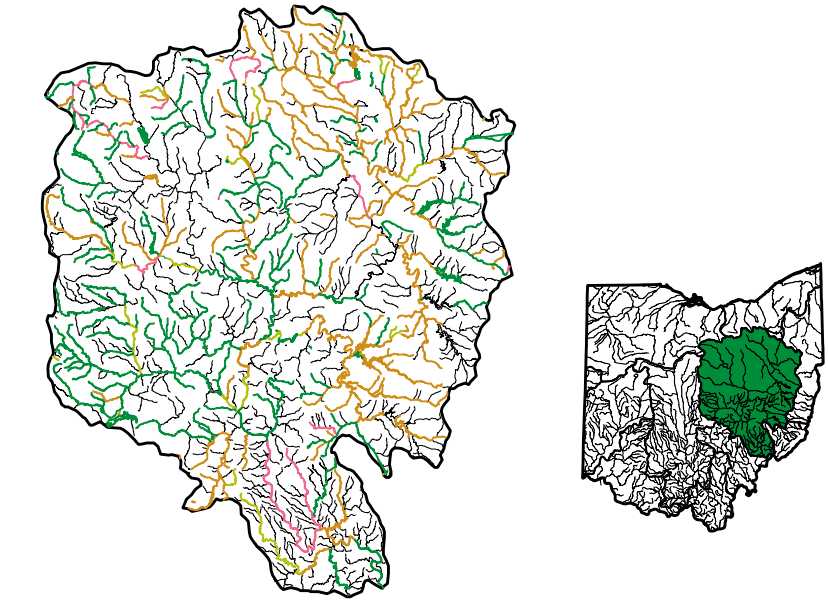
Ohio



This map depicts aquatic life use support status.

For a copy of the Ohio 1996 305(b) report, contact:

Ed Rankin
Ohio Environmental Protection Agency
Division of Surface Water
1685 Westbelt Drive
Columbus, OH 43228
(614) 728-3388
e-mail: Ed.Rankin@epa.state.oh.us

Surface Water Quality

For the 1998 reporting cycle, Ohio provided an addendum to the state's 1996 305(b) report, focusing on aquatic life use support assessments performed during 1996 and 1997. Of the 3,023 river miles assessed for aquatic life use during this time period, 57% were fully supporting, 20% were partially supporting, and 22% were not supporting. The state identified habitat alterations, organic enrichment, siltation, metals, flow alterations, and nutrients as the major causes of aquatic life use impairment. The leading sources of aquatic life use impairment include hydrologic modifications, point sources, agriculture, mining, and urban runoff.

In the state's 1998 report, Ohio for the first time presented narrative ranges of biological integrity for rivers and streams. Ohio has narrative ratings that are matched to the state's aquatic life uses. Nearly 20% of the assessed streams were rated as excellent, indicating a high species richness and diversity of fish and macroinvertebrate assemblages. Thirty-nine percent were rated as good, indicating a well-balanced community of fish and macroinvertebrates comparable to reference conditions. Just under 26% were rated as fair, indicating that one or more organism groups deviate moderately from reference conditions. Fourteen percent were rated as poor, indicating situations where one or more organism groups deviates substantially from reference conditions. Only 2% of streams were classified as very poor, indicating a virtual absence of any aquatic life.

Ground Water Quality

About 4.5 million Ohio residents depend on wells for domestic water. Waste disposal activities, underground storage tank leaks, and spills are the dominant sources of ground water contamination in Ohio.

Programs to Restore Water Quality

Ohio is reworking its Nonpoint Source Management Plan by forming a number of working groups, such as the headwater streams

working group, that involve multiple agencies and other interested parties. These groups are charged with developing strategies with the ultimate goal of protecting Ohio's rivers and streams.

To fully restore water quality, Ohio EPA advocates an ecosystem approach that confronts degradation on shore as well as in the water. Ohio's programs aim to correct nonchemical impacts, such as channel modification and the destruction of shoreline vegetation.

Programs to Assess Water Quality

Ohio pioneered the integration of biosurvey data, physical habitat data, and bioassays with water chemistry data to measure the overall integrity of water resources. Biological monitoring provides the foundation of Ohio's water programs because traditional chemical monitoring alone may not detect episodic pollution events or nonchemical impacts. Ohio EPA found that biosurvey data can increase the detection of aquatic life use impairment by about 35% to 50%.

Ohio is developing biological assessment methods and criteria for depressional and riparian wetlands.

Individual Use Support in Ohio

Designated Use[a]	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 29,113)[b]					
Total Miles Assessed	3,023	46	11	20	22	-
	-	-	-	-	-	-
	-	-	-	-	-	-
Lakes (Total Acres = 188,461)					
Total Acres Assessed	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
Great Lakes (Total Shore Miles = 236)					
Total Shore Miles Assessed	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-

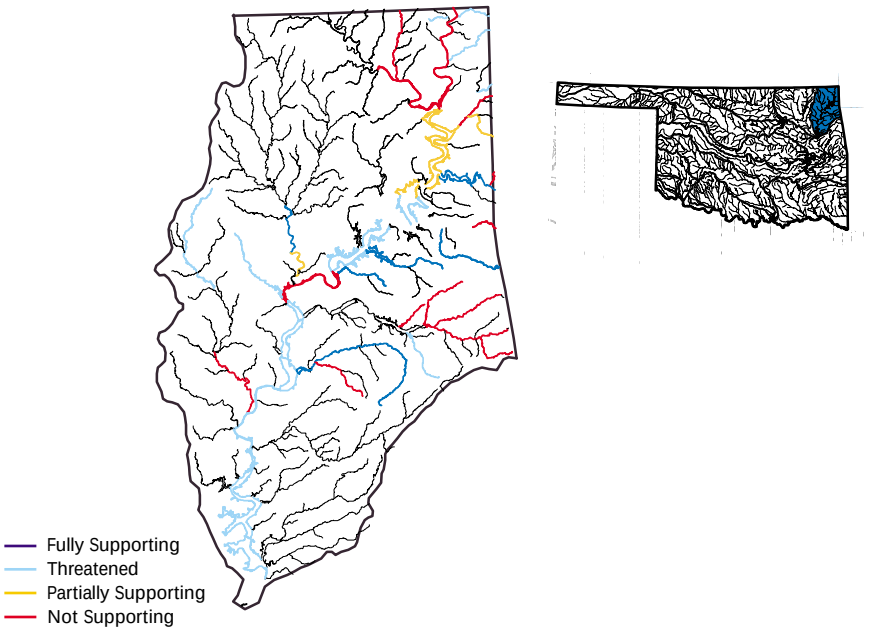
Note: Figures may not add to 100% due to rounding.

– Not reported in a quantifiable format or unknown.

[a] A subset of Ohio's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

Oklahoma



This map depicts aquatic life use support status.

For a copy of the Oklahoma 1998 305(b) report, contact:

Shelly Carter
Oklahoma Department of Environmental Quality
Water Quality Division
P.O. Box 1677
Oklahoma City, OK 73101-1677
(405) 702-8198
e-mail: karen.carter@deqmail.state.ok.us

Surface Water Quality

Thirty-seven percent of the assessed river miles have good water quality that fully supports aquatic life uses and 61% fully support swimming. The most common pollutants found in Oklahoma rivers are siltation, pesticides, nutrients, and suspended solids. Agriculture is the leading source of pollution in the state's rivers and streams, followed by resource extraction and hydrologic and habitat modifications.

Fifty-six percent of the assessed lake acres fully support aquatic life uses and more than 59% fully support swimming. The most widespread pollutants in Oklahoma's lakes are siltation, nutrients, suspended solids, pesticides, and oxygen-depleting substances. Agriculture is also the most common source of pollution in lakes, followed by hydrologic modifications and resource extraction. Several lakes are impacted by acid mine drainage, including the Gaines Creek arm of Lake Eufaula and the Lake O' the Cherokees.

Oklahoma did not report on the condition of wetlands.

Ground Water Quality

Ambient ground water monitoring has detected elevated nitrate concentrations in monitoring wells scattered across the state. Monitoring has also detected isolated cases of hydrocarbon contamination, elevated selenium and fluoride concentrations (some due to natural sources), chloride contamination from discontinued oil field activities, metals from past mining operations, and gross alpha activity above maximum allowable limits. Industrial solvents contaminate a few sites around Tinker Air Force Base. The state rates agricultural activities, injection wells, septic tanks, surface impoundments, and underground storage tanks among the highest priority sources of ground water contamination.

Programs to Restore Water Quality

Oklahoma's nonpoint source control program is a cooperative effort of state, federal, and local agencies with the Conservation Commission serving as the lead

technical agency. The program sponsors best management practices, water quality monitoring before and after BMP implementation, technical assistance, education, and development of comprehensive watershed management plans. The Conservation Commission is working toward a goal of 70% cooperative participation by local landowners in BMP projects.

Programs to Assess Water Quality

The Oklahoma Department of Environmental Quality monitors the waters of the state for toxic contaminants through the Ambient/Biotrend Monitoring and Toxic Monitoring in Reservoirs programs. The Ambient/Biotrend Monitoring program consists of 22 core and 78 rotating stations and has been in place since 1979. The Toxic Monitoring in Reservoirs program began in 1980 and has involved monitoring of over 50 different lakes in the state. Oklahoma also participates in the EPA Region 6 Ambient Biotoxicity Network that began sampling in 1990.

The Oklahoma Water Quality Monitoring Council (OWQMC) was created in the fall of 1997 to develop and implement a comprehensive state water quality monitoring strategy. The OWQMC organization fosters cooperation among groups involved in all types of water quality monitoring and associated mapping activities.

Individual Use Support in Oklahoma

Designated Use[a]	Total Miles/Acres Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 78,778)[b]						
	11,088	13	24	15	48	-
	-	-	-	-	-	-
	4,682	15	46	24	15	-
Lakes (Total Acres = 1,041,884)						
	606,066	21	35	38	5	-
	-	-	-	-	-	-
	547,972	9	50	35	6	-

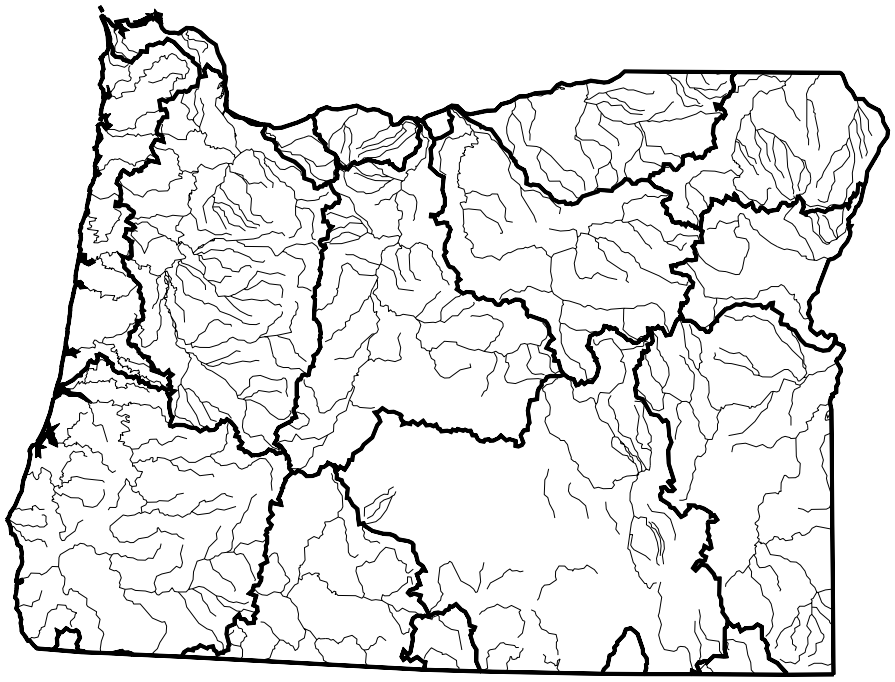
– Not reported in a quantifiable format or unknown.

[a] A subset of Oklahoma's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

Note: Figures may not add to 100% due to rounding.

