

Goose Creek Subbasin

HUC 107040211

TMDL Five-Year Review



Draft



**Department of Environmental Quality
January 2010**

Goose Creek Subbasin

TMDL Five-Year Review

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Acknowledgments

The 5-Year TMDL review of the Goose Creek Subbasin Assessment and TMDL is the cumulative work of several individuals in the Twin Falls Regional Office and DEQ’s Technical Services. These individuals include:

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- Carolyn Rambough – DEQ Administrative Assistant and WAG-BAG Secretary
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The Goose Creek Subbasin Assessment and TMDL were developed to comply with Idaho’s Total Maximum Daily Load schedule from listings found on the 1998 §303(d) list. The original TMDL was written by Clyde Lay who submitted the final version to EPA and DEQ State Office in December 2003. Final approval was given by EPA in 2004.

The commencement of the Idaho TMDL process began in 1995 via House Bill 1284. Since that time, the Lake Walcott Watershed Advisory Group (Lake Walcott WAG) and Upper Snake Basin Advisory Group (Upper Snake BAG) have been actively engaged in the TMDL process by providing comments and suggestions to DEQ during the development of the original Goose Creek TMDL and the Five-Year Review.

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Executive Summary

This document presents a five-year review of the Goose Creek Subbasin Assessment SBA/ Total Maximum Daily Loads (TMDLs). This review addresses the water bodies in the Goose Creek Subbasin that are in Idaho's current and most recent draft Section 4(a) of the 2008 Integrated Report. This includes the water bodies that were in the original 1998 Section 303(d) list, which was the basis for the Goose Creek TMDL; and the 2002 Integrated Report. This five-year review has been developed to comply with Idaho Statute §39-3611(7). The review describes current water quality status, pollutant sources, and recent pollution control efforts in the Goose Creek Subbasin, located in south central Idaho.

The TMDLs subject to the five-year review are summarized in Table 1 and Table 2. Table 1 summarizes the existing approved TMDLs and their status relative to their specific assessment unit, pollutants-of-concern, and TMDL approval year.

Table 1 Existing TMDLs and General Status.

STREAM	ASSESSMENT UNIT	POLLUTANT(S)	TMDL APPROVAL YEAR	DEQ RECOMMENDED CHANGES TO 303(D) LIST FROM 2004 TMDL	LISTED POLLUTANTS FROM 2002-2008 INTEGRATED REPORTS
Goose Creek	ID17040211SK005_02 005_03 005_05	Bac, DO, Qalt, Nut, Sed, Temp	2004	Delist: DO, Nut, Bac List: Qalt	Sed, Temp
Trapper Creek	ID17040211SK003_04a 004_03	Bac, DO, Qalt, Sed	2004	Delist: Bac, DO, Qalt	Sed, Nut, Bac, DO, Qalt, TP, Phys sub, Halt
Birch Creek	ID17040211SK 012_02 012_03	Bac, DO, Sed	2004	Delist: DO, Sed	Bac, Nut, Path, DO, Sed, TP, F-Coli, Unknown
Cold Creek	ID17040211SK011_02 011_03	Unknown	2004	Delist: Unknown	Temp, Unknown, Com bio/hab
Blue Hill Creek	ID17040211SK010_02 010_03	Unknown	2004	Delist: Unknown	Unknown
Beaverdam Creek	ID17040211SK006_02 006_03	Unknown	2004	Delist: Unknown	DO, Bac, Sed, Temp, TSS, Nut, Path, TP, F- Coli, E-Coli
Big Cottonwood Creek	ID17040211SK001_02 001_03	Unknown	2004	Delist: Unknown List: Qalt	None
Mill Creek	ID17040211SK013_03	Temp	2004	Delist: Temp	Temp
Lower Goose Creek Reservoir	ID17040211SK002_02	DO, Qalt, Nut, Sed	2004	Delist: DO, Nut, Sed List: Qalt	Nut, Hg, DO, Qalt, Sed, Unknown
Emery Creek	ID17040211SK005_02	Not listed	2004	None	None
Little Cottonwood	ID17040211SK000_02	Not listed	2004	None	Bac, Path, Qalt, E-Coli,

Creek				
TMDL= Total Maximum Daily Loads, Bac= Bacteria, DO= Dissolved Oxygen, Qalt= Flow Alteration, Nut= Nutrients, Sed = Sediment, Temp= Temperature, TSS= Total Suspended Solids, Path= Pathogen, F-Coli= Fecal Coliform, E-Coli= Escherichia coli, TP= Total Phosphorus, Com bio/hab= Combined biota/habitat bioassessments, Phy sub= physical substrate habitat alterations, Halt= Habitat Alteration, Hg= Mercury				

Table 2 summarizes the existing TMDLs and the current status of the listed creeks in HUC 17040211 as they are currently shown in the 2008 Integrated Report.

Table 2. Current Status from 2008 Integrated Report

STREAM DESIGNATION	ASSESSMENT UNIT	2008 INTEGRATED REPORT	APPROVED TMDL	OTHER INFORMATION
<i>TRIBUTARIES</i>				
Beaverdam Creek	ID17040211SK006_02 includes source to mouth.	Section 4a F-Coli, DO, TP, S/S, Temp	Goose Creek TMDL (2004)	TP and Temp concentrations used as surrogate for DO (Goose Creek TMDL, p. 183)
	ID17040211SK006_03 includes source to mouth.	Section 4a E-Coli, DO, TP, S/S Temp, TSS	Goose Creek TMDL (2004)	
Big Cottonwood Creek	ID17040211SK001_02 – source to mouth.	Section 2 Full Support	Goose Creek TMDL (2004)	
	ID17040211SK001_03 – source to mouth.	Section 2 Full Support	Goose Creek TMDL (2004)	
Birch Creek	ID17040211SK012_02 – source to mouth.	Section 4a F-Coli, TP	Goose Creek TMDL (2004)	
	ID17040211SK012_03 – source to mouth.	Section 4a F-Coli, TP	Goose Creek TMDL (2004)	
	ID17040211SK012_04 – source to mouth.	Section 4a F-Coli, TP	Goose Creek TMDL (2004)	
	ID17040211SK009_02 – Idaho/Utah border to mouth.	Section 2 Full Support	Goose Creek TMDL (2004)	
	ID17040211SK009_03 – Idaho/Utah border to mouth.	Section 4a F-Coli, TP	Goose Creek TMDL (2004)	
Blue Hill Creek	ID17040211SK010_02 – source to mouth	Section 2 Full Support	Goose Creek TMDL (2004)	Sed, DO, Nut, Bac, and Temp = supportive of beneficial uses, still listed for Q-Alt, Goose Creek TMDL (2004, p. 96)
	ID17040211SK010_03 – source to mouth	Section 2 Full Support	Goose Creek TMDL (2004)	Sed, DO, Nut, Bac, and Temp = supportive of beneficial uses, still listed for Q-Alt, Goose Creek TMDL (2004, p. 96)
Cold Creek	ID17040211SK011_02 – source to mouth	Section 4a Temp	Goose Creek TMDL (2004)	
Goose Creek	ID17040211SK008_03 – source to Idaho/Utah border	Section 2 Full Support	Goose Creek TMDL (2004)	
	ID17040211SK008_04 – source to Idaho/Utah border	Section 2 Full Support	Goose Creek TMDL (2004)	

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	ID17040211SK008_02 – source to Idaho/Utah border	Section 5 Temp	Goose Creek TMDL (2004)	IDFG temp logger indicates temp exceeds water quality standards
	ID17040211SK005_02 – Beaverdam Creek to Lower Goose Creek Reservoir	Section 2 Full Support	Goose Creek TMDL (2004)	
	ID17040211SK005_03 – Beaverdam Creek to Lower Goose Creek Reservoir	Section 4a Temp	Goose Creek TMDL (2004)	
	ID17040211SK005_05 – Beaverdam Creek to Lower Goose Creek Reservoir	Section 4a S/S, Temp	Goose Creek TMDL (2004)	
Land/Willow/Smith Creek Complex	ID17040211SK014_02 – Land/Willow/Smith Creek Complex	Section 3 Not Assessed		Not assessed in Goose Creek TMDL (2004)
	ID17040211SK014_03 – Land/Willow/Smith Creek Complex	Section 3 Not Assessed		Not assessed in Goose Creek TMDL (2004)
Little Cottonwood Creek	ID17040211SK000_02A – Little Cottonwood Creek	Section 4a E-Coli	Goose Creek TMDL (2004)	Goose Creek TMDL- See page 198 for load allocations
	ID17040211SK000_02A – Little Cottonwood Creek	Section 4c Low Flow Alterations	Goose Creek TMDL (2004)	Not caused by a pollutant
Lower Goose Creek /Lower Goose Creek Reservoir	ID17040211SK002_02 – Lower Goose Creek	Section 3 Not Assessed		Not assessed in Goose Creek TMDL (2004)
	ID17040211SK002_03 – Lower Goose Creek	Section 3 Not Assessed		Not assessed in Goose Creek TMDL (2004)
	ID17040211SK002L_0L – Lower Goose Creek Reservoir	Section 4c OFRA	Goose Creek TMDL (2004)	Not caused by a pollutant
	ID17040211SK002L_0L – Lower Goose Creek Reservoir	Section 5 Mercury		Not assessed in Goose Creek TMDL (2004)
Mill Creek	ID17040211SK013_02 – source to mouth	Section 2 Full Support		Removed from 303(d) list for Temp, Goose Creek TMDL (2004, p. 133)
	ID17040211SK013_03 – source to mouth	Section 2 Full Support		Removed from 303(d) list for Temp, Goose Creek TMDL (2004, p. 133)
Trapper Creek	ID17040211SK003_02 – Trapper Creek from and including Squaw Creek to Lower Goose Creek	Section 4a TP, S/S	Goose Creek TMDL (2004)	
	ID17040211SK003_04 – Trapper Creek from and including Squaw Creek to Lower Goose Creek	Section 4a TP, S/S	Goose Creek TMDL (2004)	
	ID17040211SK004_02 – Trapper Creek – source to Squaw Creek	Section 4a TP, S/S	Goose Creek TMDL (2004)	
	ID17040211SK004_03 – Trapper Creek – source to Squaw Creek	Section 4a TP, S/S	Goose Creek TMDL (2004)	
	ID17040211SK003_04a –Trapper Creek	Section 4c PSHA	Goose Creek TMDL (2004)	
	ID17040211SK003_04 –Trapper Creek- from and including Squaw Creek to Lower Goose Creek	Section 4c OFRA	Goose Creek TMDL (2004)	
Trout Creek	ID17040211SK007_02 – source to Idaho/Nevada border	Section 5 S/S, Temp		Not assessed in Goose Creek TMDL (2004)

