Upper Snake Rock/Middle Snake TMDLs

HUC ID17040212

Upper Snake Rock TMDL Modification (2005), Upper Snake Rock Watershed Management Plan (2000) and Middle Snake River Watershed Management Plan (1997))

5-Year TMDL Review

Department of Environmental Quality

April 2010

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5-Year TMDL Review

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Prepared by:
Twin Falls Regional Office
Idaho Department of Environmental Quality
1363 Fillmore Street
Twin Falls, Idaho 83301

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Acknowledgments

This 5-Year TMDL review involved the following Department of Environmental Quality staff:

- Sue Switzer – Principle TMDL Writer
- Dr. Balthasar B. Buhidar – TMDL Specialist and Principle TMDL Reviewer
- Katie Shewmaker – TMDL Specialist and TMDL Reviewer
- Sean Woodhead – BURP Coordinator & Implementation Specialist
- Mike Etcheverry – Implementation Coordinator
- Robert “Chad” Chorney – Regional Aquaculture Specialist and TMDL Reviewer
- Carolyn Rambough – DEQ Administrative Staff and WAG-BAG secretary
- Alissa Bosscher – Water Quality Monitoring Assistant
- Matt Anderson – Water Quality Monitoring Assistant
- Sean Coyle – GIS Analyst

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Table of Contents

List of Figures

List of Tables

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Executive Summary

Watershed at a Glance

This document presents a five-year review of the Middle Snake River Watershed Management Plan (1997), Upper Snake Rock Watershed Management Plan (2000), and the Upper Snake Rock Modification (2005). The review addresses the water bodies in the Upper Snake Rock Subbasin that are in Idaho's current and most recent draft Section 4(a) of the 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 Upper Snake Rock Subbasin, which extends from Murtaugh to King Hill and from the Bennett Hills north of Gooding to Rogerson, Idaho.

The Five Year Review looks at the status of the Upper Snake Rock/Mid Snake River corridor covering the 4th order HUC ID17040212. However, the original Middle Snake River Plan (1997) also included portions of the Snake River within the CJ Strike HUC ID17050101.

The TMDL(s) subject to five-year review are shown in Table 1 and Table 2. Table 1 summarizes the existing approved TMDLs and their status relative to specific assessment unit, pollutants of concern, and TMDL approval year. The TMDLs include the Middle Snake River Watershed Management Plan (approved in 1997), Upper Snake Rock TMDL (approved in 2000), and the Upper Snake Rock TMDL Modification (approved in 2005).

Table 1. Existing TMDLs and TMDL status.

Stream	Assessment Unit	Pollutants	TMDL Approval Year
Tributaries			
Dry Creek: Headwaters to Medley	17040212SK022_03	TSS, TP	Upper Snake Rock TMDL, 2000
West Fork Dry Creek: source to mouth	17040212SK023_02	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000
Dry Creek: Medley to Snake River	17040212SK022_03	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000
Rock Creek: river mile 25 to mouth	17040212SK013_04 17040212SK013_05	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000
Cottonwood Creek: source to mouth	17040212SK014_04	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000
McMullen Creek: 2nd order segment of creek & its tributaries; 3rd order - N. Willow Springs to Highline Canal	17040212SK015_02 17040212SK015_03	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000
Vinyard Creek: Vinyard Lake to mouth	17040212SK027_02	TSS, TP	Upper Snake Rock TMDL, 2000
Alpheus Creek	17040212SK019_02	TSS, TP	Upper Snake Rock TMDL, 2000
Ellison Creek: Source to mouth	17040212SK007_02	TSS, TP	Upper Snake Rock TMDL, 2000
Crystal Springs	17040212SK007_02	TSS, TP	Upper Snake Rock TMDL, 2000
Cedar Draw: source to mouth	17040212SK012_02	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000
Clear Springs	17040212SK028_02	TSS, TP	Upper Snake Rock TMDL, 2000
Mud Creek: Deep Cr Rd to mouth; Source to Deep Cr Rd	17040212SK010_02 17040212SK010_03 17040212SK011_02	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000

Deep Creek: Highline canal to mouth	17040212SK008_03 17040212SK009_02	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000
Blind Canyon Creek	17040212SK007_02	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000
Riley Creek: South side of Snake River (East of Yahoo Cr)	17040212SK005_02	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000
Thousand Springs Creek	17040212SK031_02	TSS, TP	Upper Snake Rock TMDL, 2000
Billingsley Creek	17040212SK033_02	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000
Clover Creek: Pioneer Reservoir to mouth	17040212SK034_04	TSS, TP, *E. coli*	Upper Snake Rock TMDL, 2000
Reservoirs			
Pioneer Reservoir	17040212SK035_04	TSS, TP	Upper Snake Rock TMDL, 2000
Mainstem Snake River (RM 638.5 to 545.0)			
Middle Snake River: Milner Dam to Twin Falls (Dam)	17040212SK020_07	TSS, TP	Middle Snake River Watershed Management Plan, 1997 Upper Snake Rock TMDL, 2000
Middle Snake River: Twin Falls (Dam) to Rock Creek (Confluence)	17040212SK019_07	TSS, TP	Middle Snake River Watershed Management Plan, 1997 Upper Snake Rock TMDL, 2000
Middle Snake River: Rock Creek (Confluence) to Box Canyon Creek (Confluence)	17040212SK007_07	TSS, TP	Middle Snake River Watershed Management Plan, 1997 Upper Snake Rock TMDL, 2000
Middle Snake River: Box Canyon Creek (Confluence) to Lower Salmon Falls (Dam)	17040212SK005_07	TSS, TP	Upper Snake Rock TMDL, 2000
Middle Snake River: Lower Salmon Falls (Dam) to Clover Creek (Confluence)	17040212SK001_07	TSS, TP	Middle Snake River Watershed Management Plan, 1997 Upper Snake Rock TMDL, 2000
Middle Snake River: Clover Creek to King Hill	17050101SW005_07	TSS, TP	Middle Snake River Watershed Management Plan, 1997 Upper Snake Rock TMDL, 2000
TMDL = Total Maximum Daily Load, TSS = Total Suspended Solids, TP = Total Phosphorus, E. coli = Escherichia coli Middle Snake River Watershed Management Plan, Upper Snake Rock Watershed Management Plan			

Table 2 summarizes the existing TMDLs and their implementation status relative to their planning efforts, project activities, and water quality improvement trends. The Upper Snake Rock Implementation Plan is a component of the Upper Snake Rock Watershed Management Plan and provides target dates and guidelines for meeting water quality standards and beneficial uses of the water bodies listed in the two tables.

Table 2. Existing TMDLs and Implementation Status.

Stream	Implementation Plan	Implementation Activities	WQ Trend
Tributaries			
Dry Creek: Medley to Snake River	Y	In Development	Stationary
Dry Creek: Headwaters to Medley	Y	In Development	Data Gap
Dry Creek: West Fork	Y	In Development	Data Gap
Rock Creek: Source to Rock Creek town	Y	Yes	Improving
Rock Creek: Rock Creek town to mouth	Y	Yes	Improving
Cottonwood Creek	Y	In Development	Stationary
McMullen Creek: 2nd order segment of creek & its tributaries; 3rd order - N. Willow Springs to Highline Canal	Y	Yes	Stationary
Vinyard Creek	Y	In Development	Stationary
Alpheus Creek	Y	In Development	Stationary
Ellison Creek: Source to mouth	Y	In Development	Stationary
Crystal Springs	Y	In Development	Stationary
Cedar Draw	Y	Yes	Stationary
Clear Springs	Y	In Development	Stationary
Mud Creek: Deep Cr Rd to mouth; Source to Deep Cr Rd	Y	Yes	Stationary
Deep Creek	Y	In Development	Stationary
Blind Canyon Creek	Y	In Development	Stationary
Riley Creek: South side of Snake River (East of Yahoo Cr)	Y	In Development	Stationary
Thousand Springs Creek	Y	In Development	Stationary
Billingsley Creek	Y	Yes	Improving
Clover Creek	Y	Yes	Improving
Reservoirs			
Pioneer Reservoir	Y	Yes	Stationary
Mainstem Snake River (RM 638.5 to 545.0)			
Middle Snake River: Milner Dam to Murtaugh	Y	Yes	Improving
Middle Snake River: Murtaugh to Twin Falls Reservoir	Y	Yes	Improving
Shoshone Falls Reservoir	Y	Yes	Improving
Middle Snake River: Shoshone Falls to Rock Creek	Y	Yes	Improving
Middle Snake River: Rock Creek to Cedar Draw	Y	Yes	Improving
Middle Snake River: Cedar Draw to Clear Lakes Bridge	Y	Yes	Improving
Middle Snake River: Clear Lakes Bridge to Mud Creek	Y	Yes	Improving
Middle Snake River: Mud Creek to Deep Creek	Y	Yes	Improving
Upper Salmon Falls Reservoir	Y	Yes	Improving
Lower Salmon Falls Reservoir	Y	Yes	Improving
Middle Snake River: Cassia Gulch to Big Pilgrim Gulch	Y	Yes	Improving
Middle Snake River: Big Pilgrim Gulch to King Hill Diversion	Y	Yes	Improving
Middle Snake River: Bliss Bridge to King Hill Diversion	Y	Yes	Stationary
Bliss Reservoir	Y	Yes	Stationary

About Assessment Units

A fuller discussion is provided in Section 1 about the use of Assessment Units (AUs) as geographical descriptive boundaries for stream segments. DEQ is using AUs for 303(d) listed water bodies that encompass "units of streams" within the same drainage. AUs are groups of similar streams that have similar land use practices, ownership, or land management. However, stream order is the main basis for determining AUs—even if ownership and land use change significantly.

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 intent and purpose of Idaho Statue 39-3611(7). The report documents the review of an approved Idaho TMDL and implementation plan 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.

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 Upper Snake Rock subbasin water bodies listed on the 2002 303 (d) list are included in this report, but the review is focused on the 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

This section discusses the TMDL review and status for the Middle Snake Watershed Management Plan, the Upper Snake Rock Watershed Management Plan, and the Upper Snake Rock TMDL Modification.

2.1 TMDL Snake River and Tributary Segments

The Upper Snake Rock TMDL stream segments in the Upper Snake Rock Subbasin to be assessed in the Upper Snake Rock TMDL 5-Year Review include Snake River Segments and tributary segments (Figure 1).

Segments
MD - PF
PF - CS
CS - BC
BC - GB
GB - SB
SB – KH

94 miles

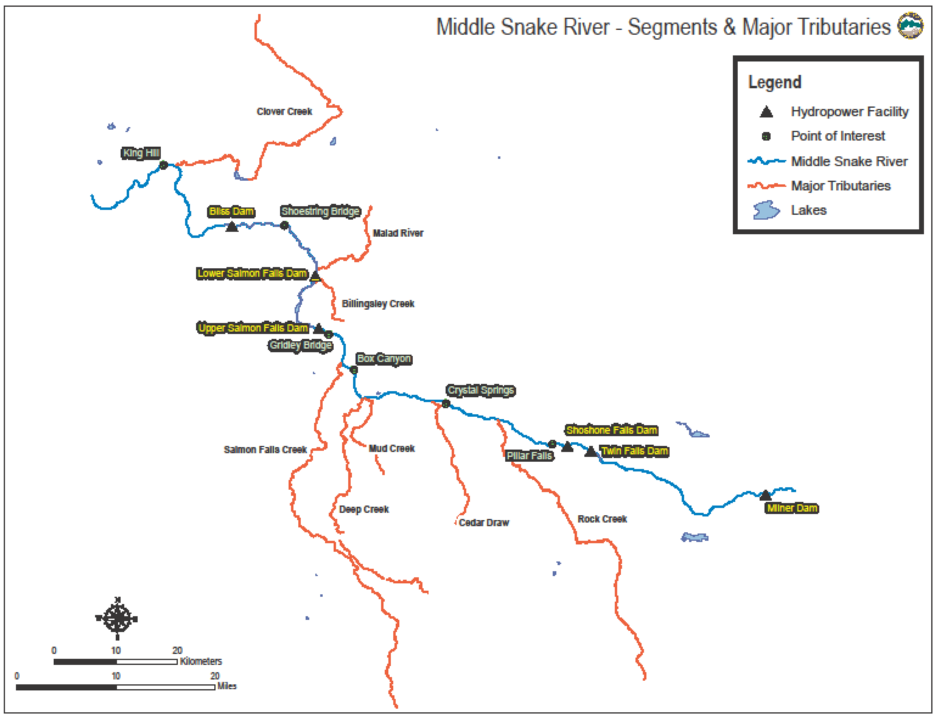

Figure 1. Middle Snake Segments and Major Tributaries.

2.1.1 Snake River Segments (based on Assessment Units)

1. Snake River – Milner Dam to Twin Falls: Assessment Unit ID17040212SK020_07
2. Snake River – Twin Falls to Rock Creek: Assessment Unit ID17040212SK019_07
3. Snake River – Rock Creek to Box Canyon: Assessment Unit ID17040212SK007_07
4. Snake River – Box Canyon to Lower Salmon Falls: Assessment Unit ID17040212SK005_07
5. Snake River – Lower Salmon Falls to Clover Creek: Assessment Unit ID17040212SK001_07

6. Snake River – Clover Creek to King Hill: Assessment Unit ID17050101SW005_07

2.1.2 Tributary Segments

1. Dry Creek (Medley Creek to Snake River): Assessment Unit ID17040212SK022_03

2. Rock Creek (Rock Creek Town to Snake River): Assessment Unit ID17040212SK013_04 and ID17040212SK013_05

3. Cottonwood Creek (headwaters to mouth): Assessment Unit ID17040212SK014_04

4. McMullen Creek: Assessment Unit ID17040212SK015_02 and 17040212SK012_03

5. Vinyard Creek (headwaters to mouth): Assessment Unit ID17040212SK027_00

6. Alpheus Creek (headwaters to mouth): Assessment Unit ID17040212SK019_02

7. Ellison Creek:, Crystal Springs, Niagara Springs, Briggs Creek, and Blind Canyon Creek (*also known as Cedar Draw Creek*) Assessment Unit ID17040212SK007_02

8. Cedar Draw (headwaters to mouth): Assessment Unit ID17040212SK012_03 and ID17040212SK012_02

9. Clear Lakes (headwaters to mouth): Assessment Unit ID17040212SK028_02

10. Mud Creek: Assessment Unit ID17040212SK010_03 and ID 17040212SK011_02

11. Deep Creek (headwaters to mouth): Assessment Unit ID17040212SK008_02 and ID 17040212SK008_03

12. Box Canyon (headwaters to mouth): Assessment Unit ID17040212SK000_02

13. Riley Creek: Assessment Unit ID17040212SK006_02

14. Bickle Springs (headwaters to mouth): Assessment Unit ID17040212SK000_02

15. Sand Springs (headwaters to mouth), Ritter Creek (*previously listed as Thousand Springs*): Assessment Unit ID17040212SK031_02

16. Billingsley Creek (headwaters to mouth): Assessment Unit ID17040212SK033_02

17. Pioneer Reservoir: Assessment Unit ID17040212SK035_04

18. Clover Creek (Pioneer Reservoir to mouth): Assessment Unit ID17040212SK034_04

The following is a list of approved TMDLs in the Upper Snake Rock:

- Mid-Snake TMDL approved 1997

- Upper Snake Rock TMDL approved 1999

- Upper Snake Rock TMDL Executive Summary 2000
- Upper Snake Rock TMDL Modification approved 2005 for aquaculture facilities only; recommended changes to TSS WLAs for existing point sources previously approved by EPA in 1999 and 2000 were not allowed to be changed in the 2005 Modification.

