
- *Aquatic Life Support* can be assessed easily and economically using biological sampling techniques.

The evaluation of *Aquatic Life 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 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 Support* better represents the results of the monitoring tools (primarily macroinvertebrate sampling) used to assess water quality. The change from *Fish Propagation/Survival* to *Aquatic Life 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 other New England State's and the USEPA national use support category.

Different types of monitoring data may be used to determine *Aquatic Life Support* use. The SWMP relies most heavily on biological sampling. The assemblage most frequently used is macroinvertebrates, however the program has recently incorporated periphyton and, to a lesser degree, fish. The relationship between biological (macroinvertebrate) assessment, as described in the *Quality Assurance Work Plan for Biological Stream Monitoring in New York State* (Bode, etal, 1996) and the impact/impairment to *Aquatic Life Support* is shown in Table 7.

Table 7 Aquatic Life 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

Table 7 outlines the interpretation of biological monitoring results independent of other water quality information. However a comprehensive evaluation of *Aquatic Life Support* must also consider all available physical/chemical monitoring data for dissolved oxygen, temperature, pH, phosphorus (nitrogen in marine waters), trace metals, organic compounds and other substances, and a comparison of these data results against the applicable water quality standards for the protection of aquatic life. Toxicity testing results from bioassays on ambient water are also a useful means to evaluate *Aquatic Life Support* and are incorporated into the assessment when available.

In addition to biological monitoring, a comprehensive evaluation of *Aquatic Life Support* must also consider all available physical/chemical monitoring data for dissolved oxygen, temperature, pH, nutrients, trace metals, flow and other substances, and a comparison of these results against applicable water quality standards for protection of aquatic life. Toxicity testing results are also incorporated into assessments when available.

Instances where these multiple indicators suggest different levels of use support require further consideration. To address the possibility of conflicting results, USEPA developed a policy of *Independent Application*. This policy states that where there are 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 takes precedence over others, the evaluation of conflicting assessments must take into account levels of documentation, overall confidence, and artifacts of monitoring data (e.g., analytic methods, sampling techniques, etc.). These considerations (or *weight of evidence* approach) may, in fact, lead to favoring one assessment over others for specific assessments.

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 recently suggested 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.

Atmospheric Deposition (Acid Rain) Impacts on *Aquatic Life Support*

One particularly useful chemical indicator for evaluation of *Aquatic Life Support* is pH. Separate criteria regarding the use of pH data to determine *Aquatic Life Support* is applied to waterbodies, particularly lakes and ponds, that are subject to atmospheric deposition, or acid rain. Acid rain has long been a significant problem in New York State. Because of the extent and significance of this issue, extensive chemical sampling efforts to monitor the pH of lakes and ponds in the state have long been in place. The separate *Aquatic Life Support/Acid Rain* criteria takes advantage of the considerable amount of available chemical (pH) data.

The relationship between chemical (pH) monitoring data and the impacts to aquatic life is shown in Table 8.

Natural Resources Habitat/Hydrologic Use Support

In an effort to better incorporate wetlands and other natural resources concerns into the water quality assessment, the water use category of *Natural Resources Habitat/Hydrology* was recently added to the list of uses to be assessed. This broad category captures waterbodies where water quality is appropriate to support uses, but various activities result in degradation of natural resources (e.g., fish and wildlife populations, habitats) and/or impacts to 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 habitat and hydrologic 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 embeddedness; 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"* rather than *"pollutant"* sources.

Specific criteria for *Natural Resources Habitat/Hydrology* use support have not yet been developed.

Table 8 Acid Rain/Aquatic Life Assessment Criteria		
Lake pH/Fishery Assessment	**WI/PWL Use Impact**	
	Severity	**Documentation**
pH less than 5.0	Precluded	Known
pH between 5.0 and 6.0	Impaired	Known
pH greater than 6.0, but fish surveys indicate a fishery impact, and lake characteristics and/or other indications suggest acid rain as cause	Stressed	Known*
No indications of acid rain effects	No Known Impact	Assessment: *Evaluated*

* Documentation of the Pollutant/Cause (*pH*) and Source (*Atmospheric Deposition*) should be less than *Known*.