	ID17040211SK007_03 – source to Idaho/Nevada border	Section 5 CBHB		Not assessed in Goose Creek TMDL (2004)
Unclassified Waters	ID17040211SK000_02 – Unclassified Waters in CU	Section 3 Not Assessed		Not assessed in Goose Creek TMDL (2004)
	ID17040211SK000_03 – Unclassified Waters in CU	Section 3 Not Assessed		Not assessed in Goose Creek TMDL (2004)
	ID17040211SK000_05 – Unclassified Waters in CU	Section 4c OFRA		Not assessed in Goose Creek TMDL (2004)
<p>TMDL = Total Maximum Daily Load. TSS = Total Suspended Sediment. TP = Total Phosphorus. S/S = Sediment/Siltation. Sed = Sediment. Nut = Nutrients. Bac = Bacteria. Q-Alt = Flow Altered. Temp = Temperature. PSHA = Physical Substrate Habitat Alterations. DO = Dissolved Oxygen. OFRA = Other Flow Regime Alterations. E-Coli = Escherichia coli. F-Coli = Fecal Coliform. CBHB = Combined Biota/Habitat Bioassessments. IDFG = Idaho Department of Fish and Game.</p>				

Watershed At A Glance

The watershed, at a glance, is as shown in Table 3.

Table 3. Watershed at a Glance.

Approved TMDLs- Specific Pollutants	General Pollutants Within Watershed
Goose Creek – Temperature, Sediment Trapper Creek – Nutrients, Sediment Birch Creek – Nutrients, Bacteria Cold Creek – Temperature Beaverdam Creek- Nutrients, Temperature, Bacteria, Sediment, Dissolved Oxygen Little Cottonwood Creek – Bacteria Left Hand Fork Beaverdam Creek – Nutrients, Sediment, Bacteria	Bacteria Dissolved Oxygen Nutrients Sediment Temperature
Implementation Plans	Implementation Actions
Goose Creek TMDL Implementation Plan – In Development Goose Creek Temperature TMDL – In Development Private Property – In Development Public Lands – In Development State Lands – In Development NPDES Point Sources - None	Road and Trail Decommissioning Road Management Livestock Enclosure Fence Repair Riparian and Brush Management Stream bank and Shoreline Protection

Section 1: Introduction

The federal Clean Water Act (CWA) requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation’s waters. States and tribes, pursuant to Section 303 of the CWA, are to adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the nation’s waters whenever possible. Section 303(d) of the CWA establishes requirements for states and tribes to identify and prioritize water bodies that are water quality limited (i.e., water bodies that do not meet water quality standards). States and tribes must periodically publish a priority list (a “§303(d) list”) of impaired waters. For waters identified on this list, states and tribes must develop a total maximum daily load (TMDL) for the pollutants, set at a level to achieve water quality standards.

Idaho Statute §39-3611(7) requires a five-year cyclic review process for Idaho TMDLs:

The director shall review and reevaluate each TMDL, supporting subbasin assessment, implementation plan(s) and all available data periodically at intervals of no greater than five (5) years. Such reviews shall include the assessments required by section 39-3607, Idaho Code, and an evaluation of the water quality criteria, instream targets, pollutant allocations, assumptions and analyses upon which the TMDL and subbasin assessment were based. If the members of the watershed advisory group, with the concurrence of the basin advisory group, advise the director that the water quality standards, the subbasin assessment, or the implementation plan(s) are not attainable or are inappropriate based upon supporting data, the director shall initiate the process or processes to determine whether to make recommended modifications. The director shall report to the legislature annually the results of such reviews.

This report is intended to meet the provisions of Idaho Statute §39-3611(7). The report documents the review of an approved Idaho TMDL and implementation plan (in development) and provides consideration of the most current and applicable information in conformance with Idaho Statute §39-3607, evaluation of the appropriateness of the TMDL to current watershed conditions, implementation plan evaluation, and consultation with the Watershed Advisory Group (WAG). An evaluation of the recommendations presented is provided. Final decisions for TMDL modifications are decided by the Department of Environmental Quality (DEQ) Director. Approval of TMDL modifications is decided by the U.S. EPA, with consultation by DEQ.

The Goose Creek TMDL five-year review is not intended to make modifications or reopen the approved Goose Creek TMDL. The review process will be used to evaluate the monitoring data collected in the last five years and implementation projects that have been applied, to assess their status in meeting water quality standards and beneficial uses for the streams that are listed in Section 303(d) of the Clean Water

Act.

1.1 About Assessment Units

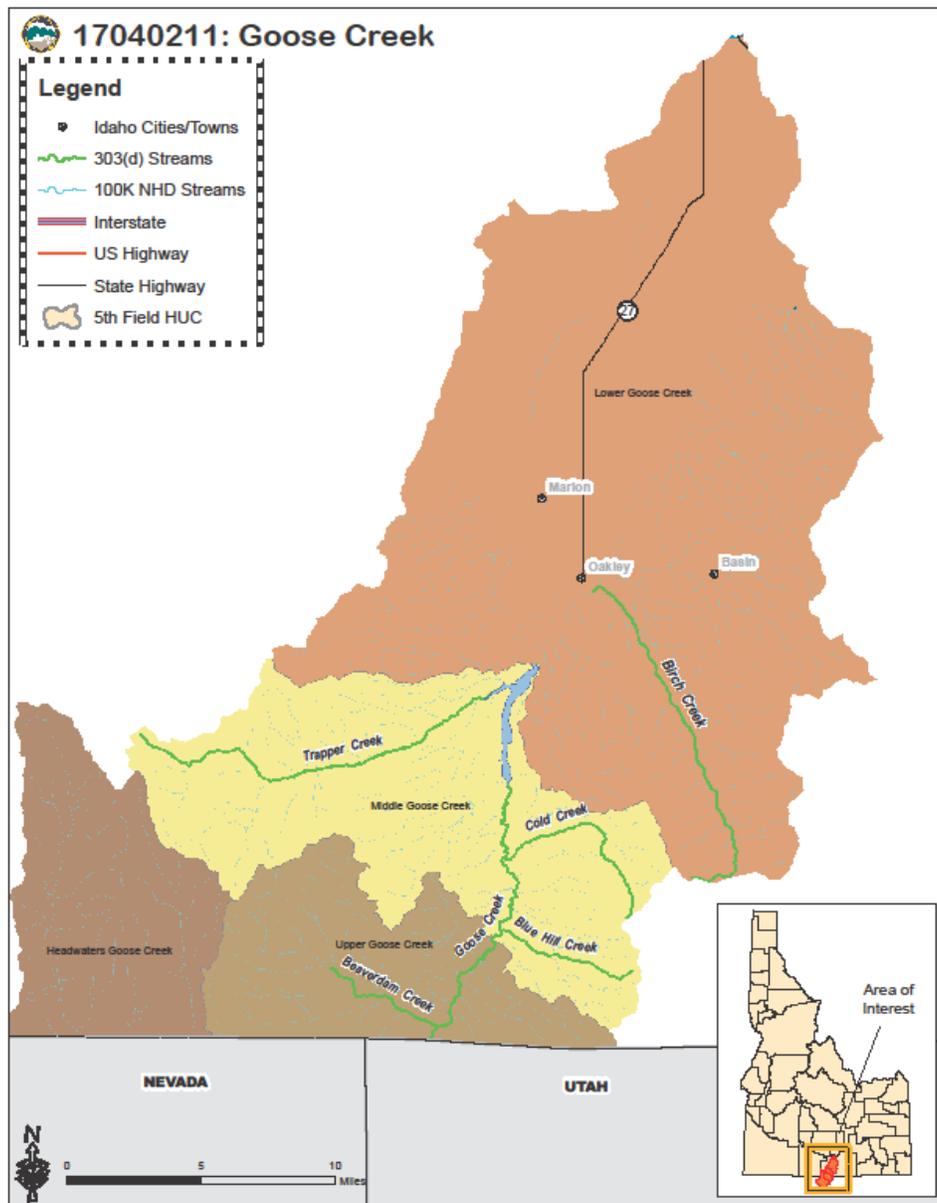
Prior to 2002, impaired waters were defined as stream segments with geographical descriptive boundaries. In 2002, DEQ modified the structure and format of Idaho’s §303(d) list by combining it with the §305(b) report, required by the CWA to inform Congress of the state of Idaho’s waters. This modification included identifying stream segments by Assessment Units (AUs) instead of non-uniform stream segments, and defining the use support of stream AUs by five categories, published as Sections, in the Integrated Report. Assessment units (AUs) now define all the waters of the state of Idaho. These units and the methods used to describe them can be found in the WBAG II (Grafe, et al., 2002). AUs are groups of similar streams that have similar land use practices, ownership, or land management. Stream order, however, is the main basis for determining AUs— even if ownership and land use change significantly, an AU remains the same. Because AUs are an extension of water body identification numbers, there is now a direct tie to the WQS for each AU, so that beneficial uses defined in the WQS are clearly tied to streams on the landscape.