Oregon



Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

For a copy of the Oregon 1998 305(b) report, contact:

Dick Pedersen
Oregon Department of Environmental Quality
Water Quality Division
811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-6345
email: pedersen.dick@deq.state.or.us

The report is also available on the Internet at: *http://www.deq.state.or.us/wq/305bRpt/305bReport.htm*

Surface Water Quality

Seventy-four percent of Oregon's surveyed rivers have good water quality that fully supports aquatic life use. The most commonly reported problems in the state's streams include thermal modifications, pathogens, and habitat alterations. Suspected sources include agriculture, silviculture, and habitat and hydromodifications.

In lakes, 35% of the surveyed acres fully support aquatic life uses. Common problems in Oregon's lakes include nutrients, acidity, organic enrichment, and metals. Agriculture, natural sources, and urban runoff/storm sewers are the most commonly reported sources of lake impairment.

Ninety-three percent of Oregon's surveyed estuarine waters partially support shellfishing use due to periodic violations of bacteria standards. Suspected sources of bacteria include municipal and industrial point sources, agriculture, collection system failures, and urban runoff/storm sewers.

In Oregon, 13,687 river miles and 30 lakes do not meet state water quality standards and are listed on the Water Quality Limited Waterbodies 303(d) list. Although the list is significantly larger than in the past, the increase does not signify that Oregon's waters are more degraded than a few years ago. The increase simply reflects the amount of new information considered in developing the list.

Oregon did not report on the condition of wetlands.

Ground Water Quality

Oregon has two ground water management areas and is studying ground water quality in several other areas of the state. Contaminants of concern include pesticides, petroleum compounds, metals, and halogenated solvents. Suspected sources of contamination include agricultural activities, above- and below-ground storage tanks, landfills, septic systems, hazardous waste sites, spills, and urban runoff.

Programs to Restore Water Quality

The Department of Environmental Quality (DEQ) is the state agency responsible for protecting Oregon's public water for a wide

range of uses. DEQ sets water quality standards to protect "beneficial uses" such as recreation, fish habitat, drinking water supplies, and aesthetics. DEQ is now beginning a 10-year process of developing Total Maximum Daily Loads for those waterbodies that appear on the state's 303(d) list.

DEQ regulates approximately 587 municipal wastewater sewage treatment plants and 223 industrial dischargers through individual permits that set limits on pollutants discharged. In addition, approximately 1,310 facilities have general permits that limit discharges and 1,410 facilities are covered by stormwater general permits. DEQ also permits and inspects septic system installations.

Programs to Assess Water Quality

DEQ monitors water quality with regular sampling of more than 50 rivers and streams in the 18 designated river basins in Oregon. This sampling produces conventional pollutant data for determining trends, standards compliance, and problem identification. Biological monitoring is also conducted under one of three sampling strategies: probabilistic sampling for extrapolation of conditions of study units (e.g., ecoregion), best management practices effectiveness monitoring, and reference site monitoring. Other monitoring includes studies of mixing zones at effluent discharges, volunteer monitoring, and sampling of shellfish areas for bacteria.

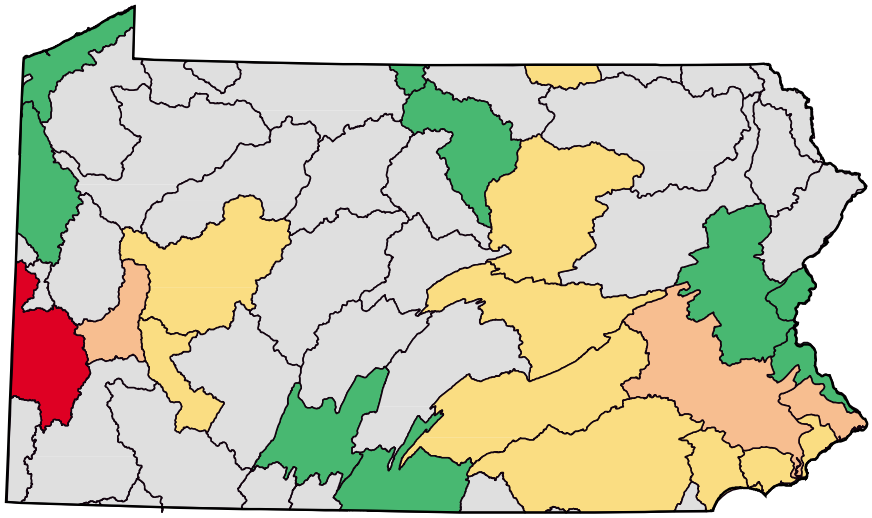
– Not reported in a quantifiable format or unknown.
[a] Includes nonperennial streams that dry up and do not flow all year.

Individual Use Support in Oregon

Designated Use	Total Miles Assessed	Percent Good (Fully Supporting)	Percent Good (Threatened)	Percent Fair (Partially Supporting)	Percent Poor (Not Supporting)	Percent Not Attainable
Rivers and Streams (Total Miles = 114,823)[a]						
	53,735	30	44	0	26	-
	984	9	10	0	81	-
	5,026	55	1	0	44	-
Lakes (Total Acres = 618,934)						
	132,299	<1	35	0	65	-
	30,820	0	31	0	69	-
	23,699	8	59	0	33	-
Estuaries (Total Square Miles = 206)						
	-	-	-	-	-	-
	-	-	-	-	-	-
	56	7	0	93	0	0
	25	100	0	0	0	-

Note: Figures may not add to 100% due to rounding.

Pennsylvania



Percent of Assessed Rivers, Lakes, and Estuaries Meeting All Designated Uses

- 80% - 100% Meeting All Uses
- 50% - 79% Meeting All Uses
- 20% - 49% Meeting All Uses
- 0% - 19% Meeting All Uses
- Insufficient Assessment Coverage
- Basin Boundaries (USGS 8-Digit Hydrologic Unit)

For a copy of the Pennsylvania 1998 305(b) report, contact:

Robert Frey
Pennsylvania Department of Environmental Protection
Bureau of Watershed Conservation
Division of Water Quality Assessment and Standards
P.O. Box 8555
Harrisburg, PA 17105-8555
(717) 787-9637
e-mail: frey.robert@dep.state.pa.us

The report is also available on the Internet at: *http://www.dep.state.pa.us/dep/deputate/watermgt/wc/subjects/wqstandards.htm*

Surface Water Quality

Nearly 66% of the surveyed river miles have good water quality that fully supports aquatic life uses. The most widespread pollutants impairing the remaining miles are metals, which impact over 1,610 miles. Other pollutants include suspended solids, nutrients, and organic enrichment.

Abandoned mine drainage is the most significant source of surface water quality degradation. Drainage from abandoned mining sites pollutes at least 1,764 miles of streams, 40% of all degraded streams. Other sources of degradation include agriculture, urban runoff/storm sewers, and habitat modification.

Pennsylvania has issued fish consumption advisories on 24 waterbodies. Most of the advisories are due to elevated concentrations of PCBs and chlordane in fish tissue, but two advisories have been issued for mirex and one for mercury.

Zebra mussels are present in Pennsylvania in Lake Erie and the immediate vicinity, as well as the lower Monongahela, lower Allegheny, and upper Ohio rivers. There are about 175 publicly and privately run zebra mussel sampling sites statewide.

Ground Water Quality

Major sources of ground water contamination include pesticide application, aboveground and underground storage tanks, surface impoundments, landfills, hazardous waste sites, industrial facilities, mining and mine drainage, pipelines and sewer lines, and spills. Petroleum and petroleum byproducts are the most common pollutants in ground water. Coal mining and oil and gas production have also elevated concentrations of several elements (including chlorides and metals in some regions). Pennsylvania is continuing to develop its Comprehensive State Ground Water Protection Program (CSGWPP). The CSGWPP provides a mechanism for Pennsylvania and EPA to work together to develop a comprehensive and consistent statewide approach to ground water quality protection. Pennsylvania and EPA will use the CSGWPP to focus on a long-term process for improving existing state and federal ground water programs.

Programs to Restore Water Quality

Eliminating acid mine drainage from abandoned mines will require up to $5 billion. The cost, difficulty, magnitude, and extent of the problem have hampered progress. To date, the Commonwealth has funded studies to determine the effectiveness of alternative techniques for treating mine drainage and preventing contamination. The U.S. Office of Surface Mining and EPA Region 3 have created the Appalachian Clean Streams Initiative to address water quality problems associated with mine drainage in Maryland, Ohio, Pennsylvania, and West Virginia. It is hoped that this initiative will involve private organizations and local citizens, as well as government agencies, in moving toward solutions.

Programs to Assess Water Quality

The Water Quality Network monitors chemical and physical parameters almost monthly and biological parameters annually at 153 fixed stations on rivers, streams, and Lake Erie. The Commonwealth also conducts ambient ground water monitoring at 537 monitoring sites.

Biological assessment methods for wetlands are being developed in Pennsylvania with the intention of establishing criteria for wetlands.

Individual Use Support in Pennsylvania

Designated Use[a]	Percent				
	Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 83,260)[b]					
Total Miles Assessed	66	-	-	34	-
12,902					
-	-	-	-	-	-
-	-	-	-	-	-
Lakes (Total Acres = 161,445)					
Total Acres Assessed					
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

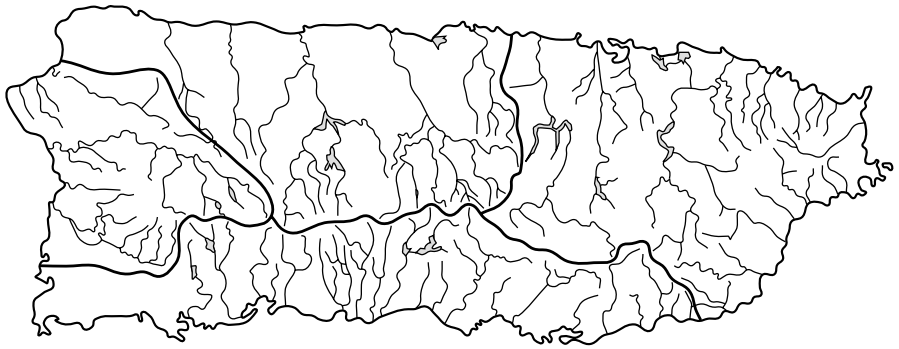
– Not reported in a quantifiable format or unknown.

[a] A subset of Pennsylvania's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

Note: Figures may not add to 100% due to rounding.

Puerto Rico



— Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

For a copy of the Puerto Rico 1998 305(b) report, contact:

Rubén González
Puerto Rico Environmental Quality Board
Water Quality Area
Box 11488
Santurce, PR 00910
(787) 751-5548

Surface Water Quality

In rivers and streams, 81% of the assessed miles have good water quality that fully supports aquatic life uses, less than 1% partially support aquatic life uses, and 19% do not support aquatic life uses. Swimming is impaired in 20% of the assessed rivers and streams. Pathogens, nonpriority organics, metals, inorganic chemicals, and low dissolved oxygen are the most widespread problems in rivers and streams. In lakes, 18% of the assessed acres fully support aquatic life uses and 82% do not support aquatic life uses. Swimming is impaired in 30% of the surveyed lake acres. Uses are impaired by pathogens, low dissolved oxygen concentrations, and metals. Major sources of impairment to rivers and lakes include land disposal of wastes, urban runoff, agricultural activities, and collection system failures.

Ninety-nine percent of the assessed estuarine waters fully support aquatic life use and 95% fully support swimming use. Metals from land disposal and pathogens from unknown sources are responsible for the impaired miles. Industrial and municipal discharges, collection system failures, spills, marinas, urban runoff, and land disposal of wastes also pollute beaches.

Puerto Rico did not report on the condition of wetlands.

Ground Water Quality

Two wells were closed due to bacterial contamination. Another 10 wells were closed for the following reasons: low yield; contamination by trichloroethylene, nitrates, or volatile organic compounds (VOCs); high salinity levels; turbidity; and residual chlorine. The major sources of ground water contamination include agricultural activities, septic tanks, industrial facilities, storage tanks, and landfills. Puerto Rico adopted ground water use classifications and water quality standards in 1990. During this reporting period, Puerto Rico began the implementation of a ground water monitoring network.