The Middle Snake Watershed Management Plan (TMDL) provided an approach to improve water quality by establishing a total phosphorus load applicable on the Snake River. The Upper Snake Rock Watershed Management Plan (TMDL) followed suit by providing loads for total phosphorus on water quality limited tributaries and total suspended solids on both the Snake River and effected tributaries. The Upper Snake Rock TMDL Executive Summary was created as a condensed version of the 1999 document. The Upper Snake Rock TMDL Modification evaluated phosphorus and total suspended solids loads primarily for aquaculture facilities that discharge to the Snake River or one of its tributaries. The 1997, 1999, 2000, and 2005 documents are linked by the subbasin itself and are intended to work in concordance with one another.

2.1.3 TMDL Map Location

Figure 2 provides the location of the TMDL Snake River and tributary segments of the Upper Snake Rock TMDL.

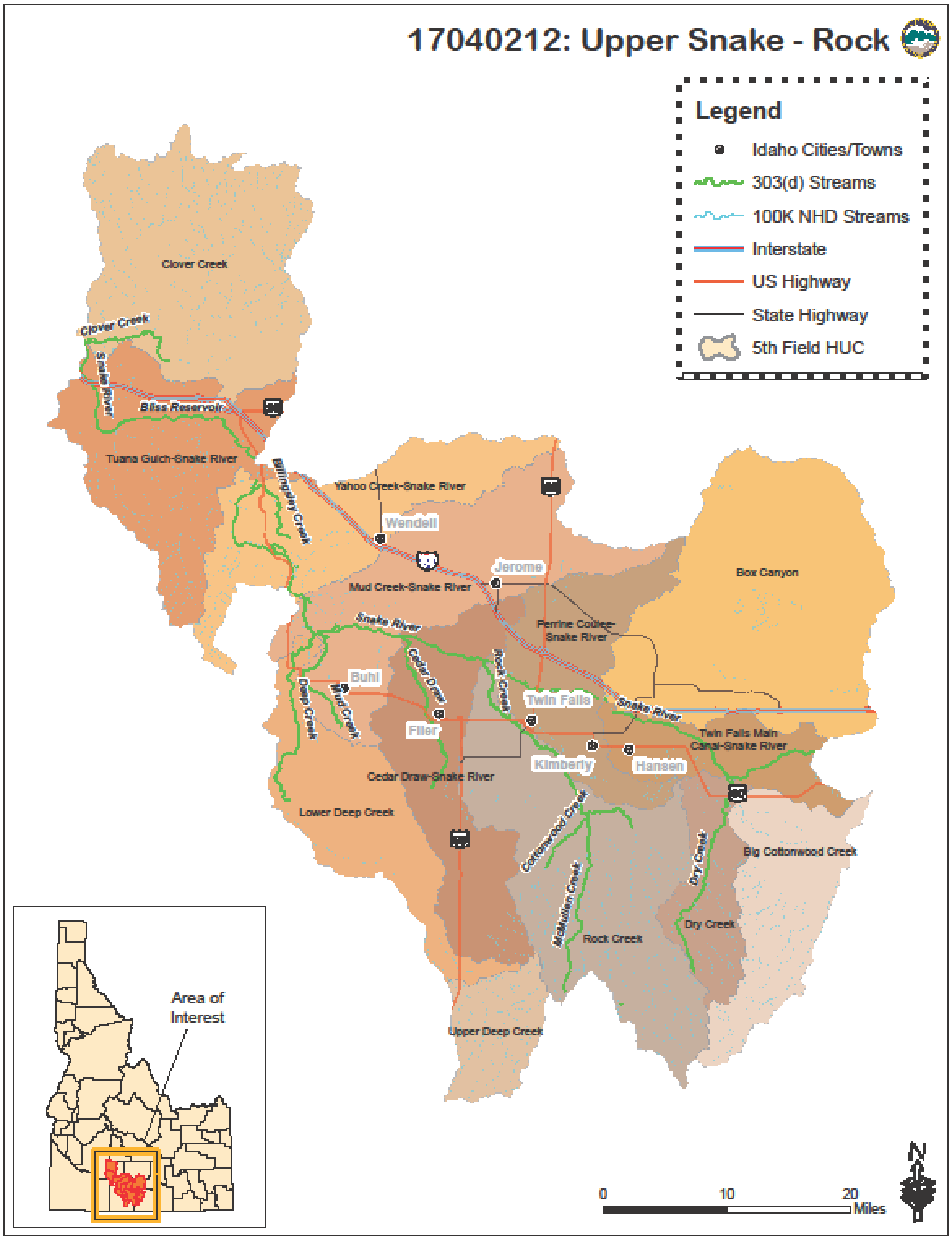

Figure 2. Map of Upper Snake Rock Subbasin.

A complete list Idaho's subbasin assessments, TMDLs, and implementation plans can be accessed from the following web page:

http://www.deq.idaho.gov/water/data_reports/surface_water/tmdls/sba_tmdl_master_list.cfm

The three TMDLs may be found by scrolling down the web page to "Snake River (Middle)", "Snake River (Middle)(Upper Snake Rock)" or "Snake River (Middle)(Aquaculture Wasteload Allocation only)" and making your selection.

2.2 Pollutant Targets

This section summarizes the pollutant targets defined in the TMDL relative to the applicable numeric criteria; applicable narrative criteria; and the necessity for appropriate numeric surrogates. These instream targets will be further addressed in this section.

2.2.1 Applicable Numeric Criteria & Targets

The water quality instream targets developed and implemented in the Upper Snake Rock TMDL are discussed in Table 3 for TSS, TP, and *E. coli*.

Table 3. Summary of WQ Instream Targets per TMDL in Upper Snake Rock Subbasin.

Instream Water Quality Criteria			
Water Body	TSS	TP	E. coli
Middle Snake River Watershed Management Plan			
Snake River - Milner to King Hill		0.075 mg/L	
Upper Snake Rock			
Snake River - Milner to King Hill	52.0 mg/L	0.075 mg/L	126 Geo Mean, 406 Inst. Max
Tributaries		0.100 mg/L	126 Geo Mean, 406 Inst. Max
Upper Snake Rock TMDL Modification			
Snake River - Segment 1	<52.0 mg/L	0.075 mg/L	126 Geo Mean, 406 Inst. Max
Snake River - Segment 2	<52.0 mg/L	0.075 mg/L	126 Geo Mean, 406 Inst. Max
Snake River - Segment 3	<52.0 mg/L	0.075 mg/L	126 Geo Mean, 406 Inst. Max
Snake River - Segment 4	<52.0 mg/L	0.075 mg/L	126 Geo Mean, 406 Inst. Max
Snake River - Segment 5	<52.0 mg/L	0.075 mg/L	126 Geo Mean, 406 Inst. Max
Snake River - Segment 6	<52.0 mg/L	0.075 mg/L	126 Geo Mean, 406 Inst. Max
Tributaries	<52.0 mg/L	0.100 mg/L	126 Geo Mean, 406 Inst. Max
Tributaries with development	25.0 mg/L	0.100 mg/L	126 Geo Mean, 406 Inst. Max
Undeveloped springfed tributaries	1.3 mg/L	0.020 mg/L	126 Geo Mean, 406 Inst. Max
TSS = Total Suspended Solids (sometimes used interchangeably as total suspended sediment). TP = Total Phosphorus. E. coli = Escherichia coli (in CFUs-colony forming units).			

2.2.2 Linkage between Instream Targets and Beneficial Uses

The linkage between the Instream targets (Table 3) and the beneficial uses of the water body are as follows:

- TSS is primarily concerned with IDAPA § 58.01.02.200.08 (sediment) in that "sediment shall not exceed quantities specified in Section 250 and 252, or, in the absence of specific sediment criteria, quantities which impair designated beneficial uses."
- TP is primarily concerned with IDAPA § 58.01.02.200.06 (Excess Nutrients) in that "surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses."
- *E. coli* is primarily concerned with IDAPA § 58.01.02.251 (*E. coli* Bacteria) in that "waters designated for recreation are not to contain *E. coli* bacteria, uses as indicators of human pathogens."

2.2.3 Reference Streams Used in the TMDL

The Upper Snake Rock TMDL did not utilize a reference stream or streams for the Middle Snake River or the tributaries. Rather, instream water quality TMDL criteria and targets were selected for TP, TSS, and *E.coli*; and these criteria and targets were used to determine beneficial use attainment for each water body of concern.

2.2.4 Evaluation of Critical Periods and Segments of Impaired Beneficial Uses

Critical periods were primarily based on the beneficial uses for cold water aquatic life (CWAL) and salmonid spawning (SS). In the case of CWAL, the critical period is July and August. In the case of SS, the critical period is April, September. and October. These critical periods are based on the hotter times of the year, when cold water and spawning are most critical.

The Middle Snake River was broken into management "segments" of impairment, but no tributary stream was. In the case of the river system, units were used to segment the river into six distinct segments:

- Milner Dam to Pillar Falls (Segment 1)
- Pillar Falls to Crystal Springs (Segment 2)
- Crystal Springs to Box Canyon (Segment 3)
- Box Canyon to Gridley Bridge (Segment 4)
- Gridley Bridge to Shoestring Bridge (Segment 5)
- Shoestring Bridge to King Hill (Segment 6).

These same segments are defined in Section 2.3 as Control and Monitoring Points.

2.2.5 Evaluation of Rationale for Target Selection

The target selection was based on water quality instream criteria and targets for TSS, TP, and *E. coli* as TMDL. DEQ reviewed these selected instream water quality targets and determined that no change is currently warranted.

However, DEQ notes the following. The Mid-Snake Watershed Advisory Group (or Mid-Snake WAG) has expressed concerns that the Middle Snake River has designated beneficial uses for CWAL and SS that may not be appropriate or achievable. Key to this concern is the hydrologic modification of the river system due to impoundments and reservoir areas associated with it. The Mid-Snake WAG may be requesting DEQ to consider a modified flow regime of the Middle Snake River that is more appropriate as a beneficial use versus its present designations.

2.3 Control and Monitoring Points

This section discusses the control and monitoring points that are being used in the Upper Snake Rock Subbasin for the Snake River, its tributaries, and its manmade canalways.

2.3.1 Evaluation of Control Points or Monitoring Points Used in the TMDL

As previously noted, the Middle Snake River was broken into six segments. As part of the Trend Monitoring Plan (see Upper Snake Rock TMDL [1999]) for the Middle Snake River, these 6 segments and 7 monitoring locations are used to evaluate compliance with the Upper Snake Rock TMDL for the instream water quality criteria and targets for TSS, TP and E. coli.

Tributaries & manmade canalways were identified at their confluence to the Snake River as control points/monitoring points to determine compliance with the Upper Snake Rock TMDL.

DEQ evaluated these control points and monitoring points and determined that their use under the TMDL process for the Upper Snake Rock Subbasin was appropriate. Therefore, DEQ continues to retain these locations to help DEQ determine beneficial use attainment for the Middle Snake River and its tributaries. Manmade canalways will be considered at the point where they discharge into a natural waterbody.

2.3.2 Evaluation of Pollutant Load Capacity and Allocations

The Upper Snake Rock TMDL Modification (2005) is the most current TMDL with the load capacity calculations and allocations for each specific industry and facility. Only the aquaculture facilities gained approval of their recommended WLAs in the modification. EPA did not approve changes to previous EPA approved TSS WLAs for Municipal or industrial facilities (1997 and 2000)

At this time, DEQ is not considering making changes to these allocations. However, it should be noted that issues stemming from population growth and industry development have become more challenging for smaller communities in meeting TMDL wasteload allocations. As population growth and industrial development affects these smaller communities, their ability to deal with growth may necessitate the need to reevaluate the wasteload allocations for point sources and may affect the load allocation for nonpoint sources. DEQ takes these concerns into consideration but is not prepared at this time to make any determinations on modifications to the existing approved TMDLs.

2.3.3 Evaluation of the Monitoring Plan and Feedback Loop in the Implementation Plan

The monitoring plan is based on the Trend Monitoring Plan developed in the Upper Snake Rock TMDL (2000) and is still the plan being implemented on the Snake River and its tributaries. In addition, an implementation plan was also developed with the Upper Snake Rock TMDL (1999 and 2000); and this plan is still being used for water quality improvement projects on Section 303(d) streams, as well as manmade canalways that may be associated with these impaired streams.

DEQ reviewed the Trend Monitoring Plan and the implementation plan and has determined that it will continue to maintain these plans as presently constituted.

2.4 Load Capacity

The Clean Water Act requires that a TMDL be developed from a load capacity. This load is the maximum assimilative capacity of a water body for a specific pollutant. Where numeric water quality standards are defined in the water quality standards for different pollutants, the load capacity can be very straight forward. However, when narrative rather than numeric water quality standards exist such as sediment and nutrients, DEQ interprets a targeted load to achieve the water quality standard and capacity. The Upper Snake Rock TMDL defines the numeric value (or instream target) that more aptly can be used to develop a load capacity.