To facilitate comparisons between the 1998 §303 (d) list and the 2002 Section 5 “impaired waters” category in the Integrated Report, a crosswalk from the 1998 §303 (d) list to the new AUs was included in the 2002 Integrated Report. A copy of the report is available from the DEQ website at http://www.deq.state.id.us/water/data_reports/surface_water/monitoring/2002.cfm#2002final. The boundaries from the 1998 §303(d)-listed segments have been transferred to the new AU framework using an approach quite similar to how DEQ has been writing SBAs and TMDLs. All AUs contained in any listed segment were carried forward to the 2002 §303(d) listings in Section 5 of the integrated report (DEQ, 2005). Any AU not wholly contained within a previously listed segment, but partially contained (even minimally), was also included on the §303(d) list. This was necessary to maintain the integrity of the 1998 §303(d) list and continuity with the TMDL program. The Goose Creek Subbasin water bodies listed on the 2002 §303 (d) list are included in this report, but the review is focused on the draft 2008 status lists.

When assessing new data that indicate full support, only the AU that the monitoring data represents will be removed (de-listed) from the §303(d) list (Section 5 of the integrated report).

Section 2: TMDL Review and Status

The TMDLs and implementation strategy for the Goose Creek Watershed can be found online at: http://www.deq.idaho.gov/water/data_reports/surface_water/tmdls/sba_tmdl_master_list.cfm. These documents include the Subbasin Assessment and Total Maximum Daily Load (DEQ 2004) for the Goose Creek Subbasin. These documents provide additional background on the watershed’s physical and biological characteristics. Map 1. illustrates the location of the subbasin in south central Idaho.



Map 1. Location of subbasin- HUC 17040211

The following narrative and maps were taken directly from the Executive Summary section of the 2004 Goose Creek Subbasin Assessment and TMDL. This quoted section represents the intention of the original document- the TMDLs written for the water-bodies in this subbasin and the justification for those TMDLs.

2.1 Subbasin at a Glance

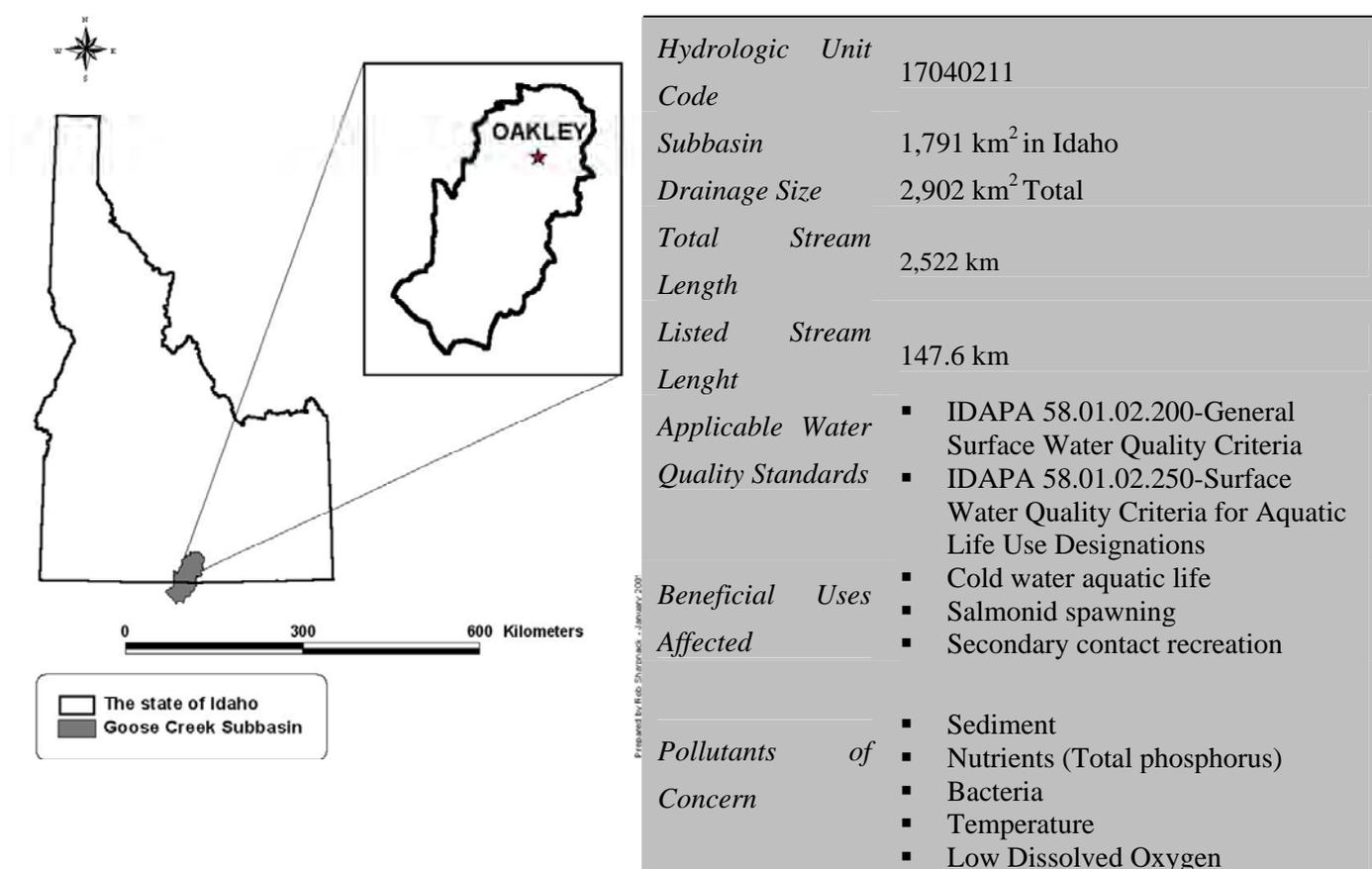


Figure 1. Goose Creek Subbasin and vital statistics.

The general physical and biological characteristics (Figure 1) of the Goose Creek Subbasin have a strong influence on the water quality of the subbasin. Land use in the subbasin is predominantly rangeland (≈ 43 percent). Irrigated agriculture also exists in the lower elevation, northern portion of the subbasin where water is either pumped from the ground or diverted from Goose Creek Reservoir. The major population center of the basin is the town of Oakley. The subbasin contains three different water sources. The first of these is runoff from the snowpack and other precipitation events in the mountainous region to the east and west. The second is the Goose Creek-Golden Valley Aquifer below Oakley, which is part of the Eastern Snake River

Plain Aquifer. The final source is a geothermal layer that feeds several geothermal springs along the ecoregional boundary. These sources affect water quality to varying degrees. To a small extent, stream temperatures may be slightly elevated due to geothermal activity in the region. The water from the local aquifer likely does not affect water quality significantly, as the amount of water entering the streams and rivers of the subbasin from this source and the geothermal source is minor in comparison with snowpack and precipitation.

The subbasin land forms, vegetation, topography, and precipitation can be defined by two ecoregions. The predominant ecoregion of the subbasin is the Northern Basin and Range. The Northern Basin and Range ecoregion is predominantly sage-steppe-juniper mountain lands. Most of the surface streams are intermittent or ephemeral in nature due to low annual precipitation and evaporation. Consequently, limited riparian habitat exists within the subbasin. Those streams that remain perennial usually form from spring sources in the more mountainous regions of the subbasin. Along these stream courses some riparian habitats persist.

Sediment, low dissolved oxygen, and bacteria are the most common listed pollutants in the subbasin. These pollutants were listed for the four 1996 §303(d) listed water bodies within the subbasin. Other listed pollutants and stressors include nutrients, flow, temperature, and “unknown”. The SBA portion of the SBA-TMDL determines the current amount of each particular pollutant in each of the watersheds of the §303(d) listed water bodies. The SBA also determines what impact to the beneficial uses each pollutant may have.

2.2 Pollutant Targets

A component of a load capacity includes targets for each pollutant. Target selection is based upon numeric water quality standards if they exist. However, if the parameters fall under narrative standards, targets are based upon current usage within the DEQ TMDL program and TFRO-DEQ. For example, suspended sediment targets of 50 mg/L TSS were used, as presented from TMDLs developed from the Twin Falls region. Additionally, nutrient targets were adopted from guidelines and recommendations from EPA references. These targets are 0.100 mg/L TP for free flowing streams and 0.050 mg/L for streams entering into a reservoir or lake. Once beneficial uses are restored, the targets are to be reevaluated through the adaptive management loop. The target number for *E. coli* for a single instantaneous sample is 576 col/100 mL and the geometric mean of five samples collected in a 30 day period is 126 col/100 mL. For streams to meet state water quality standard for DO, the stream must be greater than 6 mg/L at all times.

2.3 Control and Monitoring Points

Monitoring and data collections were done in the Goose Creek Subbasin from 2000 to 2001 and were

compared with limited historical data collected in the 1990s. These included water chemistry sampling, flow, Wolman pebble counts, water temperature, bank erosion recession rates, and solar pathfinder studies.

2.4 Load Capacity

Load Capacity and loading analysis models for the streams and pollutants in the Goose Creek Subbasin TMDL were derived from a mass balance approach of monitoring data, upstream and downstream monitoring, source monitoring, and estimations of loads from that data. Most of the pollutants that affect the subbasin do not have numeric water quality standards, only narrative standards. Due to these standards, load capacities were estimated from extrapolations from USGS or DEQ flow records and a variety of sources relating concentrations of pollutant to effects beneficial uses and aquatic communities. Load capacities and critical periods are shown in Table 4 (see Goose Creek TMDL, p. 187-188, Table 29).

Table 4 Load capacities and critical periods.