Programs to Restore Water Quality

Puerto Rico requires permits or certificates for ground water and surface water discharges,

underground storage tanks, and livestock operations. Certificates require livestock operations to implement animal waste management systems and other best management practices. During this reporting period, Puerto Rico issued 269 certificates for livestock operations. Other nonpoint source control program activities are directed at erosion and sedimentation from construction and mining activities and sewage disposal from small communities.

Programs to Assess Water Quality

The Puerto Rico Environmental Quality Board (PREQB) operates three fixed-station monitoring networks and also performs watershed monitoring on a limited basis. To date, monitoring has been limited to physical and chemical parameters. However, during 1996 the PREQB, along with EPA, approved a Rapid Bioassessment Protocol and began a pilot project to determine the feasibility of implementing it in the near future. Puerto Rico also maintains a Permanent Coastal Water Quality Network of 88 stations and the San Juan Beachfront Special Monitoring Network of 22 stations sampled monthly for bacterial contamination.

Individual Use Support in Puerto Rico

Designated Use[a]		Percent				
		Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 5,385)[b]						
	Total Miles Assessed	5,385	14	67	<1	19	0
		-	-	-	-	-	-
		5,385	14	66	<1	20	<1
Lakes (Total Acres = 12,111)						
	Total Acres Assessed	12,111	18	0	0	82	0
		-	-	-	-	-	-
		12,111	70	0	5	25	0
Estuaries (Total Square Miles = 549.9)						
	Total Square Miles Assessed	175	19	80	0	1	0
		-	-	-	-	-	-
		-	-	-	-	-	-
		175	16	79	0	1	4

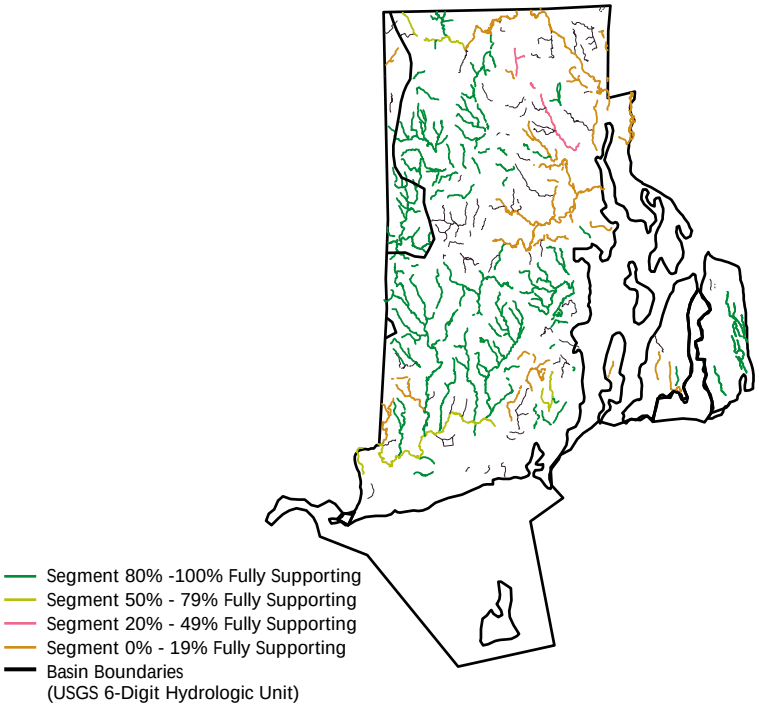
Note: Figures may not add to 100% due to rounding.

– Not reported in a quantifiable format or unknown.

[a] A subset of Puerto Rico's designated uses appear in this figure. Refer to the Commonwealth's 305(b) report for a full description of the Commonwealth's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

Rhode Island



This map depicts aquatic life use support status.

For a copy of the Rhode Island 1998 305(b) report, contact:

Connie Carey
Rhode Island Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, RI 02908
(401) 222-3961

Surface Water Quality

Of the river miles assessed, 52% fully support swimming use, and approximately 37% fully support it now but are considered threatened. Approximately 23% fully support aquatic life use and 50% are considered fully supporting but threatened. The most significant causes of nonsupport for rivers are biodiversity impacts, pathogens, metals, and nutrients. Potential sources of nonsupport include both point and nonpoint sources.

Of the lake acres assessed, 70% fully support swimming while 23% are considered fully supporting but threatened. Approximately 43% fully support aquatic life needs and 43% fully support aquatic life uses but are threatened. For lakes and ponds, the major causes of nonsupport are high bacteria, nutrient, and chloride levels. Major sources of nonsupport are mainly from nonpoint source impacts such as urban and stormwater runoff.

In estuarine waters, approximately 77% support swimming uses and 14% fully support them but are considered threatened. Sixty-six percent fully support aquatic life needs while 18% are considered fully supporting but threatened. Seventy-three percent fully support shellfishing use while 6% fully support it but are considered threatened by bacterial contamination, the major impact on designated uses. Nutrients and low dissolved oxygen in the Upper Bay and coves are moderate causes of impairment. Combined sewer overflows are the major source of bacteria contamination. CSOs, urban runoff, and municipal discharges are sources of nutrient enrichment problems in the Upper Bay and coves.

Rhode Island did not report on the condition of wetlands.

Ground Water Quality

About 19% of the state's population gets its drinking water from public and private wells. Overall, Rhode Island's ground water has good to excellent quality, but over 100 contaminants have been detected in localized areas. Thirteen community and eight noncommunity wells have been closed, and over 350 private wells have had contaminant concentrations exceeding drinking water standards. The most common pollutants are petroleum products, certain organic solvents, and nitrates. Significant pollution sources include leaking underground storage tanks, hazardous and industrial waste disposal sites, illegal or improper waste disposal, chemical and oil spills, landfills, septic systems, road salt storage and application, and fertilizer application.

Programs to Restore Water Quality

The focus on water quality has gradually shifted from controlling point sources to controlling nonpoint sources of pollution. Construction of wastewater treatment systems has addressed the majority of the larger direct discharges to the state's waters. As part of the Watershed Approach, the Office of Water Resources (OWR) staff work with local property owners and officials to develop management plans and strategies to identify pollution sources and are involved with the oversite and performance evaluation of special water quality projects.

Programs to Assess Water Quality

The OWR surface water monitoring system gathers baseline data used in establishing and reviewing the state's water quality standards to measure progress and to supply information for use in development of permit limits for wastewater discharges and total maximum daily loads. The OWR performs bacteriological monitoring at selected state-owned beaches and provides intensive bacteriological monitoring of shellfishable waters. EPA protocols and USGS monitoring are included in Rhode Island's monitoring programs, as are many citizen monitoring groups, which supply supplemental water quality data for numerous rivers, lakes, ponds, and estuarine waters in the state.

Individual Use Support in Rhode Island

Designated Use[a]	Total Miles/Acres/Square Miles Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 1,392)[b]						
Aquatic life	721	23	50	18	9	-
Fish consumption	-	-	-	-	-	-
Swimming	674	52	37	4	7	-
Lakes (Total Acres = 21,300)						
Aquatic life	15,903	43	43	11	3	-
Fish consumption	-	-	-	-	-	-
Swimming	15,560	70	25	1	3	-
Estuaries (Total Square Miles = 152)[c]						
Aquatic life	152	66	18	9	7	-
Fish consumption	-	-	-	-	-	-
Swimming	152	77	14	7	1	-
Shellfishing	125	73	6	16	4	-

Note: Figures may not add to 100% due to rounding.

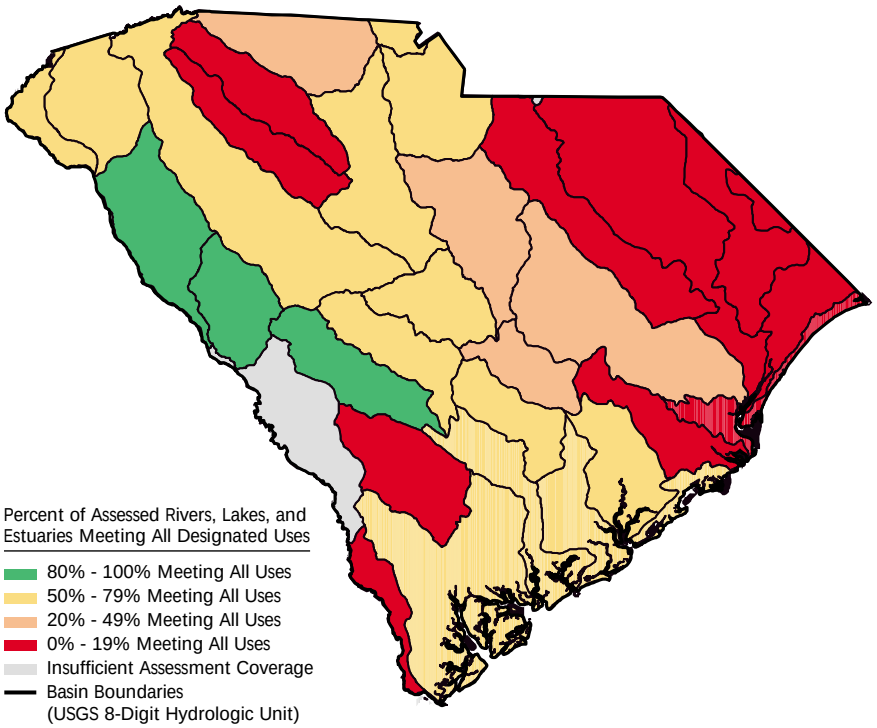
– Not reported in a quantifiable format or unknown.

[a] A subset of Rhode Island's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

[c] Includes ocean waters.

South Carolina



For a copy of the South Carolina 1998 305(b) report, contact:

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South Carolina Department of Health and Environmental Control
Bureau of Water Pollution Control
2600 Bull Street
Columbia, SC 29201
(803) 898-4250
e-mail: kirklagl@columb35.dhec.state.sc.us

Surface Water Quality

Eighty-seven percent of surveyed rivers, 92% of surveyed lakes, and 68% of estuaries have good water quality that fully supports aquatic life uses. Fifty-three percent of rivers, more than 99% of lakes, and 89% of estuaries fully support swimming. Unsuitable water quality is responsible for shellfish harvesting prohibitions in only 2% of the state's coastal shellfish waters. Another 11% of shellfish waters are closed as a precaution due to potential pollution from nearby marinas or point source discharges.

Bacteria are the most frequent cause of impairment (i.e., partial or nonsupport of designated uses) in rivers and streams; metals are the most frequent cause of impairment in lakes, but only 9% of lakes do not fully support all uses; and low dissolved oxygen is the most frequent cause of impairment in estuaries. Toxic contaminants do not appear to be a widespread problem in South Carolina surface waters.

South Carolina did not report on the condition of wetlands.

Ground Water Quality

Overall ground water quality remains excellent, although the number of reported ground water contamination cases rose from 60 cases in 1980 to 3,350 cases in 1998. The increase in the number of contaminated sites is primarily due to expanded monitoring at underground storage tank sites. Leaking underground storage tanks are the most common source of contamination, impacting 2,650 sites. Other major sources include spills, landfills, hazardous waste sites, and land application of waste.

Programs to Restore Water Quality

The South Carolina Department of Health and Environmental Control (DHEC) initiated a Watershed Water Quality Management

Strategy (WWQMS) to integrate monitoring, assessment, problem identification and prioritization, water quality modeling, planning, permitting, and other management activities by river drainage basins. DHEC has delineated five major drainage basins encompassing 280 minor watersheds. Every year, DHEC develops or revises a management plan and implementation strategy for one basin. The majority of water quality activities in these watersheds are based on a 5-year rotation. The basin strategies will refocus water quality protection and restoration priorities for allocation of limited resources.

Programs to Assess Water Quality

Year round, DHEC samples chemical and physical parameters monthly at fixed primary stations located in or near high-use waters. DHEC samples secondary stations (near discharges and areas with a history of water quality problems) monthly from May through October for fewer parameters. Each year, DHEC adds new watershed stations within the specific basin under investigation. Watershed stations are sampled monthly for 1 year corresponding with the WWQMS schedule.

