Chapter 2.1 Executive Summary

2.1.1 Introduction

Utah's surface water resources include 14,250 perennial miles of rivers and streams and over 2000 lakes and reservoirs. Utah is the second driest state in the country and these waters play a major role in the private, commercial and industrial development of the state. They are sources of drinking water, provide enormous recreational opportunities, sustain a wide variety of wildlife, and provide water for agricultural production. An overview of the state's characteristics are listed in Table 2.1-1.

Table 2.1-1   Atlas of State's Characteristics

State Population	2,550,063
Total Miles of Rivers and Streams	85,916
-Miles of Perennial Rivers / Streams	14,250
-Miles of Intermittent Rivers and Streams	66,649
- Miles of Ditches and Canals	4,017
Number of Lakes / Reservoirs / Ponds	2,085
Acres of Lakes / Reservoirs / Ponds	461,717
Wetlands	
- Acres of Freshwater Wetlands	510,359
-Linear Miles of Wetlands	1,902

Utah assesses the quality of its surface water resources to protect it for drinking, fishing, boating, irrigation, stock watering, and supporting aquatic wildlife. Data are compared against State water quality standards to determine beneficial use support (DWQ, 2005). Assessments are also made using biological and habitat data. Various reports are written and disseminated to project sponsors, local and state officials, government and private entities and the public to expand the awareness of the need to protect and enhance the water quality of Utah's rivers, streams, lakes and reservoirs. In addition, water quality data are used to identify impaired Assessment Units and establish water quality goals for implementing projects to restore or protect water quality. Water quality data are also collected to do Total Maximum Daily Load (TMDL) analyses for discharge permits and to assure that permit requirements under the Utah Pollution Discharge Elimination System (UPDES) program are being met. The effectiveness of nonpoint source projects and TMDL implementation activities are evaluated.

2.1.2 Stream Monitoring

Utah uses a basin rotation type of monitoring for its rivers and streams. This allows the State to assess a greater portion of its rivers and streams. The State is divided into five monitoring regions and ten watershed management units. Data collected statewide were used to make assessments. The results of stream assessments for the 2006 Integrated Report (IR) were used when there were no new data to make an assessment. The majority of assessments were made using data collected from January 1, 2002 through December 31, 2006. In a few instances data collected over a 10-year period were used. Other sources of data were the U.S. Geological Survey's projects and work they were doing for other entities. Data collected by Salt Lake City and County were also used to make assessments.

The stream monitoring program consists of basin intensive and long-term ambient water quality monitoring stations. The fixed-station monitoring network consists of 64 stations. These stations are used to evaluate long-term water quality trends. Samples are collected every six weeks (eight times per year).

The data collected and analyzed provide essential river, stream, lake and reservoir water quality assessment data to identify and quantify water quality problems that may exist and provide background information for the development of possible solutions to those problems. They also allow water quality programs to be focused on critical areas, and allow the Division of Water Quality to prioritize its management plans. The data are also used to determine the effectiveness of the Division's water quality management plans and to assist individuals and agencies involved in protecting the quality of the State's waters. Data are compared against the applicable standards as determined by the specific beneficial uses (Table 2.1-2). Some waters were assessed under the narrative standard.

Table 2.1-2   Beneficial Uses Applied to Streams, Rivers, Lakes and Reservoirs

Class	Definition
1	Protected for use as a raw water source for domestic water systems.
1C	Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.
2	Protected for recreational use and aesthetics.
2A	Protected for primary contact recreation such as swimming.
2B	Protected for secondary contact recreation such as boating, wading, or similar uses.
3	Protected for use by aquatic wildlife.
3A	Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.
3B	Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.
3C	Protected for nongame fish and other aquatic life, including he necessary aquatic organisms in their food chain.

Class	Definition
3D	Protected for waterfowl, shore birds and other water-oriented wildlife not included in Classes 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain.
3E	Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.
4	Protected for agricultural uses including irrigation of crops and stock watering.
5	The Great Salt Lake. Protected for primary and secondary contact recreation, aquatic wildlife, and mineral extraction.

Of the 11,075.8 stream miles assessed, 8,108.1 miles (73.1%) are fully supporting and 2,974.7 (26.8%) stream miles are not supporting at least one beneficial use (Figure 2.1-2.1-1). For the majority of streams, the Class 2B (protected for contact recreation) was not assessed because bacteriological data were not available. Waters with this classification were only considered assessed if bacteriological data were collected unless there was physical or chemical impairment such as pH.