Stream Name	Parameter	Critical Period	Load Capacity
Goose Creek	Temperature	June through July	4.1 kwh/m ² /day
Goose Creek	Sediment	March through May	1,294,371 kg/year
Trapper Creek	Nutrients	June through September	1.67 kg/day
Trapper Creek	Sediment	March through May	108,590 kg/year
Birch Creek	Nutrients	June through September	1.53 kg/day
Birch Creek	Bacteria	June through August	576 col/100 ml
Cold Creek	Temperature	June through July	4.1 kwh/m ² /day
Beaverdam Creek	Nutrients	June through September	0.32 kg/year
Beaverdam Creek	Temperature	June through July	4.1 kwh/m ² /day
Beaverdam Creek	Bacteria	June through August	576 col/100 ml
Beaverdam Creek	Sediment	March through May	232.26 kg/day
Beaverdam Creek	Dissolved oxygen	June through August	0.32 kg/year TP

Stream Name	Parameter	Critical Period	Load Capacity
Little Cottonwood Creek	Bacteria	June through August	576 col/100 ml
Left Hand Fork Beaverdam Creek	Nutrients	June through September	0.33 kg/day
Left Hand Fork Beaverdam Creek	Bacteria	June through August	576 col/100 ml
Left Hand Fork Beaverdam Creek	Sediment	March through May	31.78 kg/day

kwh/m²/day = kilowatt hours per square meter per day, kg/year = kilograms per year, col/100ml = colonies of *E. coli* per 100 ml of water.

2.5 Load Allocations

Load allocations for the Goose Creek Subbasin TMDL were calculated with margins of safety to meet water quality standards. A margin of safety (MOS) of 10 percent was taken into account for seasonal variability and uncertainty. Background load levels were determined for nutrients, temperature, bacteria, sediment, and dissolved oxygen. There are no point sources within the watershed, so no wasteload allocations were made. Nonpoint sources were allocated by subwatershed. Background and existing nonpoint source load allocations are shown in Table 5 (see Goose Creek TMDL, p. 192, table 32).

Table 5 Background and existing nonpoint source loads in the Goose Creek Subbasin.

Stream name	Pollutant	Natural Background	Existing Load	Existing Wasteload
Goose Creek	Temperature	4.1 kwh/m ² /day	6.7 kwh/m ² /day	0 kwh/m ² /day
	Sediment	1,294,371 kg/year	9,681,656 kg/year	0 kg/year
Trapper Creek	Nutrients	0.67 kg/day	3.60 kg/day	0.00 kg/day
	Sediment	108,590 kg/year	1,526,157kg/year	0 kg/year
Birch Creek	Nutrients	0.31 kg/day	1.78 kg/day	0.00 kg/day
	Bacteria	98 col 100/ml	4872 col/100 ml	0 col/100 ml
Cold Creek	Temperature	4.1 kwh/m ² /day	4.7 kwh/m ² /day	0 kwh/m ² /day
Beaverdam Creek	Nutrients	0.117 kg/day	0.73 kg/day	0.00 kg/day
	Temperature	4.1 kwh/m ² /day	5.4 kwh/m ² /day	0 kwh/m ² /day
	Bacteria	351 col/100 ml	22,071 col	0 col/100 ml

Stream name	Pollutant	Natural Background	Existing Load	Existing Wasteload
	Sediment	19 kg/day	2,601 kg/day	0 kg/day
	Dissolved Oxygen	0.08 kg/day	0.83 kg/day	0.00 kg/day
Little Cottonwood Creek	Bacteria	7 col/100 ml	758 col/100 ml	0 col/100 ml
Left Hand Fork Beaverdam Creek	Nutrients	0.06 kg/day	0.58 kg/day	0.00 kg/day
	Bacteria	55 col/100 ml	7,170 col/100 ml	0 col/100 ml
	Sediment	2.54 kg/day	49.58 kg/day	0 kg/day

^a kWh/m²/day = kilowatt hours per square meter per day, kg/year = kilograms per year, col/100ml = colonies of *E. coli* per 100 ml of water.

2.6 Margin of Safety

In the Goose Creek Subbasin TMDLs two types of MOS were used. The first was an explicit margin of 10 percent. The second was an implicit MOS. An example of this may be found in the bacteria TMDLs' determination of background. The levels used may be slightly higher than actual background levels determined from other watersheds and may change if the actual background level is determined.

2.7 Seasonal Variation

The Goose Creek Subbasin watershed is influenced by seasonal variations for nearly every pollutant addressed. Seasonal variations are built into the load allocations and their development works by ensuring that loads are reduced during critical periods. For example, when beneficial uses are impaired and loads are controllable.

2.8 Reserve for Future Growth

No reserve for future growth was included in the Goose Creek Subbasin TMDL. Historically, the Lake Walcott WAG has chosen to forgo the use of a reserve.

Section 3: Beneficial Use Status

Idaho water quality standards require that surface waters of the state be protected for beneficial uses wherever attainable (IDAPA §58.01.02.050.02). These beneficial uses are interpreted as existing uses, designated uses and presumed uses. The *Water Body Assessment Guidance*, second edition (Grafe et al. 2002) gives a detailed description of beneficial use identification for use assessment purposes.

Existing uses under the CWA are “those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards”. Designated uses are specifically listed for water bodies in Idaho in tables in the Idaho water quality standards (see IDAPA §58.01.02.003.27 and §58.02.109-.02.160 in addition to citations for existing and presumed uses).

In Idaho undesignated uses are to be designated under the negotiated rule making process. In the interim, and absent information on existing uses, DEQ presumes by default that most waters in the state will support cold water aquatic life and either primary or secondary contact recreation (IDAPA §58.01.02.101.01). To protect these “presumed uses,” DEQ will apply numeric cold water aquatic life criteria and primary or secondary contact recreation criteria to undesignated waters

3.1 Beneficial Uses

Table 6 provides information on the beneficial uses for selected water bodies within the Goose Creek Subbasin. Designated, existing, and presumed uses may include: Cold Water Aquatic Life (CWAL), Salmonid Spawning (SS), Primary Contact Recreation (PCR), Secondary Contact Recreation (SCR), and Agricultural Water Supply (AWS).

Table 6 Beneficial uses of TMDL water bodies.

WATER BODY	ASSESSMENT UNIT	BENEFICIAL USES	TYPE OF USE (DESIGNATED, EXISTING, PRESUMED)
Big Cottonwood Creek	ID17040211SK001_02 ID17040211SK001_03	CWAL, SS, SCR, AWS	Existing
Lower Goose Creek Reservoir	ID17040211SK002_02 ID17040211SK002_03 ID17040211SK002L_0L	CWAL, SS, PCR	Designated
		AWS	Existing
Trapper Creek- from and including Squaw Creek to Lower Goose Creek Reservoir	ID17040211SK003_02 ID17040211SK003_04	CWAL, SS, SCR, AWS	Existing
Trapper Creek – source to Squaw Creek	ID17040211SK004_02 ID17040211SK004_03	CWAL, SS, SCR, AWS	Existing
Goose Creek – Beaverdam Creek to	ID17040211SK005_02 ID17040211SK005_03	CWAL, SS, PCR,	Designated

Lower Goose Creek Reservoir	ID17040211SK005_05	SCR, AWS	Existing
Beaverdam Creek – source to mouth	ID17040211SK006_02 ID17040211SK006_03	CWAL, SS, SCR, AWS	Existing
Trout Creek- source to Utah/Idaho border	ID17040211SK007_02 ID17040211SK007_03	CWAL, SS, SCR, AWS	Existing
Goose Creek- source to Idaho/Utah border	ID17040211SK008_02 ID17040211SK008_03 ID17040211SK008_04	CWAL, SS, PCR	Designated
		SCR, AWS	Existing
(little) Birch Creek- Idaho/Utah border to mouth	ID17040211SK008_02 ID17040211SK008_03	CWAL, SS, SCR, AWS	Existing
Blue Hill Creek - source to mouth	ID17040211SK010_02 ID17040211SK010_03	CWAL, SS, SCR, AWS	Existing
Cold Creek – source to mouth	ID17040211SK011_02	CWAL, SS, SCR, AWS	Existing
Birch Creek – source to mouth	ID17040211SK012_02 ID17040211SK012_03 ID17040211SK012_04	CWAL, SS, SCR, AWS	Existing
Mill Creek – source to mouth	ID17040211SK013_02 ID17040211SK013_03	CWAL, SCR, AWS	Existing
Land/Willow/Smith Creek complex	ID17040211SK014_02 ID17040211SK014_03	CWAL,SCR, AWS	Existing
Emery Creek	ID17040211SK005_02	CWAL,SCR, AWS	Existing
Left Hand Fork Beaverdam Creek	ID17040211SK006_02	CWAL,SCR, AWS	Existing
Little Cottonwood Creek	ID17040211SK000_02A	CWAL,SCR, AWS	Existing
CWAL- Cold Water Aquatic Life, SS – Salmonid Spawning, PCR- Primary Contact Recreation, SCR- Secondary Contact Recreation, AWS – Agricultural Water Supply			

Beneficial uses are protected by a set of criteria, which include *narrative* criteria for pollutants such as sediment and nutrients; and *numeric* criteria for pollutants such as bacteria, dissolved oxygen, pH, ammonia, temperature, and turbidity (IDAPA §58.01.02.250). Table 7 includes the most common numeric criteria used in TMDLs. Figure 2 provides an outline of the stream assessment process for determining support status of the beneficial uses of cold water aquatic life, salmonid spawning, and contact recreation.

Table 7 Common numeric criteria supportive of designated beneficial uses in Idaho water quality standards.