2.4.1 Summary of the Method Used to Estimate the Load Capacity for Each Pollutant and Control / Monitoring Point

Under the TMDL process, the load capacity may be described with the following formula:

TMDL = Load Capacity = WLA + LA + MOS + BK + FG

Where, WLA = wasteload allocation for point sources

LA = load allocation for nonpoint sources

MOS = Margin of Safety (sometimes combined with BK)

BK = Background (sometimes combined with WLA or LA)

FG = Future Growth Reserve

More specifically:

<u>TP Load Capacity</u> = TP target (mg/L) x Flow (cfs) x 5.39 (conversion factor) = TP Load, lb/day

TP target: Middle Snake River = 0.075 mg/L TP

Tributaries = 0.100 mg/L TP

<u>TSS Load Capacity</u> = TSS target (mg/L) x Flow (cfs) x 5.39 (conversion factor) = TSS Load, lb/day

TSS target Middle Snake River = 52.0 mg/L TSS

Tributaries = 52.0 mg/L TSS

E. coli Load Capacity = E. coli (cfu/100 mL) x Flow (cfs) x 0.02445 = E. coli Load, cfu^9/day

E. coli target Middle Snake River = 126 cfu/100 mL (geometric mean) or an instantaneous value of 402 cfu/100 mL

Tributaries = 126 cfu/100 mL (geometric mean) or an instantaneous value of 402 cfu/100 mL

Each formula is the basis for the Upper Snake Rock TMDL as approved in 2000 and in the Upper Snake Rock TMDL Modification (2005).

MOS and FG are described in Sections 2.6 and 2.8, respectively. Section 2.7 describes Seasonal Variation and how it was considered in the TMDL. The WLAs and LAs are described in Section 2.5 under the general category of Load Allocations.

DEQ reviewed these methods to estimate the load capacity for each pollutant and control / monitoring point and determined that it has no intention of modifying this approach at the present time.

2.4.2 Evaluation of All Assumptions Made

The assumptions that were considered in the development of the Upper Snake Rock TMDL Modification (2005) are summarized in Section 6.0 (Beneficial Use Attainment) of the TMDL. The primary driver for the TMDL is nuisance aquatic plant growth, as initially defined in the Middle Snake River TMDL (or Mid-Snake TMDL, 1997). The results of TP reductions to an instream target of less than 0.075 mg/L are intended to meet beneficial uses by reducing nuisance aquatic plant growths by 30% (on average) at the Crystal Springs reach portion of the Middle Snake River. Additional to this TP reduction is having a TSS reduction to an instream target of less than 52.0 mg/L TSS.

DEQ reviewed these assumptions and continues to support this approach in the TMDL. Therefore, DEQ has no intent of modifying these assumptions now.

2.4.3 Evaluation of Seasonal Based Critical Periods

Seasonality is explored in Section 2.7. Seasonality was considered in the TMDL development process and is more specifically described in Section 7.0 of the Upper Snake Rock TMDL Modification (2005) as part of the wasteload allocations for aquaculture fish farms; but its application also affects nonpoint sources for the individual streams being considered. As described in the TMDL, seasonality must meet the beneficial uses for the receiving stream relative to TP and TSS.

DEQ reviewed the provisions defined in Section 7.0 of the TMDL Modification document and continues to support the approach used. Therefore, DEQ makes no suggestion to modify these provisions now.

2.5 Load Allocations

Under the Clean Water Act (CWA), Congress recognized two sources of pollution: point source pollution that is discharged from a "discernable, confined and discrete conveyance such as a pipe [or] ditch" (33 U.S.C. § 1362 (14) (2002); and nonpoint source pollution that is runoff from a variety of sources including urban area and agricultural and forestry sites. The TMDL process defines point source pollution as wasteload allocations and nonpoint source pollution as load allocations; both of which are components of the load capacity of an impaired waterbody (along with its Margin of Safety, Background and Future Growth Reserve).

The pollutant loading allocations for the parameter-of-concern are summarized in Table 4 and Table 5 with a comparison between the existing load of 1990-1991 versus the post-TMDL WLA of 2000 and 2005. The Upper Snake Rock TMDL Modification (2005) WLAs were previously identified in Sections 10.1 through 10.6.2, Load Capacity, of that document but are further described as follows.

For TSS, the 2000/2005 allocations represent an 18.5% reduction compared to the baseline load of1990-1991. For TP there is a comparable reduction of 23.7%.

Table 4. Point and Nonpoint Source Comparison of TMDL Load Allocations for Snake River.

	Point Sources		Nonpoint Sources		Total: Point + Nonpoint		
Snake River Segment	Baseline Load 1990-1991	WLA After 2000/2005	Baseline Load 1990-1991	LA After 2000/2005	Total Existing Load	Total Allocations	Percent Change, Baseline to 2000/2005 Allocations
Total Suspended Solids (TSS), ton/year							
1	1.3	1.3	24,064.2	20,373.8	24,065.5	20,375.1	-15.3%
2	177.7	204.4	40,073.0	54,208.8	40,250.7	54,413.2	35.2%
3	3,456.3	3,462.0	76,133.8	74,519.4	79,590.1	77,981.4	-2.0%
4	83.3	101.7	40,286.6	10,028.2	40,369.9	10,129.9	-74.9%
5	786.4	973.7	42,462.3	90,659.3	43,248.7	91,633.0	111.9%
6	0.0	0.0	93,524.9	7,202.3	93,524.9	7,202.3	-92.3%
Total	4,505.0	4,743.1	316,544.8	256,991.8	321,049.8	261,734.9	**-18.5%**
Total Phosphorus (TP), lb/day							
1	5.1	3.3	993.8	407.2	998.9	410.5	-58.9%
2	1,081.7	722.1	1,217.0	1,374.6	2,298.7	2,096.7	-8.8%
3	655.5	474.0	1,684.8	1,345.6	2,340.3	1,819.6	-22.3%
4	72.3	50.1	1,381.2	1,524.9	1,453.5	1,575.0	8.4%
5	98.5	73.1	2,072.1	1,278.9	2,170.6	1,352.0	-37.7%
6	0.0	0.0	525.2	210.6	525.2	210.6	-59.9%
Total	1,913.1	1,322.6	7,874.1	6,141.7	9,787.2	7,464.3	**-23.7%**

Baseline = Baseline Water Years 1990-1991 as defined in the Mid-Snake TMDL and the Upper Snake Rock TMDL (USR TMDL, 2000). The Nonpoint Source calculation is primarily based on the overall load capacity for the river segment and subtracting out the point source component; but not subtracting out the margin of safety. Some of the ton/year estimates are based on converting to lb/day or vice versa.

Segment 1: Milner Dam to Pillar Falls. Baseline based on USR TMDL (1999), Table 100 & Table 107. Point sources include City of Hansen only. Point source after 2000/2005 based on the USR TMDL Modification (2005), Table 1-A. Nonpoint Sources load after 2000/2005 is based on the net calculation between the Total Load at the discharge from one segment to another, from the Total Load at the input part of the segment.

Segment 2: Pillar Falls to Crystal Springs. Baseline based on USR TMDL (1999), Table 101 & Table 108. Point sources include City of Twin Falls and GAP-104. Point source after 2000/2005 based on the USR TMDL Modification (2005), Table 2-A.

Segment 3: Crystal Springs to Box Canyon. Baseline based on USR TMDL (1999), Table 102 & Table 109. Point sources include City of Jerome, GAP-016, GAP-100, GAP-041, GAP-054, GAP-014, and GAP-010. Point source after 2000/2005 based on the USR TMDL Modification (2005), Table 3-A.

Segment 4: Box Canyon to Gridley Bridge. Baseline based on USR TMDL (1999), Table 103 & Table 110. Point sources include U of I Research Center Lab and GAP-009. Point source after 2000/2005 based on the USR TMDL Modification (2005), Table 4-A.

Segment 5: Gridley Bridge to Shoestring Bridge. Baseline based on USR TMDL (1999), Table 104 & Table 111. Point sources include City of Hagerman, GAP-111, GAP-065, GAP-056, GAP-082 (formerly GAP-081 [Rainbow Falls/Dunn] combined with GAP-082 [Eckles]), GAP-098 (formerly GAP-098 [Barrett], GAP-020, GAP-090, GAP-118, GAP-119, GAP-120 and GAP-076. Point source after 2000/2005 based on the USR TMDL Modification (2005), Table 5-A.

Segment 6: Shoestring Bridge to King Hill. No point sources discharge directly to the Snake River. Point source after 2000/2005 based on the USR TMDL Modification (2005), Table 6-A.

Table 5 through Table 10 summarize the tributaries (both manmade and natural) that discharge into the Middle Snake River on a net basis. The "net basis" does not account for the upstream load that is entering the segment of the Middle Snake River, but accounts only for those loads that are directly attributable to the segment only.

For the tributaries of Segment 1 (Table 5), the 2000/2005 allocations represent a 15.3% reduction in TSS compared to the baseline load of 1990-1991. For TP there is a comparable reduction of 59.2%.

Table 5. Point and Nonpoint Source Comparison of TMDL Load Allocations for Tributaries associated with Segment 1 of the Middle Snake River.

	Point Sources		Nonpoint Sources		Total: Point + Nonpoint		
Tributaries of Segment 1	Baseline Load 1990-1991	WLA After 2000/2005	Baseline Load 1990-1991	LA After 2000/2005	Total Existing Load	Total Allocations	Percent Change, 1990-1991 Load to 2000/2005 Allocations
Segment 1 Net Total Suspended Solids (TSS), ton/year							
Corridor NPS	0	0	7,945.40	3,531.76	7,945.4	3,531.8	-55.5%
3 Tributaries	0	0	2,923.80	797.45	2,923.8	797.5	-72.7%
4 Canalways	0	0	3,018.50	1,518.40	3,018.5	1,518.4	-49.7%
1 Point Source	1.3	1.3	0	0	1.3	1.3	0.0%
Unaccounted	0	0	10,176.50	14,524.90	10,176.5	14,524.9	42.7%
Overall Total	1.3	1.3	24,064.20	20,372.51	24,065.5	20,373.8	**-15.3%**
Segment 1 Net Total Phosphorus (TP), lb/day							
Corridor NPS	0	0	534.2	173.06	534.2	173.1	-67.6%
3 Tributaries	0	0	14.4	13.64	14.4	13.6	-5.3%
4 Canalways	0	0	32.1	16	32.1	16.0	-50.2%
1 Point Source	5.1	3.3	0	0	5.1	3.3	-35.3%
Unaccounted	0	0	413.1	201.2	413.1	201.2	-51.3%
Totals	5.1	3.3	993.8	403.9	998.9	407.2	**-59.2%**

Baseline 1990-1991: Based on Table 100 and Table 107 from the Upper Snake Rock TMDL (1999). After 2000/2005: Based on Table 1-A from the Upper Snake Rock TMDL Modification (2005). Segment 1: Milner Dam to Pillar Falls. Corridor NPS = Middle Snake River Corridor nonpoint sources for agriculture, grazing, private land ownership and other river corridor nonpoint source inputs; plus stormwater construction activities. 3 Tributaries = Vinyard Creek TMDL, Devils Corral Spring TMDL and Dry Creek (Murtaugh Lake) TMDL. 4 Canalways = Northside A Drain, Southside A-10 Drain, Northside C-55 Drain, and Southside Twin Falls Coulee. 1 Point Source = City of Hansen. Unaccounted = Springs, Seeps and Surface Waters.

For the tributaries of Segment 2, Table 6 indicates that TSS allocations (for point sources and nonpoint sources) were increased in 2000/2005 from the baseline 1990-1991 values. The primary reason for these increases was that information was lacking in the baseline years to allow a more accurate determination. TP values were more accurately reflected in 2000/2005, primarily because more monitoring of TP was conducted for the limiting nutrient during the baseline years.

Table 6. Point and Nonpoint Source Comparison of TMDL Load Allocations for Tributaries associated with Segment 2 of the Middle Snake River

	Point Sources		Nonpoint Sources		Total: Point + Nonpoint		
Tributaries of Segment 2	Baseline Load 1990-1991	WLA After 2000/2005	Baseline Load 1990-1991	LA After 2000/2005	Total Existing Load	Total Allocations	Percent Change, 1990-1991 Load to 2000/2005 Allocations
Segment 2 Net Total Suspended Solids (TSS), ton/year							
Corridor NPS	0.0	0.0	4,256.8	1,793.6	4,256.8	1,793.6	-57.9%
5 Tributaries	0.0	0.0	14,584.3	41,993.4	14,584.3	41,993.4	187.9%
11 Canalways	0.0	0.0	18,253.9	5,949.0	18,253.9	5,949.0	-67.4%
2 Point Sources	177.7	204.4	0.0	0.0	177.7	204.4	15.0%
Unaccounted	0.0	0.0	3,155.7	4,268.4	3,155.7	4,268.4	35.3%
Overall Total	177.7	204.4	40,250.7	54,004.4	40,428.4	54,208.8	**34.1%**
Segment 2 Net Total Phosphorus (TP), lb/day							
Corridor NPS	0.0	0.0	1,798.9	87.9	1,798.9	87.9	-95.1%
5 Tributaries	0.0	0.0	197.5	442.7	197.5	442.7	124.2%
11 Canalways	0.0	0.0	167.0	62.7	167.0	62.7	-62.5%
2 Point Sources	1,071.2	722.1	0.0	0.0	1,071.2	722.1	-32.6%
Unaccounted	0.0	0.0	135.3	59.2	135.3	59.2	-56.2%
Overall Total	1,071.2	722.1	2,298.7	652.5	3,369.9	1,374.6	**-59.2%**

Baseline 1990-1991: Based on Table 101 and Table 108 from the Upper Snake Rock TMDL (1999) and Executive Summary, Segment 2 TSS & TP Allocation tables. After 2000/2005: Based on Table 2-A from the Upper Snake Rock TMDL Modification (2005). Segment 2: Pillar Falls to Crystal Springs. Corridor NPS = Middle Snake River Corridor nonpoint sources for agriculture, grazing, private land ownership and other river corridor nonpoint source inputs; plus stormwater construction activities. 5 Tributaries = Warm Creek TMDL, Rock Creek TMDL, Crystal Springs TMDL, Alpheus Creek TMDL and Ellison Creek TMDL. 11 Canalways = East Perrine Coulee, Main Perrine Coulee, West Perrine Coulee, 43 Drain, Jerome Golf Course Drain, 30 Drain, LQ/LS Drain, LS2/39A Drain, N42 Drain, N42 Drain (Rim) and 39 Drain. 2 Point Source = City of Twin Falls POTW and GAP-104. Unaccounted = Springs, Seeps and Surface Waters.

For tributaries of Segment 3, Table 7 shows that 2000/2005 TSS allocations for point source and nonpoint source are decreased by 10.1% from the 1990-1991 baseline. For TP, there is a comparable reduction of 55.1%.

Table 7. Point and Nonpoint Source Comparison of TMDL Load Allocations for Tributaries associated with Segment 3 of the Middle Snake River.