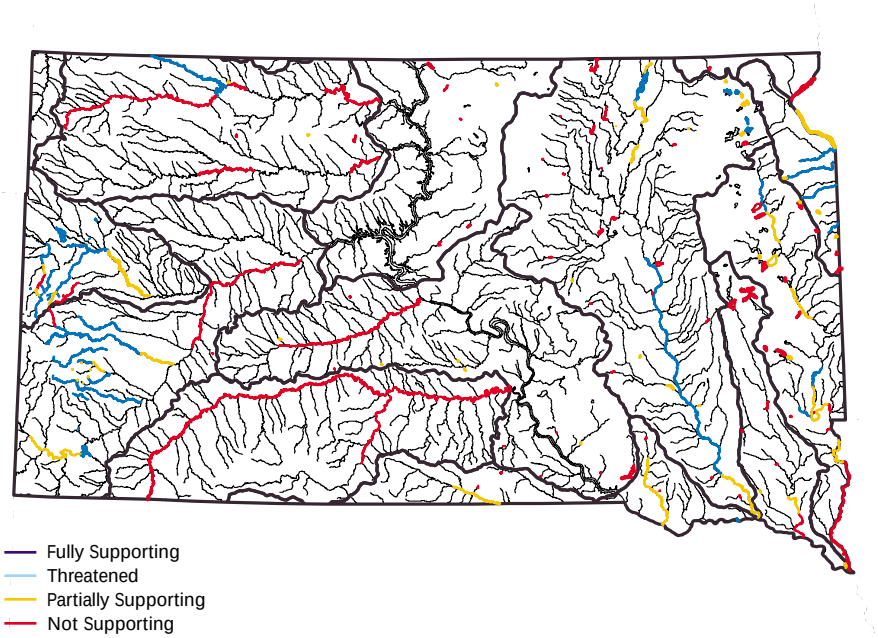
– Not reported in a quantifiable format or unknown.
[a] A subset of South Carolina's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.
[b] Includes nonperennial streams that dry up and do not flow all year.

Individual Use Support in South Carolina

Designated Use[a]		Percent				
		Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 29,898)[b]						
	Total Miles Assessed	87	-	4	9	-
	19,524					
	8,397	0	-	100	0	-
	19,428	53	-	21	26	-
Lakes (Total Acres = 366,576)						
	Total Acres Assessed	92	-	2	5	-
	211,462					
	-	-	-	-	-	-	-
	211,462	100	-	<1	<1	-
Estuaries (Total Square Miles = 682)						
	Total Square Miles Assessed	68	-	16	15	-
	221					
	-	-	-	-	-	-	-
	887	70	-	17	13	-
	221	89	-	5	6	-

Note: Figures may not add to 100% due to rounding.

South Dakota



This map depicts aquatic life use support status.

For a copy of the South Dakota 1998 305(b) report, contact:

Andrew Repsys
South Dakota Department of Environment and Natural Resources
Division of Financial and Technical Assistance
Water Resources Assistance Program
523 East Capitol, Joe Foss Building
Pierre, SD 57501-3181
(605) 773-4046
e-mail: andrewr@denr.state.sd.us

Surface Water Quality

Thirty-six percent of South Dakota's assessed rivers and streams fully support aquatic life uses and 37% of the assessed rivers also support swimming. The most common pollutants impacting South Dakota streams are suspended solids due to water erosion from croplands, gully erosion from rangelands, streambank erosion, and other natural forms of erosion.

Other impacts to streams were due to elevated total dissolved solids, low dissolved oxygen, elevated pH, and water temperature. Sixteen percent of South Dakota's assessed lake acres fully support aquatic life uses and 99% of the assessed lake acres fully support swimming. The most common pollutants are nutrients and siltation from agricultural runoff and other nonpoint sources that produce dense algal blooms in many of the state's lakes.

The high water conditions that prevailed in South Dakota for most of this reporting period and last greatly increased watershed erosion and sedimentation in lakes and streams. Suspended solids criteria were severely violated in many rivers and streams, and there was an increase in the incidence of fecal coliform bacteria in swimming areas at lakes. However, water quality improved in some lakes that experienced low water levels during the late 1980s, and high flows diluted bacteria in some rivers and streams.

South Dakota did not report on the condition of wetlands.

Ground Water Quality

More than three-quarters of South Dakota's population uses ground water for domestic needs. General ground water quality is good, with only a few aquifers having naturally occurring contamination. Deeper aquifers generally have poorer water quality than shallow aquifers but are also generally less susceptible to pollution. The most significant ground water quality problems in South Dakota are human-induced ground water degradation from petroleum, nitrate, and other chemicals through accidental releases and product mishandling, poor management practices, improper locating of pollutant-producing facilities, and contamination of shallow wells due to poor construction or location adjacent to pollutant sources.

Programs to Restore Water Quality

South Dakota regulates point sources through the National Pollutant Discharge Elimination System. As part of the state's point source program, South Dakota regulates concentrated animal feeding operations (CAFOs). The state offers two general permits, one for concentrated swine operations and one for other CAFOs.

South Dakota relies primarily on voluntary implementation of best management practices to control nonpoint source pollution. However, the state acknowledges that the technical and financial assistance currently available is not sufficient to solve all the NPS problems in the state. Other solutions may be explored, including enforcement to increase compliance with state and federal requirements.

Programs to Assess Water Quality

South Dakota conducts ambient water quality monitoring at established stations, special intensive surveys, intensive fish surveys, TMDL wasteload allocation surveys, and individual nonpoint source projects. Biological sampling is also conducted for special studies and diagnostic/feasibility studies. The U.S. Geological Survey, Corps of Engineers, and U.S. Forest Service also conduct routine monitoring throughout the state. Water samples are analyzed for chemical, physical, biological, and bacteriological parameters.

Individual Use Support in South Dakota

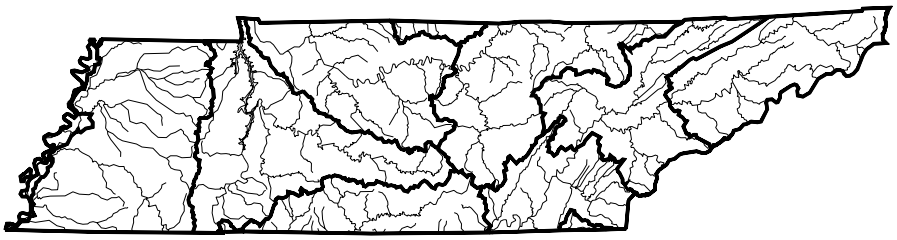
Designated Use[a]	Total Miles Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 9,937)						
	2,986	36	-	21	44	0
	170	100	-	-	-	-
	650	37	-	10	54	0
Lakes (Total Acres = 750,000)						
	Total Acres Assessed					
	132,159	16	-	26	58	0
	469,297	100	-	0	0	0
	597,121	99	-	1	0	0

– Not reported in a quantifiable format or unknown.

[a] A subset of South Dakota's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

Note: Figures may not add to 100% due to rounding.

Tennessee



Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

For a copy of the Tennessee 1998 305(b) report, contact:

Greg Denton
Tennessee Department of Environment and Conservation
Division of Water Pollution Control
7th Floor, L&C Annex
401 Church Street
Nashville, TN 37243-1534
(615) 532-0699
e-mail: gdenton@mail.state.tn.us

Surface Water Quality

Of assessed rivers and streams, 73% fully support aquatic life uses, 21% partially support these uses, and 6% do not support them. Siltation, habitat alteration, nutrients, oxygen-depleting substances, and pathogens affect the most river miles. Toxic materials, pH, and flow alterations impact rivers to a lesser extent. Major sources of pollutants include agriculture, hydromodification, urban runoff, and municipal point sources. Intense impacts from mining occur in the Cumberland Plateau region, and poor quality water discharged from dams impacts streams in east and middle Tennessee.

Of assessed lakes, 90% fully support aquatic life uses, 3% partially support these uses, and 7% do not support them. The most widespread problems in lakes include nutrients, low dissolved oxygen, metals, flow alteration, and priority organics. Major sources of these pollutants are stream impoundments, contaminated sediments, urban runoff/storm sewers, land treatment, and spills.

Tennessee identified 54,811 acres of impacted wetlands (approximately 7% of existing wetlands). Major threats include siltation from construction and residential development and loss of function due to channelization and levees.

The Department of Environment and Conservation (DEC) maintains a monitoring program to identify public health threats. Swimming advisories were issued at 33 waterbodies due to elevated bacteria levels. Seven lakes and portions of eight rivers have fishing advisories due to fish tissue contamination. Sediment contamination due to legacy chemicals remains a problem in some lakes and streams.

Ground Water Quality

Ground water quality is generally good, but pollutants contaminate (or are thought to contaminate) the resource in localized areas. These pollutants include volatile and semivolatile organic chemicals, bacteria, metals, petroleum products, pesticides, and radioactive materials.

Programs to Restore Water Quality

The Division of Water Pollution Control adopted a watershed

approach to improving water quality and encouraging coordination with the public and other agencies. Each of the 54 watersheds is managed on a 5-year cycle coinciding with the duration of discharge permits. Tennessee is also conducting several total maximum daily load studies to allocate pollutant loading among all the point and nonpoint sources discharging into a stream or its tributaries.

The Division is actively identifying strategies to reduce pollutant loadings at streams not currently meeting water quality standards. DEC, in partnership agreement with other agencies, has established a goal to implement 100 control strategies on TMDL-listed streams by 2003. The DEC has also developed a wetland strategy to protect and restore Tennessee's wetlands.

Programs to Assess Water Quality

Tennessee's ambient monitoring network consists of 156 active stations sampled quarterly for conventional pollutants, nutrients, and selected metals. The state also performs intensive surveys, often including biological monitoring at streams where they suspect that human activities are degrading stream quality. The state samples toxic chemicals in fish and sediment at sites with suspected toxicity problems.

With assistance from EPA, Tennessee is subdelineating ecoregions and characterizing water quality at carefully selected reference streams to help set clean water goals on a regional, rather than statewide, basis.

Individual Use Support in Tennessee

Designated Use[a]	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 61,075)[b]					
Total Miles Assessed 53,507	73	-	21	6	-
53,507	100	-	-	<1	-
53,618	97	-	1	2	-
Lakes (Total Acres = 538,060)					
Total Acres Assessed 538,585	90	-	3	7	-
537,261	84	-	2	14	-
537,261	97	-	1	2	-

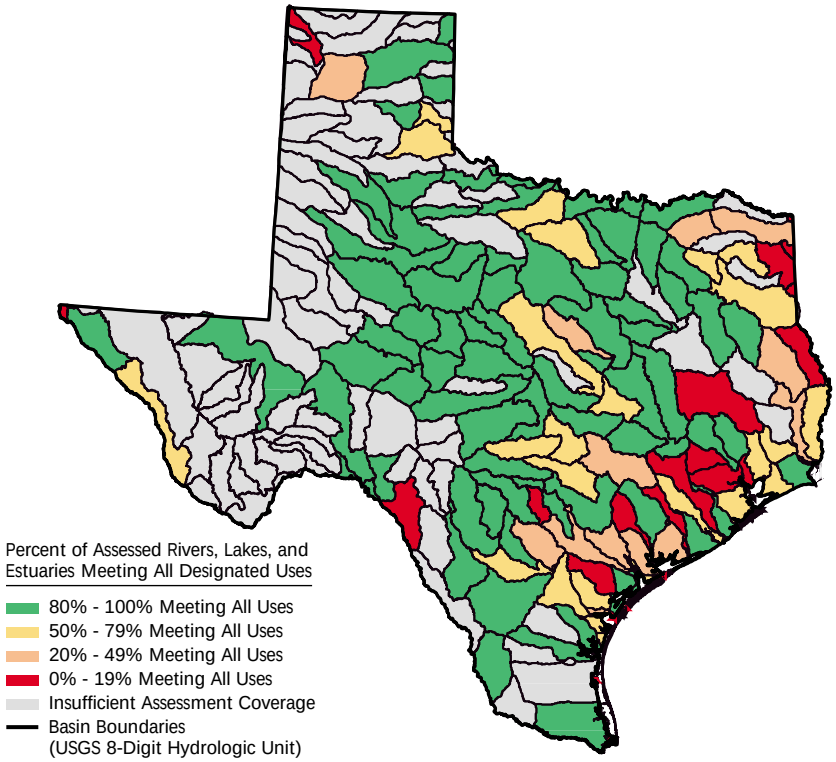
Summary of Use Support in Tennessee

	Percent: Good (Fully Supporting)	Good (Threatened)	Impaired (For One or More Uses)
Wetlands (Total Acres = 787,000)			
Total Acres Assessed 787,000	93	-	7

– Not reported in a quantifiable format or unknown.
[a] A subset of Tennessee's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.
[b] Includes nonperennial streams that dry up and do not flow all year.