Designated and Existing Beneficial Uses				
Water Quality Parameter	Primary Contact Recreation	Secondary Contact Recreation	Cold Water Aquatic Life	Salmonid Spawning (During Spawning and Incubation Periods for Inhabiting Species)
Water Quality Standards: IDAPA §58.01.02.250				
Bacteria, pH, and Dissolved Oxygen	Less than 126 E. coli/100 ml ^a as a geometric mean of five samples over 30 days; no sample greater than 406 E. coli organisms/100 ml	Less than 126 E. coli/100 ml as a geometric mean of five samples over 30 days; no sample greater than 576 E. coli/100 ml	pH between 6.5 and 9.0 DO ^b exceeds 6.0 mg/L ^c	pH between 6.5 and 9.5 Water Column DO: DO exceeds 6.0 mg/L in water column or 90% saturation, whichever is greater Intergravel DO: DO exceeds 5.0 mg/L for a one day minimum and exceeds 6.0 mg/L for a seven day average
Temperature ^d			22 °C or less daily maximum; 19 °C or less daily average	13 °C or less daily maximum; 9 °C or less daily average Bull trout: not to exceed 13 °C maximum weekly maximum temperature over warmest 7-day period, June – August; not to exceed 9 °C daily average in September and October
			Seasonal Cold Water: Between summer solstice and autumn equinox: 26 °C or less daily maximum; 23 °C or less daily average	
Turbidity			Turbidity shall not exceed background by more than 50 NTU ^e instantaneously or more than 25 NTU for more than 10 consecutive days.	
Ammonia			Ammonia not to exceed calculated concentration based on pH and temperature.	
EPA Bull Trout Temperature Criteria: Water Quality Standards for Idaho, 40 CFR Part 131				
Temperature				7 day moving average of 10 °C or less maximum daily temperature for June - September
<p>^a <i>Escherichia coli</i> per 100 milliliters, ^b dissolved oxygen, ^c milligrams per liter, ^d Temperature Exemption - Exceeding the temperature criteria will not be considered a water quality standard violation when the air temperature exceeds the ninetieth percentile of the seven-day average daily maximum air temperature calculated in yearly series over the historic record measured at the nearest weather reporting station., ^e Nephelometric turbidity units</p>				

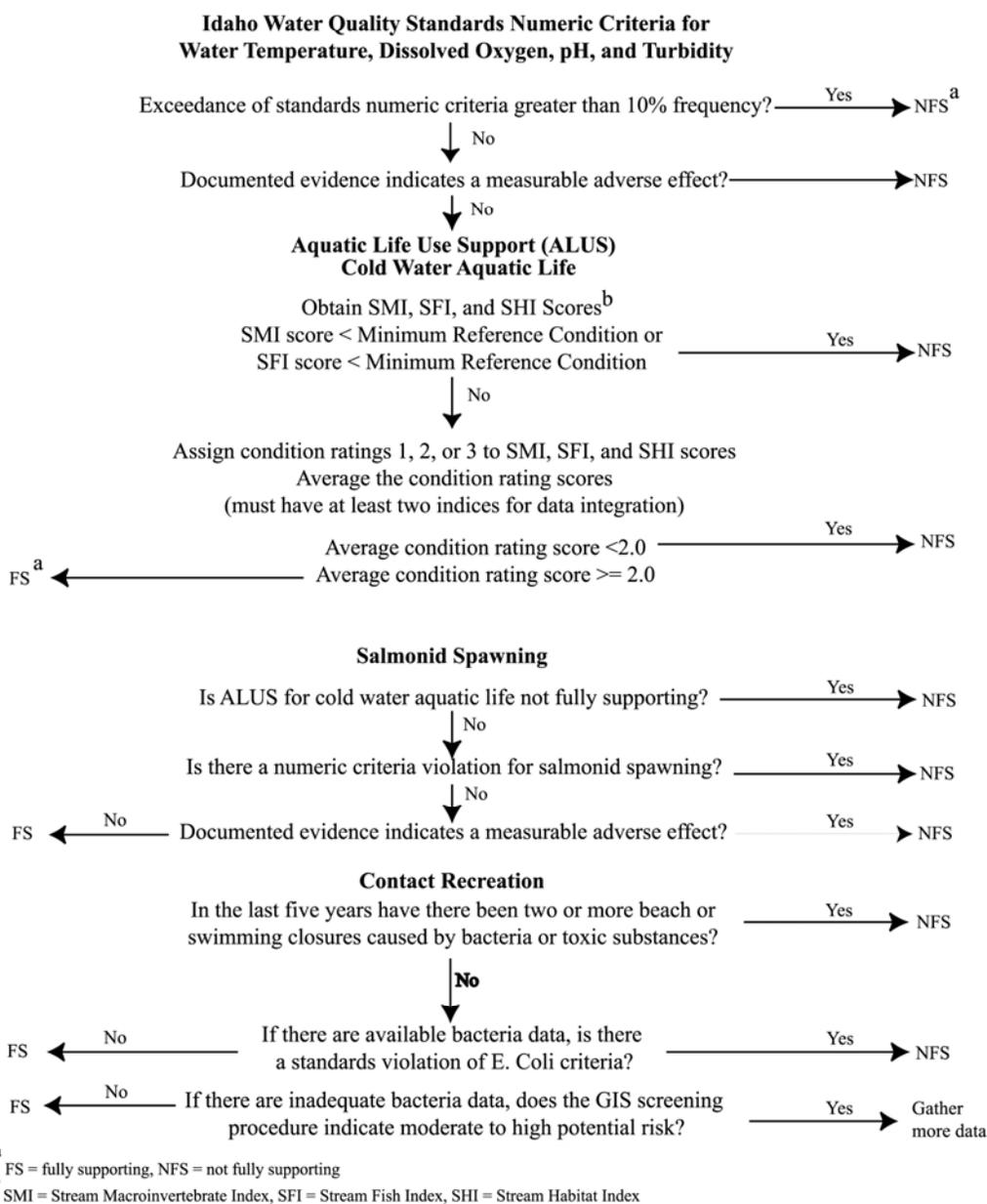


Figure 2. Determination Steps and Criteria for Determining Support Status of Beneficial Uses in Wadeable Streams: Water Body Assessment Guidance, Second Addition (Grafe et al. 2002)

3.2 Changes to Subbasin Characteristics

There have been no major changes in land use, land ownership, or population in the Subbasin since the TMDL was approved in 2004 that would have either significantly improved or degraded water quality in the Goose Creek Subbasin. For the most part, land use, land ownership and population have remained unchanged.

3.3 Summary and Analysis of Current Water Quality Data

This section includes new data collected since the development of the TMDL (2004) along with data from the Beneficial Use Reconnaissance Program (BURP) for streams in the Goose Creek Subbasin. Table 8 summarizes the limited water quality data collected by DEQ from May through October in 2009. The table also specifies the level of confidence that DEQ has in the percent exceedances based on the number of samples (N) collected. If the N value is < 30 samples, then the confidence level is “Low”. If the N value is in the range of 30-50 samples, then the confidence level is “Moderate”. And, if the N value is > 50 samples, then the confidence level is “High”. In the case of the samples collected and analyzed in the Goose Creek Subbasin, the confidence level is “low” and constitutes a data gap, thus requiring future monitoring.

Bacteria

Escherichia coli or *E. coli*, is a species of fecal coliform bacteria used by the state of Idaho as an indicator for the presence of pathogenic microorganisms in surface water. Idaho’s Water Quality Standards (IDAPA §58.01.02.521) specify that *E. coli* levels should not exceed an instantaneous measurement of 406 colony forming units (cfu)/100 mL for primary contact recreation (PCR) and 576 cfu/100 mL for secondary contact recreation (SCR) or a monthly geometric mean of 126 cfu/100mL for both PCR and SCR. However, according to IDAPA §58.01.02.080.03 a single water sample exceeding an *E. coli* standard does not in itself constitute a violation of water quality standards; so additional samples must be taken for the purpose of comparing the results to the geometric mean criteria. An exceedance of the geometric mean criteria constitutes a water quality violation. Because the number of samples collected was “low”, the ability to figure geometric mean as defined in IDAPA regulations was not doable. Therefore, the percentage of exceedances from the instantaneous standard was used as a measure of compliance. Table 8 provides a list of the streams that were monitored in 2009 and the results of that monitoring. As shown in the chart below, the only stream to exceed state water quality criteria was Little Cottonwood Creek. This occurred once out of three separate monitoring collection dates.

Sediment

One of the most common listed pollutants in the state and in the Goose Creek Subbasin is sediment. Total

Suspended Solids (TSS) can impact a subbasin in a myriad of ways including smothering fish spawning and rearing grounds to reducing habitat and food accessibility. Beneficial uses may also be impaired due to suspended and bedload sediment. The IDAPA criteria for suspended sediment are narrative. This allows the TSS limit to be established using references from other sources that allow applicability to the specific watershed. Therefore, DEQ adopted TSS guidelines of 50 mg/L, which falls within the range identified by the European Inland Fisheries Advisory Commission (EIFAC 1965) and the Committee on Water Quality Criteria from the Environmental Studies Board of the National Academy of Science and National Academy of Engineers (NAS/NAE) as supporting a “moderate” fishery. Data listed in Table 8 indicates that Goose Creek, Cold Creek, Trapper Creek and Little Cottonwood Creek all had exceedances of water quality standards for TSS during the monitoring season in 2009.

Nutrients as Total Phosphorus, TP

Idaho’s Water Standards (IDAPA §58.01.02.200.06) state that surface waters should be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses. Currently, there are no numeric standards for total phosphorus. However, EPA has suggested guidelines on a monthly average that should not exceed 0.05 mg/L in streams that enter into a lake or reservoir; and 0.1 mg/L in any stream or other free flowing water on a monthly average (EPA 1986). Table 8 indicates that Goose Creek, Cold Creek, Trapper Creek, Little Cottonwood Creek, and Beaverdam Creek all had exceedances of the monthly average during at least two sampling events. Blue Hill Creek never exceeded the water quality standard guidelines.