	Point Sources		Nonpoint Sources		Total: Point + Nonpoint		
Tributaries of Segment 3	Baseline Load 1990-1991	WLA After 2000/2005	Baseline Load 1990-1991	LA After 2000/2005	Total Existing Load	Total Allocations	Percent Change, 1990-1991 Load to 2000/2005 Allocations
Segment 3 Net Total Suspended Solids (TSS), ton/year							
Corridor NPS	0.0	0.0	42,268.5	2,083.3	42,268.5	2,083.3	-95.1%
12 Tributaries	0.0	0.0	29,434.1	59,743.0	29,434.1	59,743.0	103.0%
5 Canalways	0.0	0.0	4,057.1	4,114.5	4,057.1	4,114.5	1.4%
7 Point Sources	3,456.3	3,462.0	0.0	0.0	3,456.3	3,462.0	0.2%
Unaccounted	0.0	0.0	3,830.4	5,264.9	3,830.4	5,264.9	37.5%
Overall Total	3,456.3	3,462.0	79,590.1	71,205.7	83,046.4	74,667.7	**-10.1%**
Segment 3 Net Total Phosphorus (TP), lb/day							
Corridor NPS	0.0	0.0	1,446.5	102.1	1,446.5	102.1	-92.9%
12 Tributaries	0.0	0.0	638.2	653.1	638.2	653.1	2.3%
5 Canalways	0.0	0.0	93.9	43.4	93.9	43.4	-53.8%
7 Point Sources	655.5	474.0	0.0	0.0	655.5	474.0	-27.7%
Unaccounted	0.0	0.0	161.7	73.0	161.7	73.0	-54.9%
Overall Total	655.5	474.0	2,340.3	871.6	2,995.8	1,345.6	**-55.1%**

Baseline 1990-1991: Based on Table 102 and Table 109 from the Upper Snake Rock TMDL (1999). After 2000/2005: Based on Table 3-A from the Upper Snake Rock TMDL Modification (2005). Segment 3: Crystal Springs to Box Canyon. Corridor NPS = Middle Snake River Corridor nonpoint sources for agriculture, grazing, private land ownership and other river corridor nonpoint source inputs; plus stormwater construction activities. 12 Tributaries = Cedar Draw TMDL, Niagara Springs TMDL, Clear Lake TMDL, Mud Creek TMDL, Deep Creek TMDL, Briggs Creek TMDL, Blind Canyon TMDL, Banbury Springs TMDL, Box Canyon Springs TMDL, Blue Heart TMDL, McMullen Creek TMDL, and Cottonwood Creek TMDL. The Blue Heart TMDL is based on 60 cfs flow and a concentration of 1.3 mg/L TSS and 0.020 mg/L TP and a conversion factor of 5.39. 5 Canalways = I Drain, J8 Drain, N Drain, S29 Drain and S19/S Drain. 7 Point Sources = City of Jerome POTW, GAP-016, GAP-100, GAP-041, GAP-054, GAP-014 and GAP-010. Unaccounted = Springs, Seeps and Surface Waters.

Table 8 shows that the 2000/2005 TSS allocations for point source and nonpoint source are increased by 148.4% over the 1990-1991 baseline. For TP, there is a comparable increase of 4.9%.

Table 8. Point and Nonpoint Source Comparison of TMDL Load Allocations for Tributaries associated with Segment 4 of the Middle Snake River.

Tributaries of Segment 4	Baseline Load 1990-1991	WLA After 2000/2005	Baseline Load 1990-1991	LA After 2000/2005	Total Existing Load	Total Allocations	Percent Change, 1990-1991 Load to 2000/2005 Allocations
Segment 4 Net Total Suspended Solids (TSS), ton/year							
Corridor NPS	0.0	0.0	29,053.6	9,316.6	29,053.6	9,316.6	-67.9%
4 Tributaries	0.0	0.0	8,682.6	87,412.2	8,682.6	87,412.2	906.8%
1 Canalway	0.0	0.0	1,093.3	928.9	1,093.3	928.9	-15.0%
2 Point Sources	0.0	557.3	0.0	0.0	0.0	557.3	Undefined
Unaccounted	0.0	0.0	1,540.4	2,067.2	1,540.4	2,067.2	34.2%
Overall Total	0.0	557.3	40,369.9	99,724.9	40,369.9	100,282.2	**148.4%**
Segment 4 Net Total Phosphorus (TP), lb/day							
Corridor NPS	0.0	0.0	1,126.7	456.6	1,126.7	456.6	-59.5%
4 Tributaries	0.0	0.0	246.3	979.9	246.3	979.9	297.8%
1 Canalway	0.0	0.0	13.9	9.8	13.9	9.8	-29.5%
2 Point Sources	0.0	50.1	0.0	0.0	0.0	50.1	Undefined
Unaccounted	0.0	0.0	66.6	28.6	66.6	28.6	-57.1%
Overall Total	0.0	50.1	1,453.5	1,474.9	1,453.5	1,525.0	**4.9%**

Baseline 1990-1991: Based on Table 103 and Table 110 from the Upper Snake Rock TMDL (1999). After 2000/2005: Based on Table 4-A from the Upper Snake Rock TMDL Modification (2005). Segment 4: Box Canyon to Gridley Bridge. Corridor NPS = Middle Snake River Corridor nonpoint sources for agriculture, grazing, private land ownership and other river corridor nonpoint source inputs; plus stormwater construction activities. 4 Tributaries = Ritter Creek TMDL, Riley Creek TMDL, Sand Springs TMDL and Salmon Falls Creek TMDL. 1 Canalways = W-26 Drain. 2 Point Sources = GAP-009 and University of Idaho Research Center Lab. Unaccounted = Springs, Seeps and Surface Waters.

Table 9 shows that 2000/2005 TSS allocations for point source and nonpoint sources are increased by 112.5% over the 1990-1991 baseline. For TP, there is a comparable decrease of 40.4%.

Table 9. Point and Nonpoint Source Comparison of TMDL Load Allocations for Tributaries associated with Segment 5 of the Middle Snake River.

	Point Sources		Nonpoint Sources		Total: Point + Nonpoint		
Tributaries of Segment 5	Baseline Load 1990-1991	WLA After 2000/2005	Baseline Load 1990-1991	LA After 2000/2005	Total Existing Load	Total Allocations	Percent Change, 1990-1991 Load to 2000/2005 Allocations
Segment 5 Net Total Suspended Solids (TSS), ton/year							
Corridor NPS	0.0	0.0	11,029.5	1,983.3	11,029.5	1,983.3	-82.0%
6 Tributaries	0.0	0.0	28,196.2	84,301.0	28,196.2	84,301.0	199.0%
0 Canalways	0.0	0.0	0.0	0.0	0.0	0.0	Undefined
12 Point Sources	769.7	973.7	0.0	0.0	769.7	973.7	26.5%
Unaccounted	0.0	0.0	3,253.3	4,643.5	3,253.3	4,643.5	42.7%
Overall Total	769.7	973.7	42,479.0	90,927.8	43,248.7	91,901.5	**112.5%**
Segment 5 Net Total Phosphorus (TP), lb/day							
Corridor NPS	0.0	0.0	1,123.1	97.2	1,123.1	97.2	-91.3%
6 Tributaries	0.0	0.0	816.9	1,058.5	816.9	1,058.5	29.6%
0 Canalways	0.0	0.0	0.0	0.0	0.0	0.0	Undefined
12 Point Sources	98.5	73.1	0.0	0.0	98.5	73.1	-25.8%
Unaccounted	0.0	0.0	132.1	64.3	132.1	64.3	-51.3%
Overall Total	98.5	73.1	2,072.1	1,220.0	2,170.6	1,293.1	**-40.4%**

Baseline 1990-1991: Based on Table 104 and Table 111 from the Upper Snake Rock TMDL (1999). After 2000/2005: Based on Table 5-A from the Upper Snake Rock TMDL Modification (2005). Segment 5: Gridley Bridge to Shoestring Bridge. Corridor NPS = Middle Snake River Corridor nonpoint sources for agriculture, grazing, private land ownership and other river corridor nonpoint source inputs; plus stormwater construction activities. 6 Tributaries = Billingsley Creek TMDL, Birch Creek TMDL, Stoddard Creek TMDL, Decker Springs Creek TMDL, Malad River TMDL and Malad River Power Flume TMDL. 0 Canalways = 0. 12 Point Source = City of Hagerman, GAP-111, GAP-065, GAP-056, GAP-082, GAP-098, GAP-020, GAP-090, GAP-118, GAP-119, GAP-120 and GAP-076. Unaccounted = Springs, Seeps and Surface Waters.

Table 10 indicates that certain components in the TSS allocations are greater in the 2000/2005 allocation versus the 1990-1991 baseline. The primary reason for these increases was the lack of information in the baseline years to allow for a more accurate determination. The two canalways identified with a -4,239.9 represent diversions out of the Snake River for the Black Mesa Pump and Wiley Pumps. Consequently, they are negative; and, they are also Undefined in the percent change.

Overall, 2000/2005 allocations for point source and nonpoint source decreased by 92.35% over the 1990-1991 baseline. For TP, there is a comparable decrease of 60.2%.

Table 10. Point and Nonpoint Source Comparison of TMDL Load Allocations for Tributaries associated with Segment 6 of the Middle Snake River.

	Point Sources		Nonpoint Sources		Total: Point + Nonpoint		
Tributaries of Segment 6	Baseline Load 1990-1991	WLA After 2000/2005	Baseline Load 1990-1991	LA After 2000/2005	Total Existing Load	Total Allocations	Percent Change, 1990-1991 Load to 2000/2005 Allocations
Segment 6 Net Total Suspended Solids (TSS), ton/year							
Corridor NPS	0.0	0.0	88,186.6	2,323.9	88,186.6	2,323.9	-97.4%
2 Tributaries	0.0	0.0	388.8	4,168.8	388.8	4,168.8	972.2%
2 Canalways	0.0	0.0	0.0	-4,239.9	0.0	-4,239.9	Undefined
0 Point Source	0.0	0.0	0.0	0.0	0.0	0.0	Undefined
Unaccounted	0.0	0.0	4,949.5	4,949.5	4,949.5	4,949.5	0.0%
Overall Total	0.0	0.0	93,524.9	7,202.3	93,524.9	7,202.3	**-92.3%**
Segment 6 Net Total Phosphorus (TP), lb/day							
Corridor NPS	0.0	0.0	256.3	103.7	256.3	103.7	-59.6%
2 Tributaries	0.0	0.0	67.9	43.9	67.9	43.9	-35.3%
2 Canalways	0.0	0.0	0.0	-36.6	0.0	-36.6	Undefined
0 Point Source	0.0	0.0	0.0	0.0	0.0	0.0	Undefined
Unaccounted	0.0	0.0	201.0	97.9	201.0	97.9	-51.3%
Overall Total	0.0	0.0	525.2	208.9	525.2	208.9	**-60.2%**

2.6 Margin of Safety

Under the Clean Water Act (i.e. Public Law 100-4, Section 404 (c)(1)(C) a margin of safety (MOS) is incorporated into the TMDL to take into account "any lack of knowledge concerning the relationship between effluent limitations and water quality." This interpretation is substantiated in Idaho Code § 39-3602 (30), which defines a MOS "to account for uncertainty concerning the relationship between the pollutant loading and water quality standards." Likewise, IDAPA § 58.01.02.010 (93) states that a MOS "takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality."

- Middle Snake River Watershed Management Plan (1997): An explicit MOS of 24.1 lbs/day of total phosphorus was established for the Snake River using the RBM10 model prediction. No load allocation was shown for the tributaries. Some reduction is expected which has not been credited explicitly, this is considered an undefined component of the MOS. (See pg. 54, item No. 5)

- Upper Snake Rock TMDL (2000): MOS is accounted for as implicit for sediment. The basis of the implicit MOS is based on conservative assumptions used in calculating the load capacity, wasteload allocations, and load allocations for sediment. (See pg. 184-185, § 3.4) These assumptions include the following:

    - Flow design analysis was based on a low flow year. As more data is collected, a better understanding of the impact under high flow conditions will be assessed, thus providing better direction at determining the upper limits of excess TSS levels.

    - Since excess sediment is a narrative water quality standard, TSS instream concentration targets were based on protection of salmonids, other fish and aquatic communities for meeting beneficial uses for cold water aquatic life and salmonid spawning.

    - Targets for permitted industries in the Upper Snake Rock subbasin were based on permit requirements. An Average Monthly Limit was selected over the Average Weekly Limit because it was lower.

    - Where no information was available for TSS on a water quality limited stream segment, the stream corridor approach model was used as the method of allocation. Various sources indicate the stream corridors are protective of beneficial uses for wildlife and should have a range greater than 0.5 mile but less than 5.0 miles. A one-mile per side of stream seemed reasonable to use with an implicit margin of safety within the recommended range of 0.5 to 5.0 miles.

- Upper Snake Rock Modification (2005): The implicit MOS described in the Upper Snake Rock TMDL was referenced and summarized. Uncertainties within the TMDL were identified and adjustments were made to account for them as follows (See page 20-21, § 5.1):

- To account for the difficulty to quantifying the degree of excess sediment to the mainstem of the Mid-Snake, TSS targets had been based on achieving annual average concentrations. Actual allocations to meet these targets have been derived from low flow conditions and with a comparison to the 1990-1991 baseline years.

The 5-Year Review of the Upper Snake Rock TMDL does not propose to make any modifications to the MOS component of the TMDL as presently constituted; and therefore retains the existing MOS as so indicated

2.7 Seasonality

Under the Clean Water Act, seasonal variation may be considered in order to apply the TMDL instream water quality standards for sediment and total phosphorus. Thus, *"such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety."* This is also described in Idaho Code § 39-3602 (30) such that *"pollutant allocations established through TMDLs shall be at a level necessary to implement the applicable water quality standards for the identified pollutants with seasonal variations and a MOS."* Also, IDAPA § 58.01.02.010.93 stipulates that *"such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a MOS."*

The 5-Year Review of the Upper Snake Rock TMDL does not propose to make any modifications to the seasonality component of the TMDL as presently constituted; it retains the existing seasonality as indicated. The Upper Snake Rock TMDL Modification (2005) identifies the facilities that were to use a seasonal based approach to their allocation.

2.8 Future Growth Reserve

This section summarizes the future growth component and evaluates the appropriateness of this component.