Note: Figures may not add to 100% due to rounding.

Texas



For a copy of the Texas 1998 305(b) report, contact:

Steve Twidwell
Texas Natural Resource Conservation Commission
P.O. Box 13087
Austin, TX 78711-3087
(512) 239-4607
e-mail: stwidwel@tnrcc.state.tx.us

Surface Water Quality

About 91% of the assessed stream miles fully support aquatic life uses, 3% partially support these uses, and 6% do not support aquatic life uses. Swimming is impaired in about 26% of the assessed rivers and streams. The most common pollutants degrading rivers and streams are bacteria, metals, and oxygen-depleting substances. Major sources of pollution include municipal sewage treatment plants, agricultural runoff, and urban runoff.

In reservoirs, 89% of the assessed surface acres fully support aquatic life uses. Of the assessed lake acres, 97% fully support swimming. The most common problems in reservoirs are metals, low dissolved oxygen, and elevated bacteria concentrations. Major sources that contribute to nonsupport of uses include atmospheric deposition, natural sources (e.g., high temperature and shallow conditions), municipal sewage treatment plants, industrial point sources, and urban runoff.

The leading problem in estuaries is bacteria that contaminate shellfish beds. Sixty-one percent of the surveyed estuarine waters fully support shellfishing use, 23% partially support this use, and 16% do not support shellfishing.

Texas did not report on the condition of wetlands.

Ground Water Quality

About 41% of the municipal water is obtained from ground water sources in Texas. Identified ground water contaminant sources include storage tanks, surface impoundments, landfills, septic systems, and natural sources. The most commonly reported ground water contaminants from human activities are gasoline, diesel, and other petroleum products. Less commonly reported contaminants include volatile organic compounds and pesticides. The degradation of ground water quality from natural sources probably has a greater effect than do all anthropogenic sources combined.

Programs to Restore Water Quality

The Texas Natural Resource Conservation Commission (TNRCC) uses a basin approach to water resource management with the Clean Rivers Program (CRP). The cooperative TNRCC/CRP program is a long-term, comprehensive, and integrated

approach aimed at improving coordination of natural resource functions within the agency.

Implementation of coordinated basin monitoring is one of the priorities of the program. The goal of this activity is to provide a process in which monitoring groups will coordinate their activities with the TNRCC. Coordinated monitoring meetings are held in each of the 23 basins every spring to bring together key monitoring groups (state agencies, river authorities, cities, volunteer groups, U.S. Geological Survey, Corps of Engineers, etc.). At the meetings, schedules are cooperatively developed for fixed-station and special study monitoring to reduce duplication of effort, consolidate sampling and analysis protocols, and improve spatial coverage of monitoring sites.

Programs to Assess Water Quality

The TNRCC samples about 450 fixed stations as part of its Surface Water Quality Monitoring Program (SWQMP). The TNRCC samples different parameters and varies the frequency of sampling at each site to satisfy different needs. The TNRCC also conducts intensive surveys to evaluate potential impacts from point source dischargers during low flow conditions and special studies to investigate specific sources and pollutants. About 3,000 citizens also perform volunteer environmental monitoring in the Texas Watch Program.

– Not reported in a quantifiable format or unknown.

[a] A subset of Texas' designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

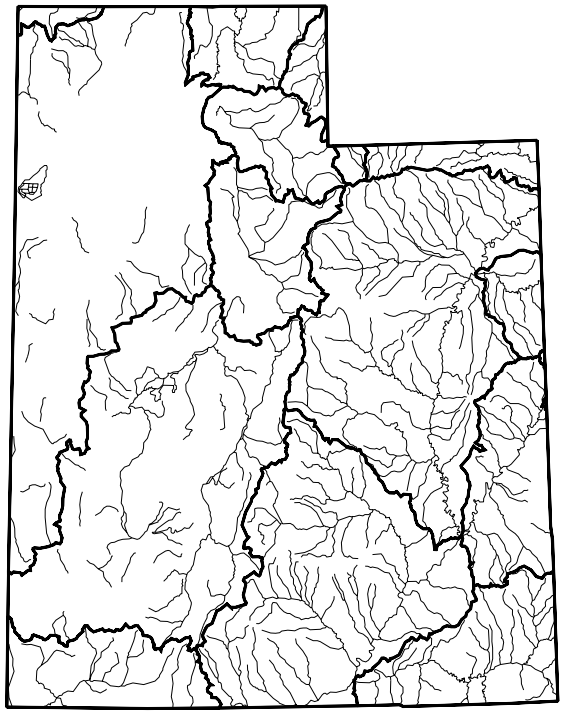
[b] Includes nonperennial streams that dry up and do not flow all year.

Individual Use Support in Texas

Designated Use[a]		Percent				
		Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 191,228)[b]						
	Total Miles Assessed	91				
	13,634		0	3	6	<1
	445	33	0	14	53	0
	13,505	73	0	7	19	<1
Lakes (Total Acres = 3,065,600)						
	Total Acres Assessed	89				
	1,318,719		0	7	4	0
	448,155	25	0	75	<1	0
	1,240,232	97	0	0	3	0
Estuaries (Total Square Miles = 1,991)						
	Total Square Miles Assessed	92				
	1,914		0	7	1	0
	648	94	0	0	6	0
	1,900	61	0	23	16	0
	1,932	100	0	<1	<1	0

Note: Figures may not add to 100% due to rounding.

Utah



Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

For a copy of the Utah 1998 305(b) report, contact:

Thomas W. Toole
Utah Department of Environmental Quality
Division of Water Quality
P.O. Box 144870
Salt Lake City, UT 84114-4870
(801) 538-6859
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Surface Water Quality

Of the 8,705 river miles assessed, 82% fully support aquatic life uses, 12% partially support these uses, and 6% do not support aquatic life uses. The most common pollutants impacting rivers and streams are total dissolved solids, habitat alterations, metals, sediments, and nutrients. Agricultural practices, such as grazing, improper manure management, and irrigation, elevate nutrient and sediment loading into streams. Point sources also contribute to nutrient loads, while natural conditions and stream channel modifications also result in impairment. The loss of riparian habitat impacts the fisheries on many streams.

About 65% of the asessed lake acres fully support aquatic life uses, 34% partially support these uses, and 1% do not support aquatic life uses. The leading problems in lakes include nutrients, siltation, low dissolved oxygen, suspended solids, and noxious aquatic plants. The major sources of pollutants are agricultural practices, industrial and municipal point sources, drawdown of reservoirs, and land development.

Fish and wildlife consumption advisories are posted on the lower portion of Ashley Creek drainage and Stewart Lake in Uintah County due to elevated levels of selenium found in fish, ducks, and American coots.

Utah did not report on the condition of wetlands.

Ground Water Quality

In general, the quality of ground water in Utah has remained relatively good throughout the state, although some ground water degradation occurs in south central Utah in the metropolitan area of Salt Lake City and along the Wasatch Front area from Payson north to Brigham City. Sources that present a risk for ground water contamination include agricultural chemical facilities, animal feedlots, storage tanks, surface impoundments, waste tailings, septic systems, road salt storage areas, spills, and urban runoff. In 1994, new ground water regulations went into effect.

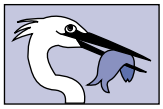
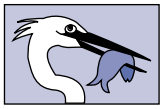
Programs to Restore Water Quality

The state's Nonpoint Source Task Force is responsible for coordinating nonpoint source programs in Utah. The Task Force is a broad-based group with representatives from federal, state, and local agencies; local governments; agricultural groups; conservation organizations; and wildlife advocates. The Task Force helped state water quality and agricultural agencies prioritize watersheds in need of NPS pollution controls. As best management practices are implemented, the Task Force will update and revise the priority list.

Programs to Assess Water Quality

In 1993, Utah adopted a basin-wide water quality monitoring approach. Intensive surveys have been completed on the lower Bear River, Weber River, Jordan River, Uinta, Sevier River, Cedar/Beaver, and Lower Colorado watershed management units. Assessments for the West Colorado and Southeast Colorado River watersheds will be completed in 1999, completing the 5-year monitoring cycle. In addition, Utah has developed a fixed-station network of 63 stations to evaluate water quality trends throughout the state. Monitoring is also conducted for Total Maximum Daily Load determinations, industrial and municipal facility compliance, nonpoint source projects, and at 18 benthic macroinvertebrate sampling stations.

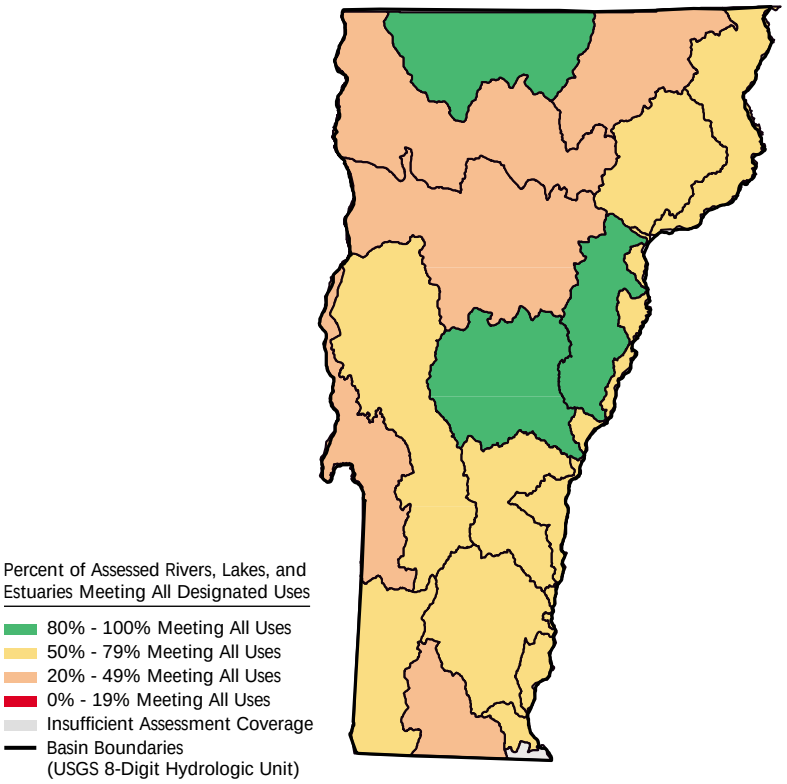
Individual Use Support in Utah

Designated Use[a]		Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 85,916)[b]						
	Total Miles Assessed	82		12	6	
	8,705		-			0
					100	
	16	0	-	0		0
		98				
	518		-	0	2	0
Lakes (Total Acres = 481,638)						
	Total Acres Assessed	65		34		
	460,561		0		1	0
		100				
	460,561		0	0	0	0
		99				
	162,760		0	0	1	0

– Not reported in a quantifiable format or unknown.
[a] A subset of Utah's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.
[b] Includes nonperennial streams that dry up and do not flow all year.

Note: Figures may not add to 100% due to rounding.

Vermont



For a copy of the Vermont 1998 305(b) report, contact:

Jerome J. McArdle
Vermont Agency of Natural Resources
Department of Environmental Conservation
Water Quality Division
103 South Main Street
Building 10 North
Waterbury, VT 05671-0408
(802) 241-3776
e-mail: jerrym@waterq.anr.state.vt.us

Surface Water Quality

Vermont's rotational strategy calls for assessment of one-fifth of the state each year, resulting in a complete assessment every 5 years. As part of this strategy, Vermont reported only on rivers and streams in three major river basins and on 138 lakes for the 1998 report. The current survey found that 93%, 77%, and 88% of the assessed river and stream miles in the White River, Otter Creek, and Lower Lake Champlain basins, respectively, fully support the water uses for which they have been classified. For assessed lakes, 24% fully support all designated uses, including fish consumption advisories (which primarily affect lake fish) for women of child-bearing age and children age 6 and under).