Table 8 Summary of Water Quality Data Collected in 2009

STREAM DESIGNATION	2009 SAMPLES		
	TSS	TP	E. coli
Instream Target	50 mg/L	0.05 mg/L	576 cfu/100 mL
Goose Creek			
N	6	5	5
No. of Exceedances	2	4	0
% Exceedances	33.3	80.0	0.0
Level of Confidence	Low due to low N	Low due to low N	Low due to low N
Cold Creek			
N	5	4	3
No. of Exceedances	2	2	0
% Exceedances	40.0	50.0	0.0
Level of Confidence	Low due to low N	Low due to low N	Low due to low N
Blue Hill Creek			
N	5	4	3
No. of Exceedances	0	0	0
% Exceedances	0.0	0.0	0.0
Level of Confidence	Low due to low N	Low due to low N	Low due to low N
Trapper Creek			

N	5	5	4
No. of Exceedances	2	2	0
% Exceedances	40.0	40.0	0.0
Level of Confidence	Low due to low N	Low due to low N	Low due to low N
Little Cottonwood Creek			
N	5	4	3
No. of Exceedances	2	3	1
% Exceedances	40.0	75.0	33.3
Level of Confidence	Low due to low N	Low due to low N	Low due to low N
Birch Creek			
N	4	3	2
No. of Exceedances	0	2	0
% Exceedances	0.0	66.6	0
Level of Confidence	Low due to low N	Low due to low N	Low due to low N
Beaverdam Creek			
N	1	1	1
No. of Exceedances	0	1	0
% Exceedances	0	100	0
Level of Confidence	Low due to low N	Low due to low N	Low due to low N
N = Number of Samples, TSS = Total Suspended Solids, TP = Total Phosphorus, E. coli = Escherichia coli			

3.4 Beneficial Uses Reconnaissance Program

DEQ collected aquatic data through their Beneficial Use Reconnaissance Program (BURP) to determine support of beneficial uses in the Goose Creek Subbasin (Table 9). Evaluations of BURP data are based primarily on three facets of wadeable streams: macroinvertebrate community, stream habitat, and fish community. Individual metrics within each category are combined to create a multimetric index score for macroinvertebrate community, fish community, and stream habitat. The multimetric index scores are called stream macroinvertebrate index (SMI), stream habitat index (SHI), and stream fish index (SFI). From those scores, a condition ranking of 1, 2, or 3 is assigned to the site based on percentile categories of reference conditions. At least two scores are needed to evaluate a stream's support status; and those scores must average 2 or greater (on a scale of 0 to 3) for beneficial uses to be considered supported. DEQ's Water Body Assessment Guidance (WBAG) II (Grafe et al. 2002) further outlines the methodology behind SMI, SFI, and SHI development and calculations.

The Idaho Waterbody Assessment Guidance (WBAGII) considers data most relevant to support status determinations to be less than five years old. BURP condition ranking scores, from 2004 through 2009 on streams with existing TMDLs, show that Left Hand Ford (LHF) Beaverdam Creek, Willow Creek, Trout Creek, and portions of Goose Creek did not receive a score that supports beneficial uses as shown in Table 9. It is noted that some streams (i.e. Right Hand Fork Beaverdam Creek, Buckhorn Creek, Birch Creek, Emery Creek, Cole Banks Creek, Lone Cedar Creek and several Unnamed Creeks) are shown as "Dry" indicating that they are non-perennial streams; and therefore a condition ranking and support status

could not be made. For “dry” streams further assessment is required. Thus, a data gap exists for “dry” streams. “Inaccessible” streams indicate that the land had private ownership and access to the stream could not be made because permission could not be secured at the time of the sampling. Streams that were “Not Assessed” (NAssd) indicate that the BURP assessment could not be conducted due to very low flow conditions. A “Full Support” status denotes that the stream received an assessment score of 2 or higher, indicating support of beneficial uses.

Table 9 BURP condition ranking and support status for streams monitored in the Goose Creek Subbasin from 2004-2009.

BURP ID #	STREAM/LOCATION	SCORE			ASSESSMENT SCORE	SUPPORT STATUS
		SMI	SFI	SHI		
AU ID17040211SK006_02: Beaverdam Creek – source to mouth						
2008STWFA067	LHF Beaverdam Creek	1	NA	1	1	NFS
2008STWFA068	RHF Beaverdam Creek	NA	NA	NA	NA	Dry
AU ID17040211SK006_03: Beaverdam Creek – source to mouth						
2008STWFA069	Beaverdam Creek	NA	NA	NA	NA	NAssd
2007STWFA078	Beaverdam Creek	NA	NA	NA	NA	NAssd
AU ID17040211SK001_02: Big Cottonwood Creek – source to mouth						
2007STWFA047	Big Cottonwood Creek	3	NA	3	3	FS
2007STWFA080	Buckhorn Creek	NA	NA	NA	NA	Dry
AU ID17040211SK001_03: Big Cottonwood Creek – source to mouth						
2008STWFA035	Big Cottonwood Creek	3	3	3	3	FS
2005STWFA048	Big Cottonwood Creek	NA	NA	NA	NA	Inaccessible
AU ID17040211SK012_02: Birch Creek – source to mouth						
2007STWFA066	Unnamed Stream	NA	NA	NA	NA	Dry
2005STWFA052	Unnamed Stream	NA	NA	NA	NA	Dry
AU ID17040211SK012_03: Birch Creek- source to mouth						
2005STWFA051	Birch Creek	NA	NA	NA	NA	Dry
AU ID17040211SK012_04: Birch Creek- source to mouth						
2007STWFA011	Birch Creek	NA	NA	NA	NA	NAssd
AU ID17040211SK010_03: Blue Hill Creek- source to mouth						
2007STWFA010	Blue Hill Creek	NA	NA	NA	NA	NAssd
AU ID17040211SK008_02: Goose Creek - source to Idaho/Utah border						
2008STWFA028	Goose Creek	3	NA	3	3	FS
2005STWFA008	Goose Creek	3	1	3	2.33	FS
AU ID17040211SK008_03: Goose Creek - source to Idaho/Utah border						
2006STWFA012	Goose Creek	3	3	3	3	FS
2004SDEQA012	Goose Creek	3	0	3	0	NFS
AU ID17040211SK008_04: Goose Creek - source to Idaho/Utah border						
2008STWFA027	Goose Creek	3	NA	3	3	FS
2008STWFA026	Goose Creek	3	0	2	0	NFS
2008STWFA024	Goose Creek	3	0	3	0	NFS
2007STWFA022	Goose Creek	3	NA	3	3	FS
2007STWFA019	Goose Creek	3	3	3	3	FS
2006STWFA036	Goose Creek	3	3	3	3	FS
2006STWFA011	Goose Creek	3	NA	3	3	FS
2004STWFA050	Goose Creek	3	NA	2	2.5	FS
2004STWFA041	Goose Creek	3	NA	2	2.5	FS
AU ID17040211SK005_02: Goose Creek - source to Idaho/Utah border						

2008STWFA037	Emery Creek	NA	NA	NA	NA	Dry
AU ID17040211SK005_03: Goose Creek - source to Idaho/Utah border						
2007STWFA079	Cole Banks Creek	NA	NA	NA	NA	Dry
AU ID17040211SK000_02A: Little Cottonwood Creek						
No current BURP info available						
AU ID17040211SK002_02: Goose Creek – Lower Goose Creek to Reservoir						
2008STWFA036	Unnamed stream	NA	NA	NA	NA	Dry
2007STWFA001	Lone Cedar Creek	NA	NA	NA	NA	Dry
AU ID17040211SK002_03: Goose Creek – Lower Goose Creek to Reservoir						
No current BURP info available						
AU ID17040211SK002L_0L: Goose Creek – Lower Goose Creek to Reservoir						
No current BURP info available						
AU ID17040211SK013_02: Mill Creek – source to mouth						
2007STWFA065	Mill Creek	NA	NA	NA	NA	No Access
AU ID17040211SK013_03: Mill Creek – source to mouth						
No current BURP info available						
AU ID17040211SK003_02: Trapper Cr from and including Squaw Cr to Lower Goose Cr						
2006STWFA005	Squaw Creek	3	3	3	3	FS
AU ID17040211SK003_04: Trapper Cr from and including Squaw Cr to Lower Goose Cr						
2008STWFA064	Trapper Creek	3	NA	3	3	FS
AU ID17040211SK004_02: Trapper Creek – source to Squaw Creek						
No current BURP info available						
AU ID17040211SK004_03: Trapper Creek – source to Squaw Creek						
2008STWFA063	Trapper Creek	3	3	2	2.67	FS
2008STWFA038	Fall Creek	3	3	2	2.67	FS
2006STWFA003	Trapper Creek	3	NA	3	3	FS
2006STWFA002	Fall Creek	3	NA	3	3	FS
AU ID17040211SK007_02: Trout Creek – source to Idaho/Nevada border						
2005STWFA001	Willow Creek	0	NA	1	0	NFS
AU ID17040211SK007_03: Trout Creek – source to Idaho/Nevada border						
2008STWFA066	Trout Creek	3	1	2	2	FS
2007STWFA070	Trout Creek	2	NA	2	2	FS
2006STWFA014	Trout Creek	2	NA	2	2	FS
2005STWFA002	Trout Creek	2	1	1	1.33	NFS
AU ID17040211SK000_02: Unclassified Waters						
2007STWFA007	Unnamed Stream	NA	NA	NA	NA	Dry
AU ID17040211SK000_03: Unclassified Waters						
No current BURP info available						
AU ID17040211SK000_05: Unclassified Waters in CU						
No current BURP info available						
SMI – stream macroinvertebrate index, SHI - stream habitat index, SFI – stream fish index, NA- not available, Cr – Creek, NFS = Not Fully Supporting. NAssd = Not Assessed. FS = Full Support. LHF = Left Hand Fork. RHF = Right Hand Fork.						

3.5 Recommendations

Table 10 contains current DEQ recommendations and justification to the next Integrated Report. This information was generated from the processes of gathering and analyzing available water quality data, recent Beneficial Use Reconnaissance information, and the writing of the Five-year review. At the time this report was written, the 2010 Integrated Report was in the final stages of development. When the

report is complete some of the information listed in the chart below may be subject to change.