Overall Beneficial Use Support

Non
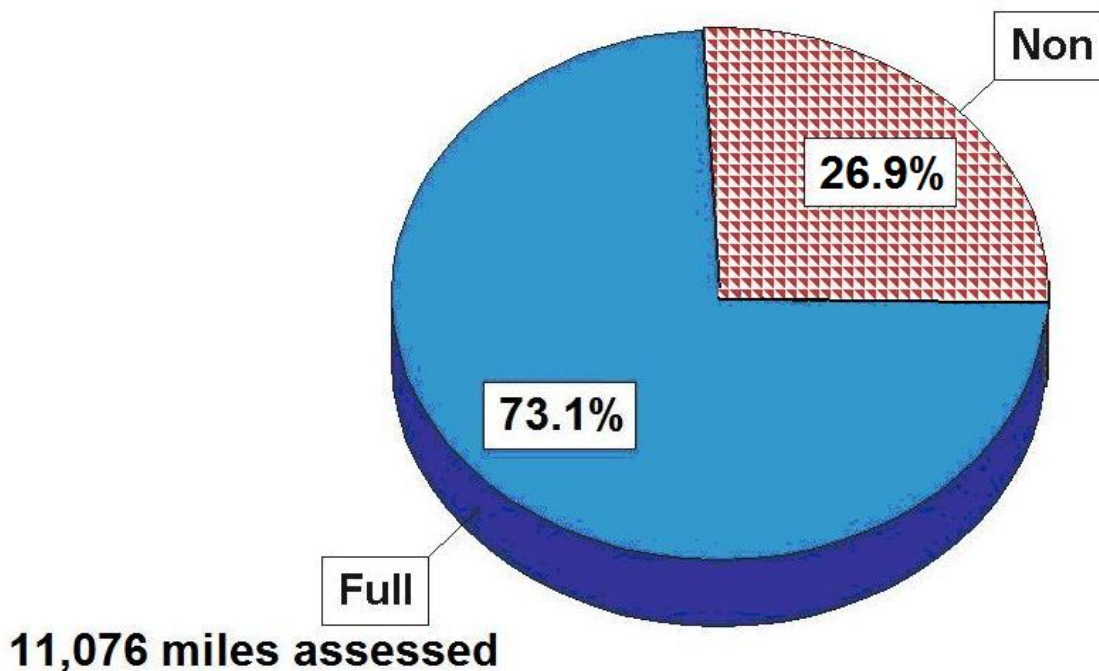26.9%

73.1%

Full

11,076 miles assessed

Figure 2.1-1   Overall Beneficial Use Support for Streams

Individual beneficial use support is listed in Table 2.1-3 below. It lists the beneficial use classes assessed, the stream miles assessed, miles supporting and not supporting the beneficial use classes.

Table 2.1-3   Individual Use Support Summary

	Size Assessed	Size Fully Supporting	Size Not Supporting	Totals
Use				
Aquatic Life	10,514.8	8,112.5	2,402.3	10,514.8
Fish Consumption	0.0	0.0	0.0	0.0
Swimming	0.0	0.0	0.0	0.0
Secondary Contact	279.9	170.1	109.8	279.9
Drinking Water	4,158.6	4,013.5	145.1	4,158.6
Agricultural	10,062.3	9,021.2	1,041.1	10,062.3
Use				
Aquatic Life		77.2%	22.8%	100.0%
Fish Consumption		0.0%	0.0%	0.0%
Swimming		0.0%	0.0%	0.0%
Secondary Contact		60.8%	39.2%	100.0%
Drinking Water		96.5%	3.5%	100.0%
Agricultural		89.7%	10.3%	100.0%

The major causes of water quality impairment are thermal modifications, total dissolved solids, nutrients, sediments, metals, nutrients, habitat alterations, and unknown causes. Habitat alterations include riparian habitat and in-stream habitat alterations.

The major sources of pollutants are agriculture, habitat modification, hydrological modification, natural and unknown sources.

River and stream assessment units (AUs) are assessed and placed into the five assessment categories that the U.S. EPA has adopted for the Integrated Report. (Table 2.1-4). These categories provide more information on the waters of the state. They identify those assessment units that all beneficial uses were assessed and found fully supporting (Category 1). Those units where one or more beneficial uses were assessed, but not all were assessed and were fully supporting their beneficial uses (Category 2) and those units that were not assessed because of insufficient or no data available to make an assessment (Category 3A).