- The Middle Snake River Watershed Management Plan (1997): A future growth reserve was not allocated at this time. Waste management concerns that could arise from economic and population growth were to be addressed by developing additional industry pollution reductions. Effective planned growth development concepts were to be promoted to communities and cities through zoning ordinances within the watershed. This approach was supported by a statement from municipal industry, "We believe that at this time there is no justification to do a further reduction to account for growth within the industry because of the lack of data on the Middle Snake River." (pg. 224). The statement recommended consistent, year-round monitoring be conducted prior to establishing wasteload allocations and to clarify the pollutant sources.

- The Upper Snake Rock Watershed Management Plan (2000): A zero allowance for future growth was recommended until the reductions identified within the TMDL demonstrated the beneficial uses or State water quality standards had been restored. Communities were encouraged to consider adoption of "Smart Growth" policies and requirements. The suggested methods for allowing growth are as follows: (1) pollutant trading set to the instream target parameters, (2) no net increase set to the instream target, and (3) no discharge where land application is the preferred option.

- The Upper Snake Rock Modification (2005): Future growth of nonpoint sources were required to "provide sufficient protection nutrient (TP and nitrogen), sediment (TSS), and bacteria pollutants so that TMDL targets and goals are maintained." Point source growth will be enforceable under NPDES permits.

The 5-Year Review of the Upper Snake Rock TMDL does not propose to make any modifications to the future growth reserve component of the TMDL as presently constituted.

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 .02.109-.02.160 in addition to citations for existing and presumed uses).

Undesignated uses are to be designated. In the interim, and absent information on existing uses, DEQ presumes 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 so-called "presumed uses," DEQ will apply the numeric cold water aquatic life criteria and primary or secondary contact recreation criteria to undesignated waters

3.1 Beneficial Uses Designations

Table 11 shows beneficial use designations for water bodies in the Upper Snake Rock Subbasin.

Table 11. Beneficial uses of Upper Snake Rock Watershed (HUC #17040212)

Stream	Assessment Unit	Beneficial Uses						Type of Use
		D	CW	SS	PC	SC	SRW	
Riley Creek	17040212SK006_02	X	X	X	X	X	X	Designated
Blind Canyon Creek	17040212SK007_02		X	X	X			Designated
Crystal Springs	17040212SK007_02		X	X	X			Designated
Deep Creek	17040212SK008_03		X	X		X		Designated
Deep Creek	17040212SK009_02		X	X		X		Designated
Mud Creek	17040212SK010_02		X	X		X		Designated
Mud Creek	17040212SK011_03		X	X		X		Designated
Cedar Draw	17040212SK012_02		X	X		X		Designated
Rock Creek	17040212SK013_04		X	X		X		Designated
Rock Creek	17040212SK013_05		X	X		X		Existing
Cottonwood Creek	17040212SK014_04		X			X		Designated
McMullen Creek	17040212SK015_02		X			X		Designated
Rock Creek	17040212SK016_04	X	X	X	X	X	X	Designated
Tool Box Creek	17040212SK017_02		X	X	X	X		Designated
Rock Creek	17040212SK018_04	X	X	X	X	X	X	Designated
Alpheus Creek	17040212SK019_02		X	X	X			Designated
Dry Creek	17040212SK022_03		X	X		X		Designated
Dry Creek, West Fork	17040212SK023_02		X			X		Existing
Clear Lakes	17040212SK028_02		X			X		Designated
Sand Springs Creek (Thousands Springs)	17040212SK031_02		X			X		Designated
Billingsley Creek: HW to mouth	17040212SK033_02	X	X	X	X	X	X	Designated
Clover Creek	17040212SK034_04		X	X	X			Designated
Clover Creek	17040212SK036_02		X	X	X			Designated
Pioneer Reservoir	17040212SK035_04		X			X		Presumed
Snake River Segments								

Snake River: Lower Salmon Falls to Clover Creek	17040212SK001_07		X	X	X	X		Designated
Snake River: Box Canyon Cr to Lower Salmon Falls	17040212SK005_07		X	X	X	X		Designated
Snake River: Rock Cr to Box Canyon Cr	17040212SK007_07		X	X	X	X		Designated
Snake River: Twin Falls to Rock Cr	17040212SK019_07		X	X	X	X		Designated
Snake River: Milner Dam to Twin Falls	17040212SK020_07		X	X	X	X		Designated
Snake River: Clover Creek to King Hill	1705010SW005_07		X	X	X	X		Designated

D = Domestic water supply; CW = Cold water communities; SS = Salmonid spawning; PC = Primary contact recreation; SC = Secondary contact recreation; SRW = Special resource water; See Table 40, pg 87-88 Upper Snake Rock TMDL (1997)

To determine support of beneficial uses, DEQ collected aquatic data through the Beneficial Use Reconnaissance Program (BURP)(Table 12).

Table 12. Table 3.1b Beneficial uses of Upper Snake Rock Watershed (HUC #17040212).

Burp ID #	Stream/Location	Score			Assessment Score	Support Status
		SMI	SFI	SHI		
Tributaries						
AU ID17040212SK022_03: Dry Creek – head waters to Medley						
No Current BURP info available						
AU ID17040212SK023_02: West Fork Dry Creek: source to mouth						
No Current BURP info available						
AU ID17040212SK022_03: Dry Creek: Medley to Snake River						
No Current BURP info available						
AU ID17040212SK016_04: Rock Creek: Fifth Fork Rock Cr to river mile 25						
2005STWFA047	Rock Creek	NA	NA	NA	NA	Dry
AU ID17040212SK013_04: Rock Creek: river mile 25 to mouth						
No Current BURP info available						
AU ID17040212SK013_05: Rock Creek: river mile 25 to mouth						
2008STWFA005	Rock Creek	NA	NA	NA	NA	Inaccessible
2005STWFA045	Rock Creek	NA	NA	NA	NA	Inaccessible/Hi flow
2004STWFA060	Rock Creek	NA	NA	NA	NA	Dry
AU ID17040212SK014_04: Cottonwood Creek: source to mouth						
No Current BURP info available						
AU ID17040212SK015_02: McMullen Creek: source to mouth						
2005STWFF020	McMullen Creek	NA	3	1	2	FS
AU ID17040212SK015_03: McMullen Creek: source to mouth						
2007STWFA129	McMullen Creek	NA	NA	NA	NA	NAssd
AU ID17040212SK027_02: Vinyard Creek: Vinyard Lake to mouth						
No Current BURP info available						
AU ID17040212SK012_02: Cedar Draw: source to mouth						
No Current BURP info available						
AU ID17040212SK028_02: Clear Lakes						
No Current BURP info available						
AU ID17040212SK010_02: Mud Creek: Deep Creek Road to mouth						
No Current BURP info available						
AU ID17040212SK010_03: Mud Creek: Deep Creek Road to mouth						
No Current BURP info available						
AU ID17040212SK011_02: Mud Creek: source to Deep Creek Road						
No Current BURP info available						
AU ID17040212SK008_03: Deep Creek: High Line Canal to mouth						
2008STWFA014	Deep Creek	NA	NA	NA	NA	Inaccessible
AU ID17040212SK009_02: Deep Creek: source to High Line Canal						

Burp ID #	Stream/Location	Score SMI	Score SFI	Score SHI	Assessment Score	Support Status
No Current BURP info available						
AU ID17040212SK007_02: Blind Canyon Creek						
No Current BURP info available						
AU ID17040213SK001_06: Salmon Falls Creek						
No Current BURP (this site falls under Large Rivers protocols)						
AU ID17040212SK005_02: Riley Creek: South side of Snake River (East of Yahoo Cr)						
No Current BURP info available						
AU ID17040212SK031_02: Thousand Springs						
No Current BURP info available						
AU ID17040212SK033_02: Billingsley Creek						
No Current BURP info available						
AU ID17040219SK001_06: Malad River: Confluence of Black Canyon Creek & Big Wood River to Snake River						
No Current BURP (this site falls under Large Rivers protocols)						
AU ID17040212SK034_04: Clover Creek: Pioneer Reservoir Dam to mouth						
2007STWFA122	Clover Creek	NA	NA	NA	NA	Dry
AU ID17040212SK036_02: Clover Creek: source to Pioneer Reservoir						
No Current BURP info available						
AU ID17040212SK000_02: Unclassified Waters in CU 17040212						
2007STWFA120	Unnamed Stream	NA	NA	NA	NA	Dry
2007STWFA121	Cottonwood Creek	NA	NA	NA	NA	Dry
2008STWFA061	Goat Springs	NA	NA	NA	NA	Dry
AU ID17040212SK000_03: Unclassified Waters in CU 17040212						
2008STWFA059	Deep Creek	NA	NA	NA	NA	Dry
AU ID17040212SK000_03A: Unclassified Waters in CU 17040212						
	Yahoo Creek	No Current BURP info available				
AU ID17040212SK019_02: Alpheus Creek						
	Alpheus Creek	No Current BURP info available				
AU ID17040212SK007_02: Ellison Creek, Crystal Spring						
	Ellison Creek	No Current BURP info available				
	Crystal Spring	No Current BURP info available				
AU ID17040212SK005_02: Riley Creek						
	Riley Creek	No Current BURP info available				
AU ID17040212SK001_02						
2008STWFA012	Unnamed Stream	NA	NA	NA	NA	NAssd
SMI - stream macro invertebrate index, SHI - stream habitat index, SFI - stream fish index, NA - not available, Cr - Creek, NFS - Not Fully Supporting, NAssd - Not Assessed, FS - Full Support						

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 many of the streams in Upper Snake Rock Subbasin are in need of current BURP data. It is noted that some streams (i.e. Rock Cr, Clover Cr, Cottonwood Cr and Deep Cr) are shown as "Dry" indicating that they are non-perennial streams or diverted; 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 low flow conditions. A "Full Support" status denotes that the stream received an assessment score of 2 or higher, indicating support of beneficial uses.

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 13 includes the most common numeric criteria used in TMDLs; Figure 3provides 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 13. 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

[a] *Escherichia coli* 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

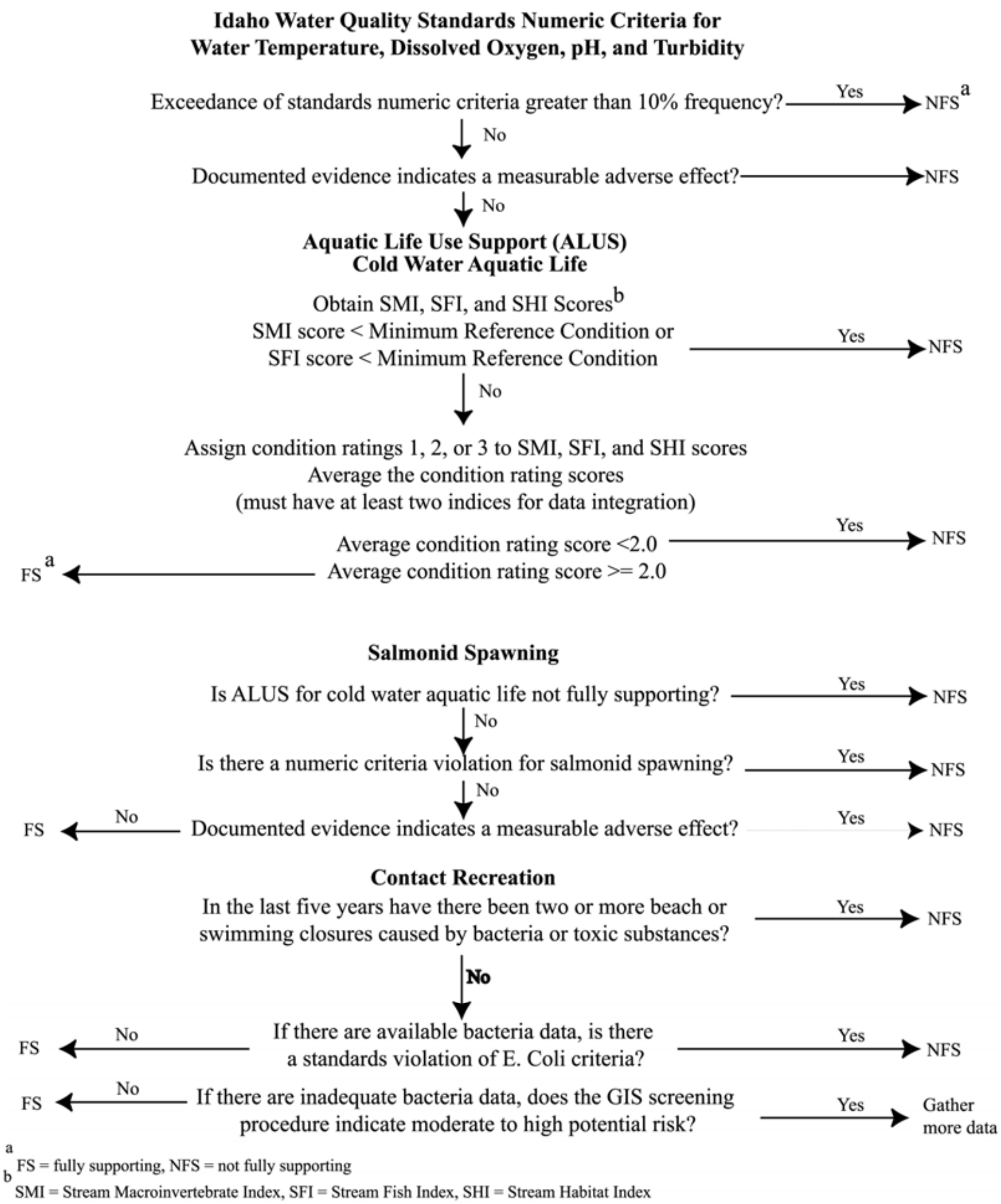

Figure 3. Determination Steps and Criteria for Determining Support Status of Beneficial Uses in Wadeable Streams: Water Body Assessment Guidance, Second Addition (Grafe et al. 2002)

3.2 Changes to Subbasin Characteristics

This section discusses the population, political boundaries, economy, land ownership, land use, roads, dams, diversions, and history with an eye toward how human activity has affected pollutant loads. Therefore, the following subsections address some of the more prominent changes in the Upper Snake Rock Subbasin since the TMDL was finalized.

3.2.1 Major Land Use

The Upper Snake Rock is encompassed by land use / land cover that involves forested lands, range lands, agricultural lands (dry land, irrigated lands) and with very little riparian lands – wetlands. Table 14 provides a summary and comparison of the major land use (cover) between pre-2000 and an NRCS study conducted in 2006. In general, few changes have occurred in the land use (cover) since the development and approval of the Upper Snake Rock TMDL.

Table 14. Major Land Use (Cover) in the Upper Snake Rock Subbasin Total Area.