Common pollutants found in the assessed waterbodies include silt, pathogens, and nutrients, which come from eroding stream/lake banks, urban areas, and agricultural lands. Additional causes of pollution include thermal modifications, flow modifications, metals, total toxics, algae, and low dissolved oxygen resulting from atmospheric deposition, natural sources, flow regulation, and habitat alterations.

Many of Vermont's lakes and rivers have been cleaned up by construction of approximately 150 municipal and industrial wastewater treatment facilities. However, more work needs to be done to complete the cleanup job—primarily to reduce pollution from nonpoint sources.

Ground Water Quality

The quality of Vermont's ground waters is not well understood. Ground water contamination has been detected at hazardous waste sites. Other sources of concern include failing septic systems, old solid waste disposal sites, agriculture, road salt, leaking underground storage tanks, and landfills. The state needs to implement a Comprehensive Ground Water Protection Program, but lacks the financial and technical resources to do so.

Programs to Restore Water Quality

It is estimated that 90% of the miles and acres of the state's

impaired waterbodies are caused by nonpoint source pollution.

Vermont has been able to effectively target areas, design work plans, compete for and capture funding and implement nonpoint source projects directed at restoring and protecting water uses and values. (Two examples of these projects are the Lake Champlain Basin Watershed Nation Monitoring Program Project, an effort to evaluate the effectiveness of improved livestock grazing, and the Vermont Better Backroads Program, a project to provide grant money to towns for BMPs).

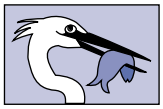
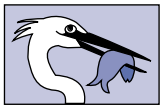
Programs to Assess Water Quality

Vermont's monitoring activities balance short-term intensive and long-term trend monitoring. Notable activities include fixed-station monitoring on lakes and ponds, citizen monitoring, long-term acid rain lake monitoring, compliance monitoring for permitted dischargers, toxic discharge monitoring, fish contamination monitoring, and ambient biomonitoring of aquatic insects and fish.

Vermont is developing a watershed approach to surface water quality planning, which calls for surface water plans for all major drainage basins or subbasins on a periodic basis. The watershed approach may also include local watershed management plans with protection and restoration strategies for individual watersheds.

Vermont is developing biological methods for vernal pools and white cedar swamps.

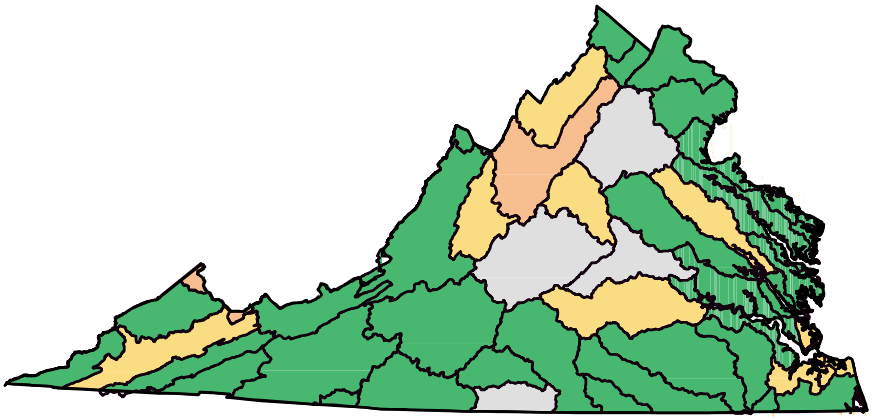
Individual Use Support in Vermont

Designated Use[a]	Total Miles Assessed	Percent Good (Fully Supporting)	Percent Good (Threatened)	Percent Fair (Partially Supporting)	Percent Poor (Not Supporting)	Percent Not Attainable
Rivers and Streams (Total Miles = 7,099)[b]						
	1,157	68	21	8	3	-
	1,156	90	1	9	1	-
	1,157	75	13	8	3	-
Lakes (Total Acres = 228,915)[c]						
	16,343	23	35	24	18	-
	16,171	40	0	21	38	-
	16,263	58	20	11	12	-

– Not reported in a quantifiable format or unknown.
[a] A subset of Vermont's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.
[b] Includes perennial streams only.
[c] Excluding Lake Champlain.

Note: Figures may not add to 100% due to rounding.

Virginia



Percent of Assessed Rivers, Lakes, and Estuaries Meeting All Designated Uses

- 80% - 100% Meeting All Uses
- 50% - 79% Meeting All Uses
- 20% - 49% Meeting All Uses
- 0% - 19% Meeting All Uses
- Insufficient Assessment Coverage
- Basin Boundaries (USGS 8-Digit Hydrologic Unit)

For a copy of the Virginia 1998 305(b) report, contact:

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Virginia Department of Environmental Quality
Water Division
Office of Water Resources Management
P.O. Box 10009
Richmond, VA 23219-0009
(804) 698-4037
e-mail: hhaugustin@deq.state.va.us

Surface Water Quality

Of the 49,358 river miles assessed, 42% fully support aquatic life use, another 51% fully support this use now but are threatened, 5% partially support this use, and 2% do not support this use. As in past years, fecal coliform bacteria are the most widespread problem in rivers and streams. Agriculture and grazing-related sources contribute much of the fecal coliform bacteria in Virginia's waters. Urban runoff also is a significant source of impacts in both rivers and estuaries.

All of Virginia's assessed publicly owned lakes fully support aquatic life use as well as fish consumption and swimming uses. Dissolved oxygen depletion, possibly associated with excess nutrients, and siltation from nonpoint sources were identified as threats to some of these lakes.

In estuaries, 7% of the assessed waters fully support aquatic life use, 81% support this use but are threatened, 10% partially support this use, and 3% do not support this use. Organic enrichment is the most common problem in Virginia's estuarine waters, followed by low dissolved oxygen concentrations. Based on available information, all of Virginia's Atlantic Ocean shoreline fully supports designated uses.

The Virginia Department of Health Bureau of Toxic Substances Information has five health advisories and one restriction currently in effect for fish consumption.

Virginia did not report on the condition of wetlands.

Ground Water Quality

Ground water programs in Virginia strive to maintain the existing high water quality. Sources of ground water contamination in the state include fertilizer and pesticide applications, underground storage tanks, landfills, septic systems, mining, and urban runoff. The Virginia Ground Water Protection Steering Committee meets bimonthly to share information, direct attention to ground water issues, and take the lead on interagency ground water protection initiatives.

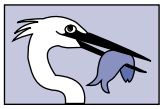
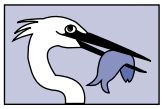
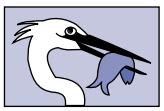
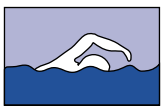
Programs to Restore Water Quality

Virginia's Department of Environmental Quality recommends control measures for water quality problems identified in the 305(b) report in their Water Quality Management Plans (WQMPs). WQMPs establish a strategy for bringing impaired waters up to water quality standards and preventing the degradation of high-quality waters. Control measures are implemented through Virginia's point source permit program and application of best management practices for nonpoint sources.

Programs to Assess Water Quality

The Ambient Water Quality Monitoring Program has grown to include 1,620 monitoring stations, of which 1,349 are ambient water quality stations and 277 are biological monitoring stations. Stations are located to gather information from industrial, urban, rural, and undeveloped areas of the state. Virginia's 305(b) assessments also utilize information from fish tissue, benthic macroinvertebrates, and volunteer monitoring programs.

Individual Use Support in Virginia

Designated Use[a]		Percent				
		Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 49,358)[b]						
	Total Miles Assessed 20,606	42	51	5	2	-
	49,224	99	<1	<1	<1	-
	8,292	69	13	11	7	-
Lakes (Total Acres = 149,982)[c]						
	Total Acres Assessed 140,079	94	6	0	0	-
	140,062	51	49	0	0	-
	139,759	100	0	0	0	-
Estuaries (Total Square Miles = 2,451)						
	Total Square Miles Assessed 2,440	7	81	10	3	-
	2,452	90	10	-	-	-
	2,216	94	<1	5	1	-
	2,309	99	<1	1	<1	-

Note: Figures may not add to 100% due to rounding.

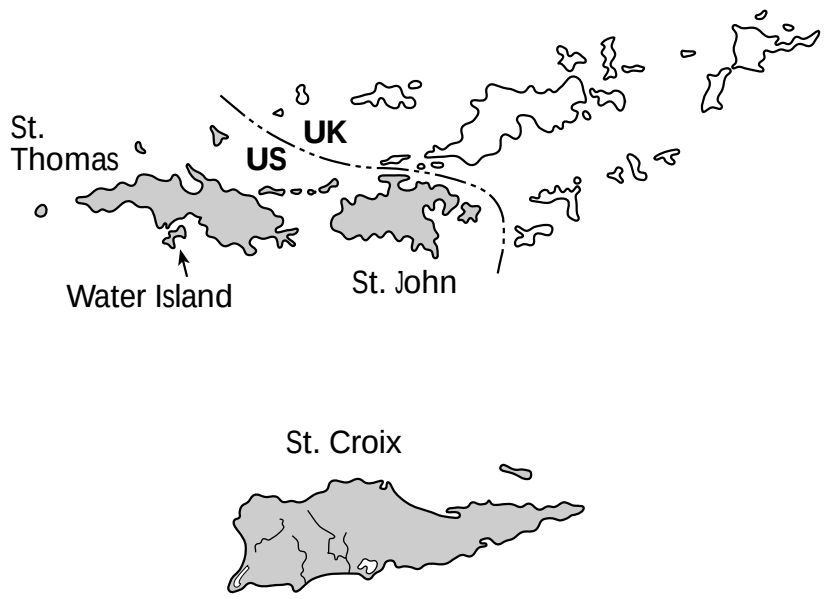
– Not reported in a quantifiable format or unknown.

[a] A subset of Virginia's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

[c] Size of significant publicly owned lakes, a subset of all lakes in Virginia.

U.S. Virgin Islands



— Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

For a copy of the Virgin Island's 1998 305(b) report, contact:

Lorina L. Williams
U.S. Virgin Islands Department of Planning and Natural Resources
Division of Environmental Protection
1118 Water Gut Homes
Christiansted, St. Croix, V.I. 00820-5065
(340) 773-0565

Surface Water Quality

The U.S. Virgin Islands consist of four main islands: St. Croix, St. Thomas, St. John, and Water Island, and over 50 smaller islands and cays located in the Caribbean Sea. The islands lack perennial streams or large freshwater lakes or ponds. Water quality in the Virgin Islands is generally good but declining due to increased point source and nonpoint source discharges into the marine environment.

The Virgin Islands municipal sewage treatment plants, operated by the Virgin Islands Department of Public Works (DPW), are a major source of water quality violations in the territory. Poor preventive maintenance practices due to the lack of funding within the DPW and negligence result in numerous bypasses due to frequent breakdowns at pumpstations, as well as clogged and collapsed pipelines that frequently cause discharges into surface waters. Furthermore, stormwater runoff overwhelms the sewage treatment plant, resulting in numerous bypasses of raw or undertreated sewage into bays and lagoons.

Other water quality problems result from unpermitted discharges, permit violations by private industrial dischargers, oil spills, and unpermitted filling or dredging activities in mangrove swamps. Nonpoint sources of concern include failing septic systems, lack of erosion control measures for coastal development, lack of control measures for urban stormwater runoff, and the disposal of vessel wastes into marine waters.

Ground Water Quality

The Virgin Islands' ground water is routinely contaminated with bacteria, saltwater, and volatile organic compounds. Leaking septic tanks, municipal sewer lines, and sewage bypasses contaminate the ground water with pathogenic bacteria. The overpumping of aquifers causes saltwater intrusion of the ground water sources. The leaking of underground storage tanks, and indiscriminant dischargers of waste oil cause VOC contamination.