Category 4A includes those AUs for which a TMDL has been completed and approved by the U.S. Environmental Protection Agency, but is still not meeting water quality standards or supporting beneficial use assessments. Waters that are impaired by pollution, such as habitat impairment, are placed in Category 4C, no TMDL required. For these waters, Best Management Practices (BMPs) need to be implemented so the waters support their beneficial uses. Those waters identified as not supporting their beneficial use because of a pollutant requiring a TMDL are placed in Category 5. An AU can be placed in multiple assessment categories, such as 4A and 5, if multiple pollutants are involved.

Utah's proposed 303(d) list for streams includes 92 Assessment Units. Because multiple causes affected some of the segments, 143 parameters were listed for TMDL analysis.

Table 2.1-4   Stream Miles by Assessment Category - State Wide

Category	Category Definitions	Stream Miles
1	All beneficial uses fully supported.	47.3
2	Assessed beneficial uses fully supported.	7,917.5
3A	No data or insufficient data to make an assessment.	2,127.8
3B	Lakes that are not supported for one cycle only.	
3C	Insufficient data to assess but an assessment plan is in place.	
4A	TMDL approved by EPA	1,445.0
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	
4C	Impaired by pollution, no TMDL required.	531.1
5	Impaired by pollutant, TMDL required.	1,966.0

2.1.3 Lakes / Reservoirs

The 132 lakes and reservoirs assessed during this reporting cycle account for 97% (468,898 acres) of the total lake acreage in the state. When accounting by acreage, 69% of these were found supporting their designated uses and 31% were not supporting at least one designated beneficial use (Figure 2.1-2). Of the 132 lakes surveyed, 86 (65 %) were fully supporting and 46 (35 %) were not supporting.
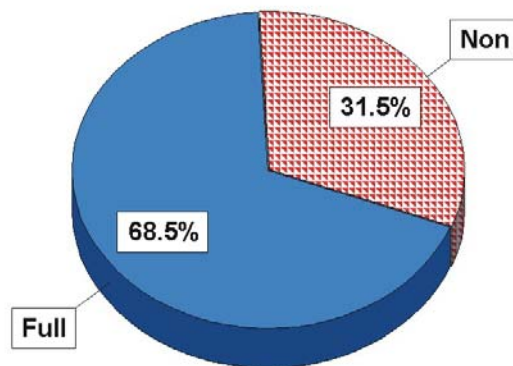
Figure 2.1.2. Overall Beneficial Use Support -Statewide.

Figure 2.1-2   Overall Beneficial Use Support - Statewide

The causes of impairment in lakes and reservoirs continue to be nutrients, siltation, low dissolved oxygen, suspended solids, organic enrichment, and noxious aquatic plants.

The major sources of pollutants causing impairments are nonpoint sources, agricultural practices, industrial and municipal point sources, and habitat modification (draw-down of reservoirs).

Thirty seven lakes are on the 303(d) list. The Division of Water Quality created a new category for lakes that are assessed as fully supporting in one of the two most recent assessment cycles and are not supporting in the other (Table 2.1-5). The new category is 3B. For these waters to be listed on the 303(d) list, they need to be assessed as not supporting their beneficial use for two consecutive monitoring cycles. Several lakes remain under additional stress due to continuing drought conditions.

Table 2.1-5   Lake Beneficial Use Assessment by Category - Lake Acreage

Category	Category Definitions	Lake Acreage
1	All beneficial uses fully supported.	162,700
2	Assessed beneficial uses are fully supported.	154,004
3A	No data or insufficient data to make an assessment.	3,668
3B	Lakes that are not supported for one cycle only.	97
3C	Insufficient data to assess but an assessment plan is in place.	1,088,000
4A	TMDL approved by EPA	10,720
4B	Pollution control requirements are expected to result in full beneficial use support in near future.	0
4C	Impaired by pollution, no TMDL required.	0
5	Impaired by pollutant, TMDL required.	141,041

The causes of impairment in lakes and reservoirs continue to be nutrients, siltation, low dissolved oxygen, suspended solids, organic enrichment, and noxious aquatic plants.

The major sources of pollutants causing impairments are nonpoint sources, agricultural practices, industrial and municipal point sources, and habitat modification (draw-down of reservoirs).