Land Cover	Pre-2000	NRCS 2006
Range Lands	54%	42%
Riparian Lands – Wetlands	<1%	1%
Forested Lands	<5%	<1%
Agricultural Lands	41%	56%
Total Land Cover	100%	99%
Total Acres	1,536,880 acres	1,608,990 acres

Forested Lands = Lands managed by USFS. Range Lands = Lands managed by BLM and IDL for shrub/rangelands. Agricultural Lands = Lands managed privately for grain crops, grass/pasture/hay lands, orchards/vineyards/berries, and row crops. Riparian Lands - Wetlands = Lands managed as riparian lands, wetlands, water and barren lands.
Pre-2000 data from the Upper Snake Rock TMDL, p. 14-15 (Land Use and Ownership); and p. 4 NRCS 2006 Study = Upper Snake-Rock 17040212, 8 Digit Hydrologic Unit Profile, March 2006. Total Acres for Pre-2000 came from the Upper Snake Rock TMDL, Table 6, p 17

3.2.2 Major Land Ownership

The Upper Snake Rock Subbasin is encompassed by the land use/land ownership that covers over 1.5 million acres in an eight county area. A comparison of the pre-2000 major land ownership versus an NRCS 2006 study shown in Table 15 and indicates that a slight shift in the major land use ownership.

Table 15. Major Land Ownership in the Upper Snake Rock Subbasin Total Area.

Land Ownership	Pre-2000	NRCS 2006
Public Lands	57%	46%
Privately Owned	42%	54%
Tribal	<1%	<1%
Total Land Cover	Approximately 100%	100%
Total Acres	1,536,880	1,608,990

Public Lands = BLM, USFS, National Parks & Monuments & Idaho State Lands. Private Owned Lands = Agriculture.
Pre-2000 data from Upper Snake Rock TMDL, p. 14-15 (Land Use Ownership).
NRCS 2006 Study = Upper Snake-Rock 17040212, 8 Digit Hydrologic Unit Profile, March 2006. Total Acres for Pre-2000 came from the Upper Snake Rock TMDL (approved 2000), Table 6, p 17.

3.2.3 NPDES Facilities

The Upper Snake Rock Subbasin has more point source facilities than any other subbasin in Idaho. Point sources located on 303(d) listed waters are identified in table-format in Appendix B:

- The table includes both the GAP number referenced in the Upper Snake Rock Modification, the IDG number currently use to identify the different aquaculture facilities, and municipality NPDES numbers. The table summarizes the status of the facility as active, not-producing, or non-permitted based on the availability of Discharge Monitoring Reports (DMR).

- A General Aquaculture Permit was issued for aquaculture facilities in 2006. The new permits contain a pollutant trading option aimed at achieving water quality improvement more efficiently than through a traditional permitting approach. These permits will be reviewed in the next evaluation of the Upper Snake Rock TMDL.

- Municipalities are identified by NPDES (National Pollutant Discharge Elimination System) numbers. These permits are to be reviewed and renewed by EPA every 5 years. Population growth, industry development, and low flow within the Snake River make permit limits difficult to achieve without implementing expensive modifications to the waste treatment processes.

3.2.4 Predicted Trends in Land Use

Areas of land use change that may have an impact to water quality are listed as follows:

- Conversion of agricultural lands to residential, commercial, and industrial developments.

- Recreational attraction to public lands and the Snake River.

- A shift in the natural landscape to regional urban centers.

- A concern for open space, undeveloped lands being protected for future recreation, watershed protection, and water quality protection, minimizing natural habitat destruction. Once an open tract of land is developed, it is highly unlikely that the natural landscape will be protected for future use.

- Maintaining scenic views of the Snake River and back road areas on public lands is important in order for the population to tie into the natural environment of the area.

The basic general trend in land use changes focuses on increased recreational pressure, economic, urban, and rural development. In 1997, it was estimated that the population in southern Idaho would increase by 40% (MSRRWG 1997). Although that trend has essentially stabilized in population growth (since 2006), attracting economic development is being heightened at county and city levels.

In 2004, the Norwest Power Conservation Council (NPCC) had a technical team evaluate the conversion of land use and determined that the pressure for such conversion was high industry and population began to increase the local growth centers (NPCC 2004).

3.2.5 Locations and Types of Pollutant Load Controls

In Section 2.3, Control and Monitoring Points were discussed as the basis of the Trend Monitoring Plan (or Goal) as initially discussed in the Upper Snake Rock TMDL (Section 3.6.03, pp 207-209). Then, in Section 2.4, the Load Capacity was discussed as an implementation planning effort between point sources and nonpoint sources.

- Point Sources. The point sources are described as application of their NPDES permit; initially in Table 4 – Table 10 as the TMDL WLAs. These sources are defined more specifically in Appendix B.

- Nonpoint Sources. The nonpoint sources are described initially in Table 2.3a (in the 5-Year Review) as load allocations (LAs). These are defined more specifically in Section 2.4.2.

3.2.6 New Industries

Table 16 and Table 17 compare populations in the larger counties and cites, respectively, in 2000 and 2006 (post-TMDL). Population has increased by 12.7% countywide and 7.5% within the major cities.

Table 16. Population Growth and Household Statistics in Upper Snake Rock Subbasin

Main Counties	Year 2000	Year 2006
Population per County Area		
Twin Falls County	64,284	74,284
Jerome County	18,342	20,468
Gooding County	14,155	14,295
Overall Total Population	96,781	109,047
12.7% increase in population		
Household Units per County Area		
Twin Falls County	23,853	29,783
Jerome County	6,298	7,348
Gooding County	5,046	5,969
Overall Household Units	35,197	43,100
22.5% increase in household units		
Source:http://quickfacts.census.gov/gdf/states/16/16083.html		

Table 17. Population Growth in Major Cities in the Upper Snake Rock Subbasin.

Major Cities	Year 2000	Year 2006
Population per Major City		
City of Twin Falls	33,296	36,742
City of Jerome	7,453	8,039
City Wendell	2,306	2,335
City of Kimberly	2,700	2,700
City of Buhl	3,810	4,019
City of Hagerman	776	685
City of Filer	1,701	1,690
City of Bliss	219	271
City of Hansen	937	984
City of Murtaugh	145	141
City of Castleford	189	277
City of Hollister	174	239
Overall Total Population	53,532	57,883
7.5% Increase in Overall Total Population		
Source: 2000 Directory of Idaho Government Officials, 2006 Directory of Idaho Government Officials		

Growth in both population and housing units have been steady in the Upper Snake Rock Subbasin from 2000 to 2006, but 2007 saw a 20% reduction in the number of building permits issued. In response to the growth that occurred in the Upper Snake Rock Subbasin through 2006, public and private sectors worked together to diversify and strengthen local economies by attracting new businesses and facilitating expansion opportunities. The following list indicates the type of businesses that are new to the subbasin or experienced a significant expansion (Southern Idaho Economic Development Organization: The First 5 Years 2001-2006):

- Technical support/service center
- Food distribution
- Furniture manufacturing
- Paper and plastic product manufacturing
- Milk processing plants – dry milk, cheese and whey products
- Potato processing plant
- Storage, distribution and logistics services
- Metal building manufacturing and distribution
- Livestock feed supplement processing plant
- Recreational vehicle and trailer manufacturing

The addition of these businesses as well as growth in population and household units to the Upper Snake Rock Subbasin has brought about changes to local counties and cities, causing some cities to consider infrastructure upgrades to their sewage and drinking water connections.

3.2.5 Changes in Water Resource Activities, Dams, Diversions, Withdrawals

The most dramatic concern in water resource management is the decline in spring flows and groundwater levels in southern Idaho. This concern was expressed in 1996 as a consequence of measured groundwater levels compared to 1980 measurements. Declines of up to 10 feet or more in nearly all areas of the10,100 square mile Eastern Snake River Plain Aquifer have appeared and continue to decline as the water resource is developed by various industries. Hundreds of thousands of acres of irrigated farmland depend on the annual delivery of that water from the Snake River and this resource is slowly being depleted and affected by these reduced water levels and by long periods of drought.

In addition, reduced water levels in the Snake River and various tributaries have the potential to have increased aquatic plant growths (i.e. macrophytes and algae) because the amount of water may be so reduced that it is conducive to nuisance aquatic plant growths that grow as a consequence of reduced flow, eutrophication and reduced water velocity. Diversions and withdrawals highlight much of the water in the Snake River and tributaries in the Upper Snake Rock Subbasin. In fact, reduced water flows have a tendency to do the following:

- Enhance higher stream temperatures.
- Reduce dissolved oxygen levels if temperature levels are enhanced.
- Enhance growth of nuisance aquatic plants if the water flow has a reduced water velocity; thus causing stagnation.
- Enhance growth of algal mats if eutrophication is a characteristic of the stream.

- Negatively impact downstream users if a reduction in the natural stream flows is coupled with a discharge of lower quality drainage water from agricultural drains.

- Reduce the ecological requirements if there are large changes to low flows (±20%), which may potentially alter micro-habitats, of which wetlands are a special case.

3.3 Summary and Analysis of Current Water Quality Data

Table 18 lists water quality data generated since the development of the TMDL

Table 18. Summary of Water Quality Data collected September 2007 – July 2008.

Parameter	BU	Number 2008	Mean 2008	Post TMDL Results (2004-2008)	Confidence	% Exceedances 2000	% Exceedances 2008
Dry Creek: headwaters to Murtaugh Lake - September 2007 - September 2008							
Temp, ° C	CWA/SS	4	15.18	All values <22° C & 3 exceed 13° C	Low	n/d	0/75
DO, mg/L	CWA & SS	4	7.46	All values >6.0 mg/L	Low	n/d	0
pH	CWA	4	7.94	All values >6.5 and 1 value exceeds 9	Low	n/d	0-25
TP, mg/L	TMDL	3	0.14	All values exceed 0.100 mg/L	Low	n/d	100
TSS, mg/L	TMDL	3	14.67	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	3	1549.87	All values exceed 576 cfu/100 mL	Low	n/d	100
Tool Box Creek: headwaters to 5th Fork Rock Creek – May 2008 – September 2008							
Temp, ° C	CWA	3	11.48	All values <22° C	Low	n/d	0
DO, mg/L	CWA & SS	3	7.57	All values >6.0 mg/L	Low	n/d	0
pH	CWA	3	8.22	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	2	0.05	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	2	3.5	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	2	56.45	All values <576 cfu/100 mL	Low	n/d	0
Rock Creek: headwaters to Rock Creek Town – May 2004 – October 2008							
Temp, ° C	CWA/SS	45	6.85	All values <22° C & 3 exceed 13° C	High	n/d	0/6.7
DO, mg/L	CWA & SS	45	10.05	All values >6.0 mg/L	High	n/d	0
pH	CWA	45	7.46	All values >6.5 & <9	High	n/d	0
TP, mg/L	TMDL	45	0.03	All values <0.100 mg/L	High	93	0
TSS, mg/L	TMDL	45	4.05	All values <52.0 mg/L	High	25	0
E. coli, cfu/100m/L	PCR	43	64.35	2 values exceed 406 cfu/100 mL	High	28.0	4.7
5th Fork Rock Creek: headwaters to Rock Creek - 2008 March – September 2008							
Temp, ° C	CWA/ SS	8	13.66	1 exceed 22° C & 4 values exceed	Low	n/d	12.5/50
DO, mg/L	CWA & SS	8	9.06	All values >6.0 mg/L	Low	n/d	0
pH	CWA	7	8.13	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	4	0.04	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	4	8.5	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	4	55.83	All values <576 cfu/100 mL	Low	n/d	0
Rock Creek: Rock Creek Town to mouth – May 2004 – October 2008							
Temp, ° C	CWA/SS	183	10.72	All values <22°C & 68 exceed 13° C	High	n/d	0/37.2
DO, mg/L	CWA & SS	182	10.42	2 values below 6.0 mg/L	High	n/d	0.0
pH	CWA	182	8.16	All values >6.5 & 1 value exceeds 9	High	n/d	0.0
TP, mg/L	TMDL	161	0.08	38 values exceed 0.100 mg/L	High	93	23.6
TSS, mg/L	TMDL	161	20.13	10 values exceed 52.0 mg/L	High	25	6.2
E. coli, cfu/100m/L	SCR	162	350.33	23 values exceed 576 cfu/100 mL	High	17.1	14.2
Cottonwood Creek: headwaters to mouth (at Foothill Road) – March 2008 – September 2008							
Temp, ° C	SS	1	16.33	Value exceeds 13° C	Low	n/d	100

Parameter	BU	Number 2008	Mean 2008	Post TMDL Results (2004-2008)	Confidence	% Exceedances 2000	2008
DO, mg/L	CWA & SS	1	6.21	Value >6.0 mg/L	Low	n/d	0
pH	CWA	1	7.79	Value >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	1	0.13	Value exceed <0.100 mg/L	Low	n/d	100
TSS, mg/L	TMDL	1	110	Value exceed <52.0 mg/L	Low	n/d	100
E. coli, cfu/100m/L	SCR	1	191.8	Value <576 cfu/100 mL	Low	n/d	0
McMullen Creek - January 2008 - September 2008							
Temp, ° C	CWA	3	5.25	All values <22° C	Low	n/d	0
DO, mg/L	CWA & SS	3	5.25	1 value below 6.0 mg/L	Low	n/d	33.3
pH	CWA	3	7.92	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	3	0.14	2 values exceed 0.100 mg/L	Low	n/d	66.6
TSS, mg/L	TMDL	3	44.17	1 value exceed 52.0 mg/L	Low	n/d	33.3
E. coli, cfu/100m/L	SCR	3	206.07	2 values exceed 576 cfu/100 mL	Low	n/d	66.6
Vinyard Creek: headwaters to mouth – October 2007 - September 2008							
Temp, ° C	CWA	5	13.92	All values <22° C	Low	n/d	0
DO, mg/L	CWA & SS	6	10.54	All values >6.0 mg/L	Low	n/d	0
pH	CWA	6	8.27	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	6	0.03	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	6	2.97	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	6	152.47	1 value exceed 576 cfu/100 mL	Low	n/d	16.7
Alpheus Creek: headwaters to mouth – October 2007 -September 2008							
Temp, ° C	CWA	3	14.68	All values <22° C	Low	n/d	0
DO, mg/L	CWA & SS	3	8.08	All values >6.0 mg/L	Low	n/d	0
pH	CWA	3	7.97	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	3	0.02	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	3	2.3	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	3	1.08	All values <576 cfu/100 mL	Low	n/d	0
Ellison Creek: - October 2007 - September 2008							
Temp, ° C	CWA	5	14.18	3 values exceed 22° C	Low	n/d	60
DO, mg/L	CWA & SS	5	8.71	All values >6.0 mg/L	Low	n/d	0
pH	CWA	5	8.43	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	5	0.03	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	5	5.7	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	5	13.34	All values <576 cfu/100 mL	Low	n/d	0
Crystal Springs: headwaters to mouth - October 2007 - September 2008							
Temp, ° C	SS	6	14.11	All values exceed 13° C	Low	n/d	100
DO, mg/L	CWA & SS	6	9.09	All values >6.0 mg/L	Low	n/d	0
pH	CWA	6	8.09	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	6	0.03	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	6	1.83	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	PCR	6	3.32	All values <406 cfu/100 mL	Low	n/d	0
Cedar Draw: headwaters to mouth - September 2007 - September 2008							
Temp, ° C	CWA/ SS	11	11	All values <22° C & 6 exceed 13° C	Low	n/d	0/54.5
DO, mg/L	CWA & SS	11	10.01	All values >6.0 mg/L	Low	n/d	0
pH	CWA	11	8.46	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	9	0.15	6 values exceed 0.100 mg/L	Low	95.6	66.7
TSS, mg/L	TMDL	9	42.56	4 value exceed 52.0 mg/L	Low	54.9	44.4
E. coli, cfu/100m/L	SCR	9	323.03	2 values exceed 576 cfu/100 mL	Low	15.6	22.2
Niagara Springs - October 2007 - September 2008							
Temp, ° C	CWA	6	14.13	All values <22° C	Low	n/d	0