Table 10 Summary of recommended changes for AUs evaluated

STREAM	ASSESSMENT UNIT	PREVIOUS LISTED TMDL POLLUTANT(S)	ADDITIONAL POLLUTANTS FROM 2002-2008 INTEGRATED REPORTS	DEQ RECOMMENDED CHANGES TO NEXT INTEGRATED REPORT	JUSTIFICATION FOR DEQ RECOMMENDED CHANGES TO INTEGRATED REPORT
Goose Creek	ID17040211SK005_02 005_03 005_05	Bac, DO, Qalt, Nut, Sed, Temp	Sed, Temp	None	Already in section 4a and section 2
Trapper Creek	ID17040211SK003_04a 004_03	Bac, DO, Qalt, Sed	Sed, Nut, Bac, DO, Qalt, TP, Phys sub, Halt	None	Already in section 4a and section 4c
Birch Creek	ID17040211SK 012_02 012_03	Bac, DO, Sed	Bac, Nut, Path, DO, Sed, TP, F- Coli, Unknown	None	Already in section 4a
Cold Creek	ID17040211SK011_02 011_03	Unknown	Temp, Unknown, Com bio/hab	None	Already in section 4a
Blue Hill Creek	ID17040211SK010_02 010_03	Unknown	Unknown	None	Already in section 2
Beaverdam Creek	ID17040211SK006_02 006_03	Unknown	DO, Bac, Sed, Temp, TSS, Nut, Path, TP, F-Coli, E-Coli	None	Already in section 4a
Big Cottonwood Creek	ID17040211SK001_02 001_03	Unknown	None	None	Already in section 2
Mill Creek	ID17040211SK013_03	Temp	Temp	None	Already in section 2
Lower Goose Creek Reservoir	ID17040211SK002_02	DO, Qalt, Nut, Sed	Nut, DO, Qalt, Sed, Unknown	Needs Site Visit and Assessment	In Section 3
	ID17040211SK002L_0L	NA	Hg Listing from 2008 IR	2010 Integrated Report Listing: DEQ to do TMDL for Hg	Fish Tissue > 0.3 mg/Kg Hg
Emery Creek	ID17040211SK005_02	Not listed	None	None	Already in section 2
Little Cottonwood Creek	ID17040211SK000_02	Not listed	Bac, Path, Qalt, E- Coli,	None	Already in section 4a
Trout Creek	ID17040211SK007_02	Not listed	Sedimentation/ Siltation; Temperature; Water	Needs Site Visit and Assessment	Listed in section 5
	ID17040211SK007_02	Not listed	Combined Biota/Habitat Bioassessments	Needs Site Visit and Assessment	Listed in section 5
NA = Not Applicable. TMDL= Total Maximum Daily Loads, Bac= Bacteria, DO= Dissolved Oxygen, Qalt= Flow Alteration, Nut= Nutrients, Sed = Sediment, Temp= Temperature, TSS= Total Suspended Solids, Path= Pathogen, F-Coli= Fecal Coliform, E-Coli= Escherichia coli, TP= Total Phosphorus, Com bio/hab= Combined biota/habitat bioassessments, Phy sub= physical substrate habitat alterations. Hg = Mercury. IR = Integrated Report.					

Section 4: Review of Implementation Plan and Activities

4.1 Development and Purpose

The implementation strategy of the Goose Creek Subbasin was written to provide details of the actions needed to achieve the load reductions set forth in the TMDL, provide a schedule for those actions, and specify monitoring needs to document actions and progress toward meeting water quality standards. Development of the final plan is current and ongoing. Cooperative development of this plan includes DEQ, the Goose Creek committee of the Lake Walcott WAG, the affected private landowners, designated federal, state and other agencies with input from the established public process.

4.2 Responsible Parties

This section identifies the federal, state, and local governments; individuals; or entities that are involved in or responsible for implementing the TMDL in the various 303(d) streams. Designated agencies are responsible for assisting with preparation of specific implementation plans, especially for the sources for which they have regulatory authority or responsibility. Idaho’s designated state management agencies include:

- Idaho Department of Agriculture (IDA): aquaculture, animal feeding operations (AFOs), confined animal feeding operations (CAFOs)
- Idaho Department of Environmental Quality (DEQ): all other activities
- Idaho Department of Lands (IDL): timber harvest, oil and gas exploration and development, mining
- Idaho Department of Transportation (IDT): public roads
- Idaho Soil Conservation Commission (ISCC): grazing and agriculture

Federal agency partners and land management agencies are also involved with the preparation of implementation plans. They include: Natural Resources Conservation Service (NRCS), United States Forest Service (USFS), Bureau of Land Management (BLM), and United States Bureau of Reclamation (USBOR).

All Stakeholders within the watershed have the responsibility of working toward the implementation of the TMDL. This includes DEQ, the “designated agencies”, landowners, local governing authorities, taxpayers, industries and land managers. Past experience has shown that the best and most effective implementation strategies are those that have been developed with substantial stakeholder involvement

and cooperation. Table 11 summarizes the responsible parties for the various segments of the Goose Creek Subbasin.

Table 11 Responsible Parties for the Goose Creek TMDL Implementation

WATERBODY OF CONCERN	INVOLVED ENTITY	RESOURCE RESPONSIBILITY	TYPE OF INVOLVEMENT (REGULATORY, FUNDING, ASSISTANCE ETC.)
Goose Creek – Idaho Head Waters (Cassia County) to the Nevada Border	USFS	Nonpoint Source Tributary	Regulatory (Grazing Permits)
Goose Creek – Idaho border to Lower Goose Creek Reservoir	BLM, IDL, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits) Best Management Practices
Goose Creek – Lower Goose Creek Reservoir to Oakley Dam	BLM, IDL, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits) Best Management Practices
Goose Creek- Oakley Dam to Segments	Private Landuse	Nonpoint Source Tributary	Best Management Practices
Trapper Creek	BLM, USFS, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits) Best Management Practices
Birch Creek	BLM, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits) Best Management Practices
Cold Creek	BLM, IDL, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits) Best Management Practices
Blue Hill Creek	BLM, IDL, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits) Best Management Practices
Beaverdam Creek	BLM, USFS, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits) Best Management Practices
Big Cottonwood Creek	BLM, USFS, IDL, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits) Best Management Practices
Mill Creek	BLM, USFS, IDL, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits) Best Management Practices
Emery Creek	BLM, IDL, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits)

			Best Management Practices
Little Cottonwood Creek	BLM, USFS, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits) Best Management Practices
Left Hand Fork Beaverdam Creek	USFS, Private Landuse	Nonpoint Source Tributary	Regulatory (Grazing Permits) Best Management Practices
BLM- Bureau of Land Management, USFS- United States Forest Service, IDL- Idaho Department of Lands			

4.3 Planned Activities

The implementation strategy was designed to reduce pollutant loads from sources to meet the TMDLs and water quality standards. DEQ realizes that implementation that involves significant restoration can create time and economic constraints. A definitive timeline for implementation practices was listed in the Goose Creek TMDL (table 36, p.206) and is listed below as Table 12.

Table 12 Implementation strategy goals and time frame for nonpoint sources.

Industry	Year 1.5	Year 3	Year 10	Year 15	Year 25
Agriculture	Develop implementation plan for private lands	Begin BMP implementation	Document BMP implementation progress for DEQ database	Reevaluate targets and reductions	Meet reviewed TMDL targets; beneficial uses fully supported
Grazing	Federal agencies review allotment management plans	Begin allotment management adjustments as necessary	Document BMP implementation progress for DEQ database	Reevaluate targets and reductions	Meet reviewed TMDL targets; beneficial uses fully supported
DEQ	Maintain database; review nonpoint source efficacy data; seek funding	Collect data to determine water quality trends	Collect data to determine water quality trend, BMP effectiveness, and beneficial use support	Reevaluate targets and reductions, assess beneficial uses	Collect data to determine water quality trend, BMP effectiveness, and beneficial use support
BMP = Best management practice.					

4.4 Accomplished Activities

A compilation of implementation activities, and the designated management agency, or entity involved is listed in Table 13. While some activities are still in the planning and development stages, others listed below have been completed or are ongoing projects. The information collected from agencies and private

landowner or managers details activities completed within the years following the completed 2004 Goose Creek TMDL through December of 2009.

Table 13 Existing TMDLs and Implementation Status

STREAM	IMP PLAN	IMP ACTIVITIES	DMA OR ENTITY INVOLVED
Goose Creek	Yes	Road and Trail Decommissioning, Bank Barbs, rock drop structures, willow planting,	USFS
		In Development	BLM, ISCC
		Livestock Exclosure, Riparian Management, Stream bank and Shoreline Protection	Private
Trapper Creek	Yes	In Development	USFS, ISCC
Birch Creek	Yes	Livestock Exclosure, Riparian Management, Willow Planting, Biological and Chemical Control of Leafy Spurge	BLM
Cold Creek	Yes	In Development	USFS, BLM, ISCC
		Livestock Exclosure, Riparian and Brush Management	Private
Blue Hill Creek	Yes	In Development	BLM, ISCC
Beaverdam Creek	Yes	Off-site watering, Riparian Management	Private, ISCC
Big Cottonwood Creek	Yes	In Development	USFS, BLM, Private
Emery Creek	Yes	Livestock Exclosure	BLM,
Little Cottonwood Creek	Yes	Willow Planting	BLM
	Yes	Treatment of Encroaching Junipers in Shrub/Grass areas	USFS
	Yes	Road Management, Fence Exclosure Reconstruction, Headcut Treatment	USFS
Trout Creek	Yes	Road Management, Fence Exclosure Reconstruction, Headcut Treatment	USFS
DMA= Designated management Agency. USFS = United States Forest Service. BLM = Bureau of Land Management. ISCC = Idaho Soil Conservation Commission. IMP = Implementation.			

Point Sources

Point source accomplished activities are generally dealt with in National Pollutant Discharge Elimination System (NPDES) permits that are administered by the EPA. At the time this document was written there were currently no known point sources operating in the subbasin. However, there was a small fish hatchery located midway through the listed segment of Trapper Creek that is no longer in operation. Historically, the hatchery had too low of a production rate to fall under the general aquaculture NPDES

permit, and therefore was considered a nonpoint source.