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).

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*. Because of this subjectivity and the limitations on the level of severity, there is no table of specific assessment criteria to determine support of aesthetics. Instead, the assessment of aesthetics use support should reflect what objective information (CSLAP Lake Perception Surveys, preponderance of citizen complaints, etc) is available.

Monitored and *Evaluated* Waters

In compiling water quality information for their 305(b) Report, states are to distinguish between water quality assessments based on monitoring data, and assessments based on other information.

- "Monitored waters" are those waterbodies for which the use support assessment is based primarily on current (i.e., less than five year 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 questionnaire surveys of water quality and natural resource staff. Also, assessments based on older ambient monitoring data are generally considered to be "evaluated."

While available site-specific ambient monitoring data is incorporated into the WI/PWL, the bulk of the current WI/PWL information is more reflective of "evaluation" as opposed to "monitoring" efforts. This is largely due to limited monitoring resources, and a history of targeting those resources on waters of the state thought to have problems and issues requiring additional investigation. Consequently, available data for "monitored" waters tend to be concentrated in priority or problem areas.

The assessment of waters outside these priority or problem areas has traditionally relied on the public participation of various "watershed partners" in Priority Waterbodies List update efforts. Although input from watershed partners may include current, site-specific, ambient data the level and documentation of the data varies considerably.

As discussed previously, various efforts are underway to improve the scope of monitoring and quality of water quality assessments for the state. These efforts include the more systematic monitoring of non-priority waters, better documentation of available ambient data, and more consistent interpretation of water quality information and determination of water quality impacts/impairment. These efforts – which are outlined in the Comprehensive Assessment Strategy – are to focus on a few drainage basins each year, and cover the entire state over a five-year period (ending in 2004). Until a basin-wide Comprehensive Assessment Strategy is in place, the assessment of waters in that basin should be considered to be "evaluated."

Until a basinwide Comprehensive Assessment Strategy is in place, the assessment of waters in that basin should be considered to be "evaluated."

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. At about the same time, NYS DEC also recognized 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.

As discussed in the Monitoring Strategy, recent modifications to the division's Statewide Waters Monitoring Program (SWMP) includes 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 taxa. Where the assessment criteria are met, the waterbody is assessed as having *No Known Impacts*. Where the criteria is 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 assessment of aesthetics and support of recreational activities.

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

The primary focus of the Statewide Waters Monitoring Program is on determining use support, and not pollutant (cause) and source identification. More detailed investigations of pollutants and sources are generally conducted during the *Watershed Protection and Restoration Strategy* development phase of the water quality monitoring/assessment/management cycle (see figure 2). However, the initial assessment of waterbody use support in the WI/PWL does includes an indication of likely pollutants/causes and sources causing the impact on water uses. These pollutant/source identifications are based on Impact Source Determinations drawn from biological sampling and/or water chemistry data collected during Intensive Network Monitoring, or other available monitoring data. In the absence of any such data, best professional judgement based on surrounding land use may be used to identify possible causes/sources.

Because of the limitations of pollutant and source identification through SWMP, it is necessary to qualify the degree to which specific pollutants and sources are thought to contribute to water quality problems. Consequently, each pollutant and source is listed as *Known*, *Suspected*, or *Possible*. Additionally, it is not uncommon for multiple pollutants and sources to be indicated as contributing to a water quality impact. As a result, multiple pollutants and sources may be identified for one waterbody. Each pollutant and source is listed as a either *major* or *minor* contributor to the impact. Note that major and minor refers to the contribution to the most significant (severe) water quality impacts/impairments; pollutants/sources that contribute only to lesser impacts are always listed as *minor*.

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 which indicates where a waterbody needs additional study, the development of a strategy, the implementation of a strategy, or the 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 NYS DEC 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 reasonable achieved, and the appropriate role for NYS DEC.
- TMDL Note indicates the status of planned and/or ongoing Total Maximum Daily Load activities, if any.

Such information allows NYS DEC to better prioritize monitoring, restoration and protection activities, target the expenditure of limited resources to those waters where there is 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.

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