Parameter	BU	Number 2008	Mean 2008	Post TMDL Results (2004-2008)	Confidence	% Exceedances 2000	2008
DO, mg/L	CWA & SS	6	8.92	All values >6.0 mg/L	Low	n/d	0
pH	CWA	6	8.19	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	6	0.02	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	6	1.5	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	5	0.7	All values <576 cfu/100 mL	Low	n/d	0
Clear Lakes: headwaters to mouth - October 2007 - September 2008							
Temp, ° C	SS	6	14.14	All values exceed 13° C	Low	n/d	100
DO, mg/L	CWA & SS	6	8.41	All values >6.0 mg/L	Low	n/d	0
pH	CWA	6	7.91	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	6	0.12	5 values exceed 0.100 mg/L	Low	n/d	83.3
TSS, mg/L	TMDL	6	2.17	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	6	82.82	All values <576 cfu/100 mL	Low	n/d	0
Briggs Creek: headwaters to mouth - October 2007 - September 2008							
Temp, ° C	SS	6	14.34	All values exceed 13° C	Low	n/d	0
DO, mg/L	CWA & SS	5	9.72	All values >6.0 mg/L	Low	n/d	0
pH	CWA	6	7.84	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	5	0.03	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	5	1.3	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	5	0.6	All values <576 cfu/100 mL	Low	n/d	0
Mud Creek - September 2007 - September 2008							
Temp, ° C	CWA/SS	6	11.42	All values <22° C & 2 exceed 13° C	Low	n/d	0/33.3
DO, mg/L	CWA & SS	6	10.7	All values >6.0 mg/L	Low	n/d	0
pH	CWA	6	8.48	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	5	0.14	All values exceed 0.100 mg/L	Low	96	100
TSS, mg/L	TMDL	5	12.8	All values <52.0 mg/L	Low	7.6	0
E. coli, cfu/100m/L	SCR	5	489.2	2 values exceed 576 cfu/100 mL	Low	33.9	40
Deep Creek: headwaters to mouth - September 2007 - September 2008							
Temp, ° C	CWA/SS	6	11.15	All values <22° C & 2 exceed 13° C	Low	n/d	0/33.3
DO, mg/L	CWA & SS	6	10.21	All values >6.0 mg/L	Low	n/d	0
pH	CWA	6	8.76	All values >6.5 and 1 value exceed 9	Low	n/d	0-16.6
TP, mg/L	TMDL	5	0.22	4 values exceed 0.100 mg/L	Low	74.2	80
TSS, mg/L	TMDL	5	85.4	2 values exceed 52.0 mg/L	Low	15.6	40
E. coli, cfu/100m/L	SCR	5	269.86	All values <576 cfu/100 mL	Low	5.8	0
Bickle Springs: headwaters to mouth - September 2007 - October 2008							
Temp, ° C	CWA	5	15.28	All values <22° C	Low	n/d	0
DO, mg/L	CWA & SS	5	9.41	All values >6.0 mg/L	Low	n/d	0
pH	CWA	5	8.17	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	4	0.02	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	4	1.63	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	4	2.88	All values <576 cfu/100 mL	Low	n/d	0
Riley Lake - September 2007 - July 2008							
Temp, ° C	CWA	5	14.67	All values <22° C	Low	n/d	0
DO, mg/L	CWA & SS	5	9.13	All values >6.0 mg/L	Low	n/d	0
pH	CWA	5	8.27	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	4	0.02	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	4	1.13	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	PCR	4	64.35	All values <406 cfu/100 mL	Low	n/d	0
Riley Creek - September 2007- July 2008							
Temp, ° C	CWA/SS	6	15.61	All values <22° C & 4 exceed 13° C	Low	n/d	0/66.6

Parameter	BU	Number 2008	Mean 2008	Post TMDL Results (2004-2008)	Confidence	% Exceedances 2000	2008
DO, mg/L	CWA & SS	6	10.03	All values >6.0 mg/L	Low	n/d	0
pH	CWA	6	8.39	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	5	0.04	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	5	2.5	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	PCR	5	31.18	All values <406 cfu/100 mL	Low	n/d	0
Blind Canyon Creek (Cedar Draw Creek): headwaters to mouth - October 2007 - September 2008							
Temp, ° C	CWA	4	12.62	All values <22° C	Low	n/d	0
DO, mg/L	CWA & SS	3	9.26	All values >6.0 mg/L	Low	n/d	0
pH	CWA	4	8.21	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	3	0.82	One value exceeding 0.100 mg/L	Low	n/d	33.3
TSS, mg/L	TMDL	3	1.8	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	3	13.1	All values <576 cfu/100 mL	Low	n/d	0
Box Canyon Creek: headwaters to mouth - January 2008 - September 2008							
Temp, ° C	CWA	7	14.82	All values <22° C	Low	n/d	0
DO, mg/L	CWA & SS	7	9.46	All values >6.0 mg/L	Low	n/d	0
pH	CWA	7	8.15	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	5	0.02	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	5	0.8	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	4	1.9	All values <576 cfu/100 mL	Low	n/d	0
Salmon Falls Creek: headwaters to mouth – September 2007 - July 2008							
Temp, ° C	CWA/SS	7	13.11	All values <22° C & 3 exceed 13° C	Low	n/d	0/42.9
DO, mg/L	CWA & SS	7	11.48	All values >6.0 mg/L	Low	n/d	0
pH	CWA	7	8.76	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	5	0.09	1 value exceed 0.100 mg/L	Low	55.5	20
TSS, mg/L	TMDL	5	27.06	1 value exceed 52.0 mg/L	Low	5.9	20
E. coli, cfu/100m/L	PCR	5	138.96	All values <406 cfu/100 mL	Low	6.3	0
Sand Springs: headwaters to mouth – October 2007 - September 2008							
Temp, ° C	CWA	5	15.11	All values <22° C	Low	n/d	0
DO, mg/L	CWA & SS	5	10.04	All values >6.0 mg/L	Low	n/d	0
pH	CWA	5	8.49	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	5	0.04	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	5	4.3	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	5	125.1	All values <576 cfu/100 mL	Low	n/d	0
Thousand Springs (Ritter Springs): headwaters to mouth – October 2007 - September 2008							
Temp, ° C	CWA	5	14.3	All values <22° C	Low	n/d	0
DO, mg/L	CWA & SS	5	8.65	All values >6.0 mg/L	Low	n/d	0
pH	CWA	5	8.28	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	5	0.02	All values <0.100 mg/L	Low	n/d	0
TSS, mg/L	TMDL	5	1.4	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	SCR	5	2.48	All values <576 cfu/100 mL	Low	n/d	0
Billingsley Creek: headwaters to mouth - September 2007 - October 2008							
Temp, ° C	CWA/SS	9	14.24	All values <22° C & 7 values exceed 13° C	Low	n/d	0/77.7
DO, mg/L	CWA & SS	9	10.06	All values >6.0 mg/L	Low	n/d	0
pH	CWA	9	8.07	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	5	0.07	All values <0.100 mg/L	Low	65.1	0
TSS, mg/L	TMDL	5	2.5	All values <52.0 mg/L	Low	0	0
E. coli, cfu/100m/L	PCR	5	31.58	All values <406 cfu/100 mL	Low	10.5	0
Malad River - September 2007 - October 2008							

Parameter	BU	Number 2008	Mean 2008	Post TMDL Results (2004-2008)	Confidence	% Exceedances 2000	2008
Temp, ° C	CWA/SS	7	15.09	All values <22° C & all exceed 13° C	Low	n/d	0/100
DO, mg/L	CWA & SS	7	9.11	All values >6.0 mg/L	Low	n/d	0
pH	CWA	7	8.45	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	4	0.03	All values < 0.100 mg/L	Low	37.5	0
TSS, mg/L	TMDL	4	2.83	All values <52.0 mg/L	Low	2.5	0
E. coli, cfu/100m/L	PCR	4	5.78	All values <406 cfu/100 mL	Low	21.7	0
Clover Creek: headwaters to Pioneer Reservoir - December 2007 - September 2008							
Temp, ° C	CWA/SS	9	9.47	1 value exceed 22° C & 3 exceed 13°C	Low	n/d	11.1/33.3
DO, mg/L	CWA & SS	10	10.13	All values >6.0 mg/L	Low	n/d	0
pH	CWA	10	8.1	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	8	0.08	2 values exceed 0.100 mg/L	Low	52.9	25.0
TSS, mg/L	TMDL	8	4.88	All values <52.0 mg/L	Low	0.0	0
E. coli, cfu/100m/L	PCR	8	16.5	All values <406 cfu/100 mL	Low	11.8	0
Pioneer Reservoir - March 2008 - August 2008							
Temp, ° C	SS	4	12.38	All values exceed 13° C	Low	n/d	100
DO, mg/L	CWA & SS	4	8.13	1 value below 6.0 mg/L	Low	n/d	25
pH	CWA	4	7.73	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	4	0.16	3 values below 0.100 mg/L	Low	n/d	75
TSS, mg/L	TMDL	4	16	All values <52.0 mg/L	Low	n/d	0
E. coli, cfu/100m/L	PCR	4	14.3	All values <406 cfu/100 mL	Low	n/d	0
Clover Creek: Pioneer Reservoir to mouth - May 2008 - September 2008							
Temp, ° C	CWA/SS	3	16.79	1 value exceed 22° C & all exceed 13° C	Low	n/d	33.3/ 100
DO, mg/L	CWA & SS	3	9.56	All values >6.0 mg/L	Low	n/d	0
pH	CWA	3	8.2	All values >6.5 & <9	Low	n/d	0
TP, mg/L	TMDL	2	0.02	All values <0.100 mg/L	Low	52.9	0
TSS, mg/L	TMDL	2	2.5	All values <52.0 mg/L	Low	0.0	0
E. coli, cfu/100m/L	PCR	2	89.4	All values <406 cfu/100 mL	Low	11.8	0
BU = Beneficial Use, CWAL = Cold Water Aquatic Life, SS = Salmonid Spawning, N = number of samples, n/d = no data Confidence: Low = N<15, Medium = N<30, High = N>30 See Upper Snake Rock Watershed Management Plan Pg 118-121							

In summary, the table showed the following:

- Streams where TSS does not meet TMDL water quality target: Cedar Draw, Cottonwood Creek, Deep Creek, and McMullen Creek.

- Streams where TP does not meet TMDL water quality target: Blind Canyon Creek, Cedar Draw, Clear Springs, Cottonwood Creek, Deep Creek, Dry Creek, McMullen Creek, Mud Creek, Pioneer Reservoir, Rock Creek (RC town to mouth), and Clover Creek.

- Streams where *E. coli* exceeded the one time measurement water quality standard and additional samples should be gathered in a 30 day period: Cedar Draw, Dry Creek, McMullen Creek, Mud Creek, Rock Creek (RC town to mouth) and Vinyard Creek.

Table 19. Summary of Water Quality Data collected since 2000 on the Snake River.