Programs to Restore Water Quality

The Territorial Pollutant Discharge Elimination System (TPDES) program requires that all point source dischargers obtain a permit

to discharge low concentrations of pollutants into waters. The Division of Environmental Protection (DEP) performs quarterly compliance inspections.

The Virgin Islands is strengthening its Local Water Pollution Control Act and its Water Quality Standards and developing new regulations for urban stormwater runoff and for siting and constructing onsite sewage disposal systems and advocating best management practices.

The Virgin Islands has submitted its Unified Watershed Assessment Report pursuant to the Clean Water Action Plan. More detailed assessments of the most critical watersheds requiring restoration will be developed beginning in FY 1999.

The Territory will also be developing Total Daily Maximum Loads for various waterbodies identified in the 1998 303(d) listing.

Programs to Assess Water Quality

The Ambient Monitoring Program performs quarterly sampling at 64 fixed stations around St. Croix, 57 stations around St. Thomas, 19 stations around St. John and 5 stations on Water Island. Samples are analyzed for the following parameters: fecal coliform, turbidity, dissolved oxygen, temperature, Secchi depth, and salinity. On St. Croix, 20 stations were also sampled for phosphorus, nitrogen, and suspended solids. Intensive surveys are conducted at selected sites that may be adversely affected by coastal development. The Virgin Islands does not monitor bacteria in shellfish waters or toxins in fish, water, or sediment.

Individual Use Support in the Virgin Islands

Designated Use[a]	Total Square Miles Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Estuaries (Total Square Miles = 921)						
	727	73	27	<1	0	-
	51	100	0	0	0	-
	-	-	-	-	-	-
	6	100	0	0	0	-
Ocean Shoreline (Total Shore Miles = 173)						
	4	100	0	0	0	-
	20	59	0	41	0	-
	20	59	0	41	0	-
	113	99	0	0	1	-

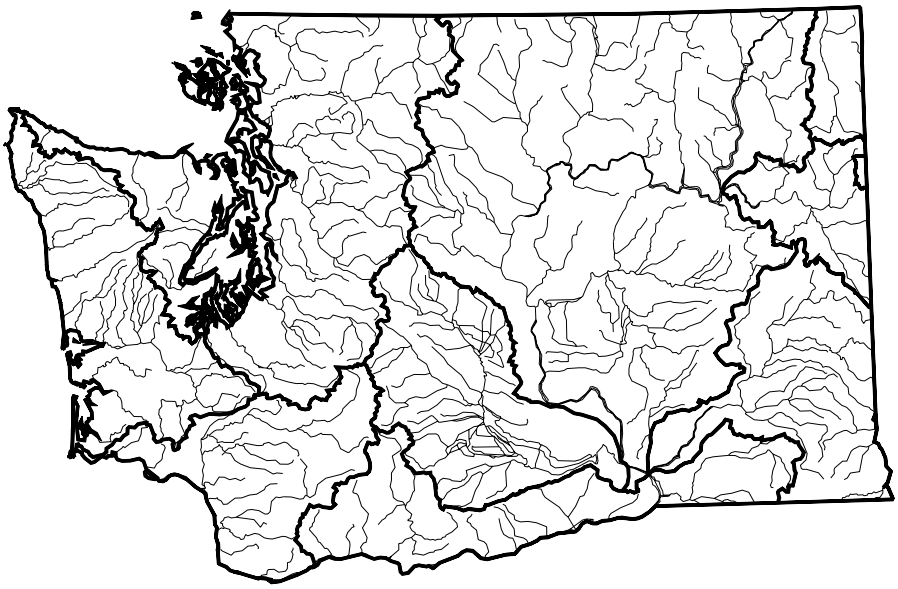
Summary of Use Support in the Virgin Islands

	Total Acres Assessed	Percent: Good (Fully Supporting)	Good (Threatened)	Impaired (For One or More Uses)
Wetlands (Total Acres = 3,776)				
	927	79	21	<1

– Not reported in a quantifiable format or unknown.

Note: Figures may not add to 100% due to rounding.

Washington



Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

For a copy of the Washington 1998 305(b) report, contact:

Alison Beckett
Washington Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600
(360) 407-6456
e-mail: abec461@ecy.wa.gov

Surface Water Quality

Washington reports that 63% of their assessed river miles fully support aquatic life uses, 21% partially support these uses, and 16% do not support aquatic life uses. Sixty-five percent of Washington's lakes fully support state-defined "overall" use. Thirty-three percent of the surveyed estuarine waters fully support aquatic life uses, 43% partially support these uses, and 24% do not support aquatic life uses.

Low levels of dissolved oxygen, temperature and fecal coliform bacteria from nonpoint source pollution, and natural conditions are the major causes of impairment of designated uses in estuaries. Agricultural runoff, land disposal, and municipal point sources also cause impairments in estuaries. Major causes of impairment in lakes include nutrients and noxious aquatic plants. Agriculture, nonpoint source pollution, and natural conditions are the predominant sources of impairment in lakes. Other sources include urban runoff, municipal point sources, land disposal, and construction runoff. In rivers and streams, agriculture is the major source of water quality degradation, followed by hydrologic habitat modification, natural sources, and other specific and nonspecific sources. Causes of water quality impairment from these sources include thermal modification, pathogen indicators, pH, and low dissolved oxygen.

Washington did not report on the condition of wetlands.

Ground Water Quality

Washington reports ground water contamination by metals, trace elements, nitrates, pesticides, petroleum, and synthetic organic chemicals. Sources include industrial activities, agriculture, municipal wastewaters, mining, and onsite sewage systems.

Programs to Restore Water Quality

Washington provides financial incentives to encourage compliance with permit requirements, the principal vehicle for regulating point source discharges. The state also has extensive experience developing, funding, and implementing nonpoint source pollution prevention and control programs since the early 1970s. The state has developed nonpoint source control plans with best management practices for forest practices, dairy waste, irrigated agriculture, dryland agriculture, and urban stormwater. The state is now focusing attention on watershed planning. The watershed approach is designed to synchronize water quality monitoring, inspections, permitting, nonpoint activities, and funding.

Programs to Assess Water Quality

Washington implements an aggressive program to monitor the quality of lakes, estuaries, and rivers and streams. The program makes use of fixed-station monitoring to track spatial and temporal water quality changes so as to ascertain the effectiveness of various water quality programs and be able to identify desirable adjustments to the programs.

Individual Use Support in Washington

Designated Use[a]	Total Miles Assessed	Percent Good (Fully Supporting)	Percent Good (Threatened)	Percent Fair (Partially Supporting)	Percent Poor (Not Supporting)	Percent Not Attainable
Rivers and Streams (Total Miles = 70,439)[b]						
	69,317	63	-	21	16	-
	59,039	67	-	<1	33	-
	69,317	57	-	14	29	-
Estuaries (Total Square Miles = 2,904)						
	2,304	33	-	43	24	-
	-	-	-	-	-	-
	444	64	-	19	17	0
	2,904	99	-	<1	1	-

Summary of Use Support[c] in Washington

	Total Acres Assessed	Percent Good (Fully Supporting)	Percent Good (Threatened)	Percent Impaired (For One or More Uses)
Lakes (Total Acres = 249,277)				
	248,683	65	0	35

Note: Figures may not add to 100% due to rounding.

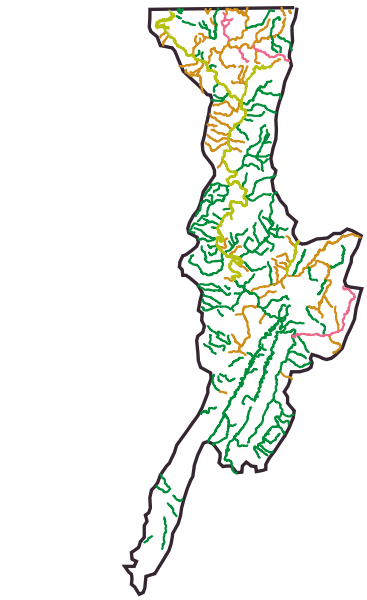
– Not reported in a quantifiable format or unknown.

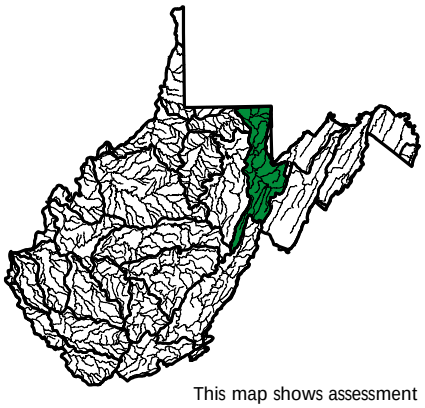
[a] A subset of Washington's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

[c] A summary of use support data is presented because Washington did not report individual use support for lakes in their 1998 Section 305(b) report.

West Virginia





This map shows assessment information in the Cheat river basin, one of the basins assessed for West Virginia's 1998 305(b) report under the state's rotating basin system.

- Segment 80% -100% Fully Supporting
- Segment 50% - 79% Fully Supporting
- Segment 20% - 49% Fully Supporting
- Segment 0% - 19% Fully Supporting
- Basin Boundaries (USGS 6-Digit Hydrologic Unit)

This map depicts aquatic life use support status.

For a copy of the West Virginia 1998 305(b) report, contact:

Mike Arcuri
West Virginia Division of Environmental Protection
Office of Water Resources
1201 Greenbrier Street
Charleston, WV 25311
(304) 558-2108
e-mail: marcuri@mail.dep.state.wv.us

The report is also available on the Internet at: *http://www.dep.state.wv.us/wv/pubs.html*

Surface Water Quality

West Virginia reported that 51% of their assessed river and stream miles have good water quality that fully supports aquatic life uses, and 82% fully support swimming. In lakes, 32% of the assessed acres have good water quality that fully supports aquatic life uses and 100% fully support swimming.

Metals and siltation are the most common water quality problems in West Virginia's rivers. Nutrients, pH, oxygen-depleting substances, and pathogens also impair a large number of river miles. In lakes, siltation, turbidity, metals, and nutrients impair the greatest number of acres. Resource extraction, primarily abandoned mining, impaired the most stream miles, followed by agriculture, forestry, and municipal point sources. Petroleum activities were the leading source of degraded water quality in lakes, followed by agriculture, forestry, and construction.

West Virginia reported that fish consumption advisories are posted for the Kanawha River, Pocatalico River, Armour Creek, Ohio River, Shenandoah River, North Branch of the Potomac River, the Potomac River, and Flat Fork Creek. Five of the advisories were issued because of elevated dioxin concentrations in bottom feeders or nonsport species. The other advisories address PCBs, chlordane, and dioxin in suckers, carp, and channel catfish.

West Virginia did not report on the condition of wetlands.

Ground Water Quality

West Virginia ranked mining and mine drainage as the highest priority source of ground water contamination in the state, followed by municipal landfills, surface water impoundments (including oil and gas brine pits), abandoned hazardous waste sites, and industrial landfills. West Virginia has documented or suspects that ground water has been contaminated by pesticides, petroleum compounds, other organic chemicals, bacteria, nitrates, brine/salinity, arsenic, and other metals.

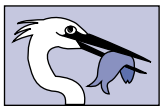
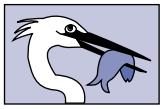
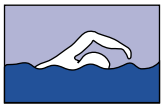
Programs to Restore Water Quality

The Office of Water Resources (OWR) is the lead agency for West Virginia's nonpoint source program. OWR works with other cooperating state agencies to assess nonpoint source impacts, then develops and implements projects designed to reduce pollutant loads from agricultural, forestry, resource extraction, urban runoff, hydromodification, and construction activities. Program initiatives are based on education, technical assistance, financial incentives, and demonstration projects. Current projects address nutrient management from livestock operations, erosion control, neutralization of acid mine drainage, pesticide usage, and road stabilization.

Programs to Assess Water Quality

West Virginia's surface water monitoring program includes compliance inspections, intensive site-specific surveys, ambient water quality monitoring, monitoring of contaminant levels in aquatic organisms, benthic and toxicity monitoring to assess perturbations, and special surveys and investigations. The state's Watershed Assessment Program (WAP) is charged with evaluating the health of West Virginia's watersheds. WAP assesses the health of a watershed by evaluating as many streams as possible, as close to their mouths as possible. The program collects and interprets water quality and biological information on watersheds on a 5-year rotating cycle. WAP began evaluating random sites in each watershed beginning in 1997.