Nonpoint Sources

Due to the fact, that no point sources occur in the Goose Creek Subbasin, the total pollutant loads on these water bodies are derived from nonpoint and background sources. Proposed nonpoint source management actions or best management practices on water bodies should be implemented with the purpose of attaining beneficial uses and state water quality standards. The objective of the Goose Creek Subbasin TMDLs is to allocate allowable loads among different pollutant sources in order to work under the parameters of appropriate control actions in order to meet water quality standards. This strategy has been implemented by DEQ on all water body projects, including any activities that fall below the ordinary high water mark of the stream (i.e. Section 404 projects).

Section 404 Water Quality Projects

The Army Corps of Engineers (ACOE) issues permits, under Section 404 of the Clean Water Act after notice and opportunities for public hearings, for the discharge of dredged or fill material into waters of the United States. The State of Idaho, as part of the Section 404 process, shall provide the licensing or permitting federal agency a water quality certification that certifies that the activity meets the water quality standards of the State. The IDWR and the IDL are also involved with these types of projects. As part of the Section 404 process, the State of Idaho shall provide the licensing or permitting federal agency a water quality certification that certifies that the activity meets the water quality standards of the State of Idaho. Since 2000, various Section 404 implementation projects have been permitted in the Goose Creek Subbasin. Each of these projects has required a Section 401 water quality certification. These implementation projects are summarized in Table 14 and indicate that 19 projects occurred on the Snake River and 30 projects occurred in various tributaries.

Table 14 Section 404 Permitted Implementation Projects since 2000 in Lake Walcott HUC

ACOE Permit Number	Waterbody Involved	Year Project Initiated	Business or Agency	Project Description
<i>Snake River Section 404 Permitted Implementation Projects</i>				
002200190	Snake River	2000	Private	NWP 13
012200270	Snake River	2001	Private	NWP 13
012200250	Snake River	2001	Private	NWP 13 & 14
043200045	Snake River	2004	Private	NWP 13

053300139	Milner Lake Reservoir	2005	Private	NWP 20
053200178	Snake River	2005	Private	
053200160	Snake River	2005	Private	NWP 13
052600026	Snake River	2005	ITD	NWP 3
IDWR L-45-S-51	Milner Reservoir	2005	Private	
063200012	Milner Reservoir	2006	Private	NWP 13
063300031	Snake River	2006	Private	NWP 13
06xxxxxxx	Snake River	2006	McCains	Discharge of wastewater
063300190	Snake River	2006	Private	NWP 36
2007-453-I02	Snake River, Milner Pool	2007	Private	NWP 18
2007-351-I01	Snake River	2007	City of Burley	NWP 39
2007-351-I01	Snake River	2007	City of Burley	NWP 13
IDWR L-45-S-58	Snake River	2008	Private	Retaining Wall & Dredging
IDWR L-45-S-59A	Snake River	2008	Private	NWP 13 & 36
ITD Key No. 8903	Snake River	2008	ITD	North Overland Road Project
<i>Tributary Section 404 Permitted Implementation Projects</i>				
022200170	Howell Creek	2001	AHD	NWP 3
012201260		2001	AHD	NWP 3
002201280	Marsh Creek	2000	AHD	NWP 13 & 14
043200057		2004	Private	NWP 13
053200052		2005	Private	NWP 27
063300141		2006	Private	NWP 33
2007-01190-B02		2007	ITD	NWP 14
002200740	Almo Creek	2000	BLM	NWP 13 & 14
043300144		2004	Private	NWP 27
2007-158-I02		2007	IDPR	NWP 33
043300142	Almo, Edwards & Little Cove Creeks	2004	Private	NWP 13
002200720	Little Cottonwood Creek	2000	BLM	NWP 13
002200380	Cassia Creek	2000	ITD	NWP 23
002200380		2000	ITD	Extension of Permit
2008-299-I01	Unnamed Spring to Cassia Creek or Clyde Creek	2007	Private	Cattle crossing ford
012201190	Raft River	2001	Cassia Co.	NWP 3
012201180		2001	Cassia Co.	NWP 3

032100690		2003	MVP	NWP 13 & 14
042600068		2004	Private	NWP 12, 14 & 33
022101710	Summit Creek	2002	AHD	NWP 3 & 13
043200056		2004	Private	NWP 14
032600200	Trapper Creek	2003	USFS	NWP 3
2007-141-I02		2007	Private	NWP 13
063300085	Cottonwood Creek	2006	Private	NWP 18
IDWR 45-20014	Land Creek	2007	AHD	Emergency Repair
2007-1059-I01		2007	Private	NWP 14
IDWR 45-20010	Spring Creek	2007	Chevron	Bury petroleum pipeline below stream channel
2007-420-I02	Squaw Creek	2007	Private	NWP 13
2008-487-I01	Trout Creek	2008	ITD	North Overland Road Project
<p>ACOE = Army Corps of Engineers. NWP = Nationwide Permit classification. AHD = Albion Highway District. BLM = Bureau of Land Management. ITD = Idaho Transportation Department. Private = Private Individual, Private Farm, etc. NWP 3 = Maintenance. NWP 12 = Utility Line Activities. NWP 13 = Bank Stabilization. NWP 14 = Linear Transportation Projects. NWP 18 = Minor Discharges. NWP 20 = Oil Spill Cleanup. NWP 23 = Approved Categorical Exclusions. NWP 27 = Aquatic Habitat Restoration, Establishment, and Enhancement Activities. NWP 33 = Temporary Construction, Access, and Dewatering. NWP 36 = Boat Ramps. NWP 39 = Commercial and Institutional Developments. Co. = County. MVP = Mountain Valley Potato. McCains = McCains Foods – Burley Factory. IDPR = Idaho Department of Parks and Recreation. Chevron = Chevron Pipeline.</p>				

4.5 Future Strategy and Planned Time Frame

DEQ will present this document to the Lake Walcott Watershed Advisory Group to solicit their input and recommendations. Information from suggestions and discussions will assist with future project proposals on the pollutants of concern in the Subbasin and the particular stream segments that are most in need of implementation activities.

During these discussions the different management agencies and members of the WAG, and private landowners will help to distinguish various responsibilities necessary to continue implementation of Best Management Practices and implementations strategies. Designated Management Agencies will continue to work within their timelines as stated in Table 12. Future private implementation activities will be scheduled based on landowner interest and funding availability.

Section 5: Summary of Five Year Review and Watershed Advisory Involvement

This section provides a summary of review process; changes to subbasin conditions since last assessment; analysis, assumptions and allocations for TMDL; appropriateness of use designations and water quality criteria. Watershed Advisory Involvement is also included.

5.1 Review process

DEQ's data was collected under its standard operating field protocols governed under a Quality Assurance Project Plan (QAPP) for the Goose Creek Subbasin. DEQ reviewed its own data under this provision; and applied the same provision to other data submitted from outside sources. However, little data was provided by any of the stakeholders.

Monitoring points were selected prior to the approval of the TMDL that reflected the overall water quality condition of the stream; and with key linkage to the designated or existing beneficial uses based on the IDAPA numeric water quality standards or the TMDL water quality standards. In order to maintain consistency from year-to-year, the same monitoring points or locations were kept in order to provide meaningful comparison between pre-TMDL versus post-TMDL considerations. Water quality monitoring was conducted by DEQ under the provisions of a Quality Assurance Project Plan (QAPP) that provided an assurance that the quality control and quality assurance was present in sample preparation, field collection, and laboratory testing. Monitoring was conducted at a frequency that was dependent on available resources, which were primarily dictated by resource budget constraints. In the case of the Goose Creek Subbasin, little monitoring was afforded due to budget constraints. The 5-Year Review followed the same provisions designated for the TMDL and used the same monitoring points (locations). The water quality data was entered into a database; and statistical analysis of the data was conducted and determined by DEQ based on meeting beneficial use attainment provisions and TMDL water quality standards.

5.2 Changes in Subbasin

There have been no major changes in land use, land ownership, or population in the Subbasin since the TMDL was approved in 2004 that would have either significantly improved or degraded water quality in the Goose Creek Subbasin. For the most part, land use, land ownership and population have remained unchanged.

5.3 TMDL Analysis and Water Quality Criteria

The 5-Year Review concluded that the original analyses and assumptions are still valid for the Goose Creek TMDLs. It was also concluded that the allocations for point (no nonpoint sources exist in the Subbasin) sources are appropriate for the TMDLs. However, one of the concerns is population growth and economic development, and the effect this may have on possible wastewater treatment and the potential for small cities to want to discharge into a water body. Growth issues may require changes to the wasteload allocations and load allocations in the future, but at this time are not warranted. Since the creation of the original TMDLs there has been no change in water quality criteria that would affect the document.

5.4 Review of Beneficial Uses

The DEQ concluded that the designated beneficial uses in the Goose Creek TMDL are appropriate as presently constituted and does not make or recommended changes to the beneficial uses at this time. In general, the DEQ concludes that beneficial uses for the Goose Creek Subbasin are either being met or will be met in the future based on TMDL reductions being implemented. However, the qualifying concern to this is the ability to have sufficient resources for water quality monitoring in order to make a complete assessment of the status of the water quality in relationship to the beneficial uses.

5.5 Watershed Advisory Group Consultation

The Lake Walcott Watershed Advisory Group (WAG) was created in 1995 and contributed to the original Goose Creek Subbasin Assessment and TMDL. The WAG has continued to meet annually since the approval of the original document. The WAG first met to discuss the draft five year review on September 24, 2009. At that time, no suggestions were given. The WAG met again on January 28, 2010 to review and discuss this Five Year Review document and how it may influence future implementation efforts throughout the Watershed.

5.6 Recommendations for Further Action

DEQ and the Lake Walcott Watershed Advisory Group will continue to work together to implement strategies on-the-ground towards meeting the beneficial uses and water quality standards. During the January 28, 2010 meeting, the Lake Walcott WAG formulated the following recommendations: **In Development**

References Cited

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