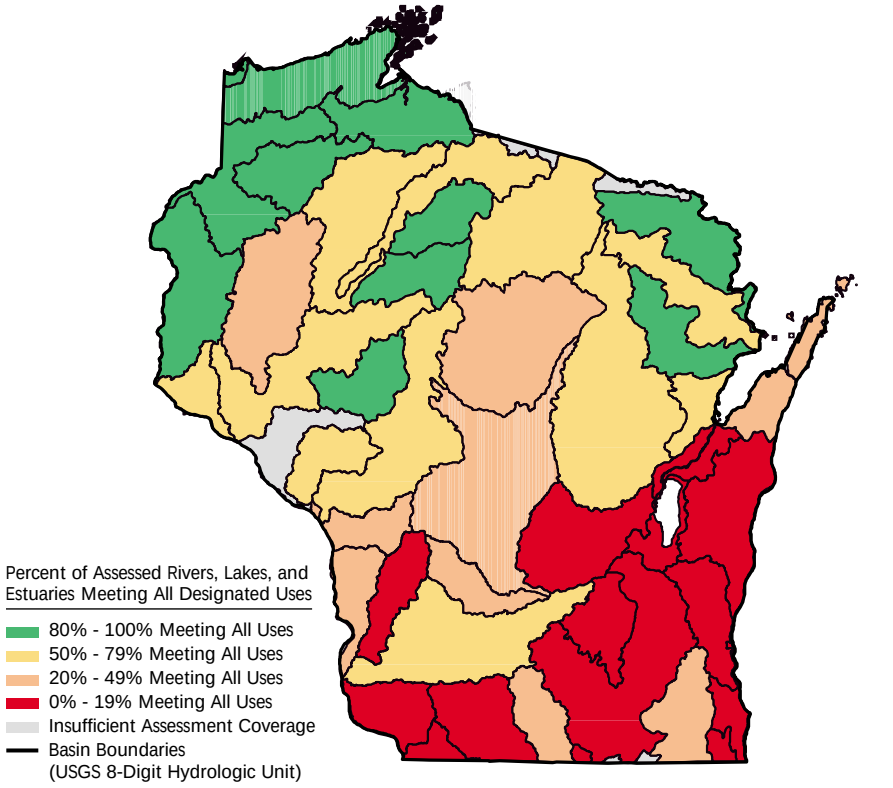
Individual Use Support in West Virginia

Designated Use[a]	Total Miles Assessed	Percent Good (Fully Supporting)	Percent Good (Threatened)	Percent Fair (Partially Supporting)	Percent Poor (Not Supporting)	Percent Not Attainable
Rivers and Streams (Total Miles = 32,278)[b]						
	7,943	38	13	38	11	<1
	349	41	0	58	1	0
	7,841	71	11	8	10	<1
Lakes (Total Acres = 22,373)						
	21,523	11	21	60	8	0
	91	100	0	0	0	0
	21,523	87	13	0	0	0

[a] A subset of West Virginia's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.
[b] Includes nonperennial streams that dry up and do not flow all year.

Note: Figures may not add to 100% due to rounding.

Wisconsin



For a copy of the Wisconsin 1998 305(b) report, contact:

Ron Martin
Wisconsin Department of Natural Resources
P.O. Box 7921
Madison, WI 53707
(608) 266-9270
e-mail: martir@dnr.state.wi.us

Surface Water Quality

The Wisconsin Department of Natural Resources (WDNR) found that 31% of the assessed river miles fully support aquatic life uses, 25% support these uses now but are threatened, 36% partially support aquatic life uses, and 8% do not support aquatic life uses. The most prevalent problems in rivers are habitat and flow alterations, siltation, excessive nutrients, pathogens, thermal modifications, and oxygen-depleting substances. The sources of these problems are often polluted runoff, especially in agricultural areas, and river modifications, such as channelization, dam construction, and the loss of vegetation alongside streams. Municipal wastewater discharges also impair more than 1,590 miles of streams, and industrial discharges more than 1,250 miles.

About 37% of the assessed lake acres fully support aquatic life uses, 3% support these uses but are threatened, 55% partially support these uses, and 6% do not support aquatic life uses. The primary source of lake degradation is deposition of airborne pollutants, especially mercury, and polluted runoff. All of Wisconsin's Great Lakes' shoreline partially supports fish consumption use due to fish consumption advisories posted throughout the Great Lakes.

Wisconsin did not report on the condition of wetlands.

Ground Water Quality

The primary sources of ground water contamination in Wisconsin are agricultural activities, municipal landfills, leaking underground storage tanks, abandoned hazardous waste sites, and spills. Other sources include septic tanks and land application of wastewater. Nitrate-nitrogen is the most common ground water contaminant. Nitrates come from fertilizers, animal waste storage sites and feedlots, municipal and industrial wastewater and sludge disposal, refuse disposal areas, and leaking septic systems.

Programs to Restore Water Quality

WDNR is integrating multiple agencies, programs, interests, and jurisdictions in an "ecosystem approach" that looks at all parts of the ecosystem when addressing water quality—the land that drains to the waterbody, the air above it, the plants, animals, and people using it. Since the 1970s, WDNR has prepared water quality management plans for each of the state's river basins that summarize the condition of waters in each basin, identify improvements and needs, and make recommendations for cleanup or protection. WDNR updates the plans every 5 years and uses the plans to rank watersheds for priority projects under the Wisconsin Nonpoint Source Water Pollution Abatement Program and to address wastewater discharge concerns.

Programs to Assess Water Quality

In 1992, Wisconsin implemented a surface water monitoring strategy to support river basin planning. The strategy integrates monitoring and management activities in each of the state's river basins on the 5-year basin planning schedule. In recent years, Wisconsin has placed more emphasis on monitoring polluted runoff and toxic substances in bottom sediments and tissues of fish and wildlife.

– Not reported in a quantifiable format or unknown.

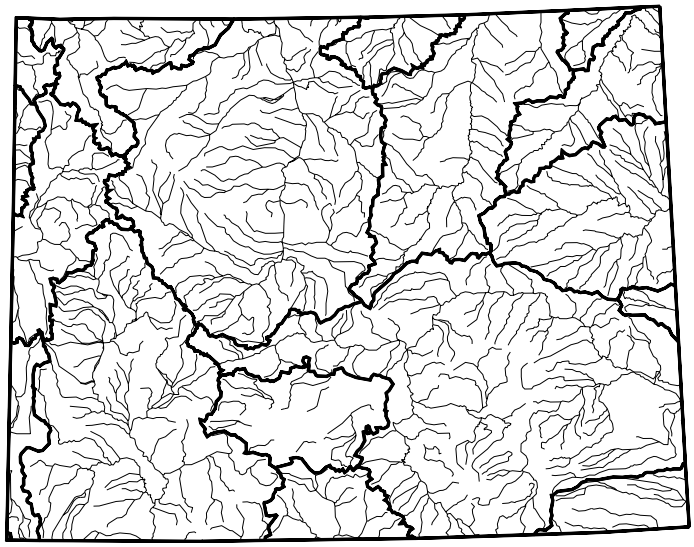
Individual Use Support in Wisconsin

Designated Use[a]	Total Miles/Acres/Shore Miles Assessed	Percent Good (Fully Supporting)	Percent Good (Threatened)	Percent Fair (Partially Supporting)	Percent Poor (Not Supporting)	Percent Not Attainable
Rivers and Streams (Total Miles = 57,698)[b]						
	22,854	31	25	36	8	<1
	3,779	75	3	18	4	<1
	-	-	-	-	-	-
Lakes (Total Acres = 982,155)						
	64,510	37	3	55	6	-
	105,596	59	0	0	41	-
	54,771	25	5	63	6	-
Great Lakes (Total Shore Miles = 1,017)						
	1,017	0	79	21	0	0
	1,017	0	0	100	0	0
	-	-	-	-	-	-

[a] A subset of Wisconsin's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.
[b] Includes nonperennial streams that dry up and do not flow all year.

Note: Figures may not add to 100% due to rounding.

Wyoming



— Basin Boundaries
(USGS 6-Digit Hydrologic Unit)

For a copy of the Wyoming 1998 305(b) report, contact:

Mark Conrad
Wyoming Department of
Environmental Quality
Water Quality Division
Herschler Building
122 West 25th Street
Cheyenne, WY 82002
(307) 777-5802
email: mconra@missc.state.wy.us

Surface Water Quality

Historic land and water management activities, compounded by climatological events, led to accelerated loss of streamside vegetation in many parts of Wyoming during the early parts of this century. This downcutting resulted in considerable amounts of erosion, sediment loading, and sediment deposition as the streams reestablished more natural and stable channels and flood plains. Better land and water management, along with improved treatment of discharges, has improved the water quality in Wyoming over the last several decades.

Overall, the water quality in Wyoming is excellent to good in most of the state. Currently, the most widespread problems in rivers and streams are related to sediment loading, and the resultant loss of aquatic habitat, from activities such as long-duration grazing, certain irrigation practices, and some activities associated with road building and maintenance. The second most common water quality problems are localized cases of fecal contamination from urban runoff, illicit connections, and unknown sources. These problems are being addressed through numerous locally led watershed improvement projects, educational programs, and active public participation in the decision making process.

Wyoming did not report on the condition of wetlands.

Ground Water Quality

Petroleum hydrocarbons are the most common contaminants impacting Wyoming's ground water, followed by halogenated solvents, salinity/brine, nitrates, and pesticides. Common sources of contamination include leaking above- and underground storage tanks, fertilizer and pesticide application, spills, landfills, and pipelines and sewer lines. Natural contaminants are also found in Wyoming's ground water. These include radionuclides, flouride, metals, and salts whose sources are primarily subsurface geologic materials.

Programs to Restore Water Quality

The state Department of Environmental Quality (DEQ) oversees the NPDES program in Wyoming. DEQ reviews industrial and municipal permit applications

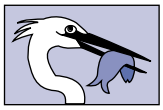
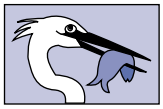
and ensures that proper design criteria are implemented. Wyoming's nonpoint source control program is nonregulatory and relies on voluntary cooperative efforts to control NPS pollution. Program efforts focus on providing information and education to the public; demonstrating, implementing, and cost-sharing best management practices; and coordinating with local, state, and federal agencies.

Programs to Assess Water Quality

In the past, Wyoming relied primarily on information from other agencies to determine which waterbodies had water quality impairments and should be listed on the 303(d) list. After a lawsuit was filed in 1996 over the state's Total Maximum Daily Loads program, it was discovered that much of the information used to list those waterbodies was inconclusive. Wyoming made an agreement with EPA that it would list on future 303(d) lists only those waterbodies that had conclusive and scientifically valid data suggesting impairment. In 1998 Wyoming tripled the size of its monitoring staff to better conduct comprehensive (biological, chemical, and physical) water quality assessments on those waterbodies on the 1996 303(d) list that lacked that conclusive and valid data. Wyoming has committed to monitoring all those waterbodies by the year 2002 and developing TMDLs on those waterbodies that need them by the year 2007.

In addition, many conservation districts have begun training to conduct credible and comprehensive water quality assessments to provide data needed for locally led water quality improvement programs.

Individual Use Support in Wyoming

Designated Use[a]		Percent: Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Not Attainable
Rivers and Streams (Total Miles = 108,767)[b]						
	Total Miles Assessed	90				
	20,188		2	2	<1	6
		100				
	18,997		0	0	0	0
		-	-	-	-	-
Lakes (Total Acres = 325,048)						
	Total Acres Assessed	-	-	-	-	-
		-	-	-	-	-
		-	-	-	-	-

– Not reported in a quantifiable format or unknown.

[a] A subset of Wyoming's designated uses appear in this figure. Refer to the state's 305(b) report for a full description of the state's uses.

[b] Includes nonperennial streams that dry up and do not flow all year.

Note: Figures may not add to 100% due to rounding.