	Milner Dam (MD)		Pillar Falls (PF)		Crystal Springs (CS)		Box Canyon (BC)		Gridley Bridge (GB)		Shoestring Bridge (SB)		King Hill (KH)	
TSS, mg/L	<2000	>2000	<2000	>2000	<2000	>2000	<2000	>2000	<2000	>2000	<2000	>2000	<2000	>2000
N	199	97	63	101	61	99	152	98	77	99	14	98	29	98
Min	0.2	0.3	2.0	0.5	<0.0	0.1	2.0	0.5	0.5	0.5	18.0	0.5	3.0	0.5
Mean	**15.1**	**11.4**	**18.7**	**10.6**	**27.0**	**9.8**	**26.1**	**7.8**	**25.0**	**6.4**	**40.7**	**8.0**	**43.9**	**76.0**
Max	77.0	35.0	50.0	79.0	65.0	56.0	134.0	54.0	109.0	130.0	156.0	32.0	305.0	30.0
Median	**15.0**	**10.5**	**16.0**	**8.0**	**25.0**	**8.0**	**18.0**	**6.6**	**17.0**	**4.0**	**33.0**	**7.4**	**27.0**	**6.2**
TP, mg/L														
N	199	97	95	99	94	99	207	98	131.0	99.0	14	98	29	98
Min	0.030	0.029	0.049	0.005	0.060	0.051	0.018	0.035	0.022	0.038	0.074	0.033	0.076	0.010
Mean	**0.164**	**0.137**	**0.101**	**0.102**	**0.137**	**0.142**	**0.119**	**0.111**	**0.112**	**0.094**	**0.116**	**0.097**	**0.118**	**0.081**
Max	0.900	0.410	0.270	0.910	0.300	1.400	0.430	0.229	0.400	0.236	0.263	0.620	0.471	0.190
Median	**0.100**	**0.117**	**0.090**	**0.077**	**0.135**	**0.122**	**0.111**	**0.107**	**0.100**	**0.088**	**0.104**	**0.083**	**0.100**	**0.078**
E. coli, cfu/100mL														
N		96		100		98		97		99		97		97
Min		0		1		1		1		1		1		1
Mean		**3**		**15**		**14**		**25**		**21**		**7**		**7**
Max		50		980		80		500		687		110		52
Median		**1**		**2**		**10**		**10**		**8**		**4**		**4**
pH														
N	199	98	67	100	66	101	122	101	101	101	15	102	30	100
Min	6.90	7.41	6.5	7.66	7.1	7.60	6.90	7.61	6.90	7.59	7.92	7.65	7.91	7.38
Mean	**8.57**	**8.54**	**8.4**	**8.46**	**8.3**	**8.40**	**8.23**	**8.32**	**8.15**	**8.23**	**8.23**	**8.35**	**8.25**	**8.43**
Max	9.40	9.60	8.9	9.40	9.0	9.40	9.05	9.00	8.79	8.80	8.40	8.90	8.45	9.08
Median	**8.60**	**8.55**	**8.4**	**8.47**	**8.4**	**8.45**	**8.23**	**8.36**	**8.16**	**8.27**	**8.26**	**8.37**	**8.28**	**8.50**
DO, mg/L														
N	199	98	61	98	60	99	112	99	89	99	15	100	30	99
Min	6.6	4.2	5.3	6.6	6.7	5.8	7.1	5.2	7.1	5.8	6.19	6.80	5.44	6.0
Mean	**10.3**	**10.2**	**9.8**	**9.8**	**9.7**	**10.3**	**10**	**9.6**	**9.7**	**9.3**	**9.25**	**9.80**	**9.50**	**9.8**
Max	17.0	20.0	14.3	13.8	14.7	14.7	15.6	14.4	14.5	12.8	14.81	12.40	12.27	15.7
Median	**10.4**	**9.7**	**9.5**	**9.8**	**9.6**	**10.3**	**9.5**	**9.4**	**9.2**	**9.2**	**9.14**	**9.70**	**9.22**	**9.7**
Temp, °C														
N	199	98	67	99	65	100	123	100	101	100	15	100	30	98
Min	0.00	-2.14	1.2	-1.20	1.5	1.68	2.11	1.68	2.97	2.05	7.63	1.98	8.06	1.36
Mean	**10.95**	**11.81**	**14.7**	**11.81**	**15.0**	**12.57**	**14.47**	**13.08**	**14.40**	**12.90**	**16.07**	**12.93**	**16.08**	**12.85**
Max	24.20	23.50	21.6	24.20	22.0	24.00	24.00	21.00	22.00	23.00	19.61	21.00	19.65	22.00
Median	**10.69**	**9.75**	**16.0**	**12.00**	**16.0**	**12.51**	**16.00**	**12.70**	**15.40**	**12.30**	**17.56**	**12.95**	**17.42**	**12.60**

Water quality data was compared from the years 2000 to 2008 - loads were not considered. Original TMDL written for Fecal Coliform, WQ standards were changed to evaluate E. coli

Beneficial uses are protected by a set of criteria, which include narrative criteria and numeric criteria. As previously discussed in Section 2.1, the narrative criteria were converted to numeric TMDL criteria as instream water quality targets (or instream water quality TMDL standards). These standards are shown in Table 3 on page 7.

3.4 Beneficial Uses – Assessment

This section provides a current beneficial use status determination following the water body assessment process.

3.4.1 Appropriateness of Use Designations

DEQ reviewed the use designations, described in Table 20 (of the 5-Year Review) and, at the present time, concurs with those designations–both designated and existing. DEQ does not support a change in any of these designations until such time as sufficient corroborative weight-of-evidence exists that indicates otherwise.

3.4.2 Status of Beneficial Use Support

The beneficial uses the water bodies of the Upper Snake Rock Subbasin are protected by a set of criteria, which include narrative criteria and numeric criteria. The narrative criteria were essentially "converted" to numeric TMDL criteria as instream water quality targets (or instream water quality TMDL standards). It is these numeric instream water quality TMDL standards that are used to preliminarily assess the beneficial use support status for the Section 303(d) streams.

Table 20 and Table 21 provide a summary of the beneficial use support status of the Snake River and the tributaries based on the numeric instream water quality TMDL standards of the Upper Snake Rock TMDL. The beneficial uses shown are primarily for cold water aquatic life, primary and secondary contact recreation, salmonid spawning, and warm water aquatic life. The domestic water supply and agricultural water supply were not considered in this assessment since they are included for all water bodies under IDAPA regulations.

An evaluation is shown in the tables, followed by an assessment explanation after each table. TP and TSS are included as TMDL criteria that affect SS. *E. coli* is both a beneficial use criterion for PCR and SCR; it is also a TMDL criterion that is identified in the TMDL as instream water quality targets.

Table 20. Summary of Beneficial Use Support Status of the Snake River & Reservoirs.

STREAM: DESIGNATION (MONITORING SITE)	ASSESSMENT UNIT	BENEFICIAL USES	BENEFICIAL USE EVALUATION
Inland Reservoirs			
Pioneer Reservoir: the entire reservoir	17040212SK035	Ag, SCR	SCR: E. coli: 0% values > 576
Snake River Reaches			
Milner Dam to Twin Falls (Milner Dam Monitoring Site)	17040212SK020_07	Ag, CWAL, SS, PCR	CWAL: DO: 0% values < 6.0 mg/L Tem: 6.1% values > 22°C pH: 7.1% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 39.8% values > 13°C TSS: 0% values > 52.0 mg/L TP: 79.4%values>0.075 mg/L PCR: E. coli: 0% values > 406

STREAM: DESIGNATION (MONITORING SITE)	ASSESSMENT UNIT	BENEFICIAL USES	BENEFICIAL USE EVALUATION
Twin Falls to Rock Creek (Pillar Falls Monitoring Site)	17040212SK019_07	Ag, CWAL, SS, PCR	CWAL: DO: 0% values < 6.0 mg/L Tem: 5.1% values > 22°C pH: 4.0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 5.1% values > 13°C TSS: 3% values > 52 mg/L TP: 51.5%values>0.075 mg/L PCR: E. coli: 1.0% values > 406
Rock Creek to Box Canyon Creek (Crystal Springs Monitoring Site)	17040212SK007_07	Ag, CWAL, SS, PCR	CWAL: DO: 1.0% values < 6.0 mg/L Tem: 3.0% values > 22°C pH: 3.0% values > pH 9.0 SS: DO: 1.0% values < 6.0 mg/L Tem: 45.0% values > 13°C TSS: 1% values > 52 mg/L TP: 89.9%values>0.075 mg/L PCR: E. coli: 0% values > 406
Box Canyon Creek to Lower Salmon Falls (Gridley Bridge & Box Canyon Monitoring Sites)	17040212SK005_07	Ag, CWAL, SS, PCR	CWAL: DO: 1.0% values < 6.0 mg/L Tem: 0.5% values > 22°C pH: 0% values > pH 9.0 SS: DO: 1.0% values < 6.0 mg/L Tem: 47.5% values > 13°C TSS: 1% values > 52.0 mg/L TP: 76.1%values > 0.075 mg/L PCR: E. coli: 1.0% values > 406
Lower Salmon Falls to Clover Creek (Shoestring Bridge Monitoring Site)	17040212SK001_07	Ag, CWAL, SS, PCR	CWAL: DO: 0% values < 6.0 mg/L Tem: 0% values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 49.0% values > 13°C

STREAM: DESIGNATION (MONITORING SITE)	ASSESSMENT UNIT	BENEFICIAL USES	BENEFICIAL USE EVALUATION
			TSS: 0% values > 52.0 mg/L TP: 67.3%values>0.075 mg/L PCR: E. coli: 0% values > 406
Clover Creek to King Hill (King Hill Monitoring Site)	17050101SW005_07	Ag, D, CWAL, SS, PCR, SRW	CWAL: DO: 0% values < 6.0 mg/L Tem: 0% values > 22°C pH: 1.0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 46.9% values > 13°C TSS: 0% values > 52.0 mg/L TP: 56.1% values>0.075 mg/L PCR: E. coli: 0% values > 406
AU = Assessment Unit. Ag = Agricultural Water Supply. D = Domestic Water Supply. CWAL = Cold Water Aquatic Life. SS = Salmonid Spawning. PCR = Primary Contact Recreation. SCR = Secondary Contact Recreation.			

It is noted the Middle Snake River is segmented in the Upper Snake Rock TMDL into 6 segments. These segments don't exactly match their respective assessment units:

- Segment 1: Milner Dam to Pillar Falls
- Segment 2: Pillar Falls to Crystal Springs
- Segment 3: Crystal Springs to Box Canyon
- Segment 4: Box Canyon to Gridley Bridge
- Segment 5: Gridley Bridge to Shoestring Bridge
- Segment 6: Shoestring Bridge to King Hill

The newer designations are based on assessment units and do not match exactly with the original segmentation scheme; and may be confusing. Table 16 is based on the assessment units of the Snake River. The following summary discusses the beneficial use status based on the water quality information collected by DEQ, and is based solely on the numeric criteria for CWAL (DO, Tem and pH), SS (DO, Tem, TSS and TP), PCR (E. coli) and SCR (E. coli).

Inland Reservoirs: Pioneer Reservoir

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 4). However, based on the samples collected, and based on the beneficial use of secondary contact recreation, the numeric criterion for E. coli is met by the samples collected.

Snake River: Milner Dam to Twin Falls (Milner Dam Monitoring Site)

DEQ has a high confidence on this assessment based on the high number of samples collected (N = 99 for DO; N = 98 for Tem; N = 98 for pH; N = 96 for E. coli; N = 97 for TSS; N = 97 for TP). The beneficial use support status of the Snake River from Milner Dam to Rock Creek, based on water quality monitoring conducted by DEQ at the Milner Dam monitoring site, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL. In the case of Tem and pH, only 6.1% and 7.1%, respectively, of the samples exceeded the > 22°C and > pH 9.0 criteria, which are well below 10% of the total percent of exceedances that is allowed to compensate for variability.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. However, the numeric criterion for Tem is not met 39.8% of the time (because the 13°C value is exceeded). The TMDL numeric criterion for TSS is met. However, the TP TMDL numeric criterion is not met 79.4% of the time.

- PCR. The numeric criterion for E. coli in general meets the beneficial use for PCR; indicating that in general, the PCR beneficial use is met for E. coli.

Snake River: Twin Falls to Rock Creek (Pillar Falls Monitoring Site)

DEQ has a high confidence on this assessment based on the high number of samples collected (N = 98 for DO; N = 99 for Tem; N = 100 for pH; N = 100 for E. coli; N = 101 for TSS; N = 99 for TP). The beneficial use support status of the Snake River from Twin Falls to Rock Creek, based on water quality monitoring conducted by DEQ at the Pillar Falls monitoring site, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL. In the case of Tem and pH, only 5.1% and 4%, respectively, of the samples exceeded the > 22°C and > pH 9.0 criteria, which are well below 10% of the total percent of exceedances that is allowed to compensate for variability.

- SS. The numeric criterion for DO in general meets the beneficial use for SS; indicating that in general, the SS beneficial use is met for DO. The numeric criterion for Tem in general meets the beneficial use for SS, although 5.1% of the values exceed the 13°C numeric criterion, which is well below 10% of the total percent of exceedances that is allowed to compensate for variability. The TMDL numeric criterion for TSS is not met 3% of the time, which is well below 10% of the total percent of exceedances that is allowed to compensate for variability. However, the TP TMDL numeric criterion is not met 51.5% of the time.

- PCR. The numeric criterion for E. coli in general meets the beneficial use for PCR, although 1.0% of the values did exceed the < 406 cfu/100 mL criterion, which is well below the 10% of the total percent of exceedances that is allowed to compensate for variability.

Snake River: Rock Creek to Box Canyon Creek (Crystal Springs Monitoring Site)

DEQ has a high confidence on this assessment based on the high number of samples collected (N = 99 for DO; N = 100 for Tem; N = 101 for pH; N = 98 for E. coli; N = 99 for TSS; N = 99 for TP). The beneficial use support status of the Snake River from Rock Creek to Box Canyon Creek, based on water quality monitoring conducted by DEQ at the Crystal Springs monitoring site, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL. In the case of DO, Tem and pH, only 1%, 3% and 3%, respectively, of the samples exceeded the < 6.0 mg/L, > 22°C and > pH 9.0 criteria, which are well below 10% of the total percent of exceedances that is allowed to compensate for variability.

- SS. The numeric criterion for DO in general meets the beneficial use for SS, although 1.0% of the values did exceed the < 6.0 mg/L criterion, which is well below the 10% of the total percent of exceedances that is allowed to compensate for variability. However, the numeric criterion for Tem is not met 45.0% of the time (because the 13°C value is exceeded). The TMDL numeric criterion for TSS is not met 1% of the time, which is well below 10% of the total percent of exceedances that is allowed to compensate for variability. However, the TP TMDL numeric criterion is not met 89.9% of the time.

- PCR. The numeric criterion for E. coli in general meets the beneficial use for PCR; indicating that in general, the PCR beneficial use is met for E. coli.

Snake River: Box Canyon Creek to Lower Salmon Falls (Gridley Bridge & Box Canyon Monitoring Sites)

DEQ has a high confidence on this assessment based on the high number of samples collected (N = 198 for DO; N = 200 for Tem; N = 202 for pH; N = 196 for E. coli; N = 197 for TSS; N = 197 for TP). The beneficial use support status of the Snake River from Box Canyon Creek to Lower Salmon Falls, based on water quality monitoring conducted by DEQ at the Gridley Bridge and Box Canyon monitoring sites, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL. In the case of DO and Tem, only 1% and 0.5%, respectively, of the samples exceeded the < 6.0 mg/L, and > 22°C criteria, which are well below 10% of the total percent exceedances that is allowed to compensate for variability.

- SS. The numeric criterion for DO in general meets the beneficial use for SS, although 1.0% of the values did exceed the < 6.0 mg/L criterion, which is well below the 10% of the total percent of exceedances that is allowed to compensate for variability. However, the numeric criterion for Tem is not met 47.5% of the time (because the 13°C value is exceeded). The TMDL numeric criterion for TSS is not met 1% of the time, which is well below 10% of the total percent of exceedances that is allowed to compensate for variability. However, the TP TMDL numeric criterion is not met 76.1% of the time.

- SCR. The numeric criterion for E. coli in general meets the beneficial use for SCR, although 1% of the values did exceed the <406 cfu/100 mL criterion which is well below the 10% of the total percent of exceedances that is allowed to compensate for variability.

Snake River: From Lower Salmon Falls to Clover Creek (Shoestring Bridge Monitoring Site)

DEQ has a high confidence on this assessment based on the high number of samples collected (N = 100 for DO; N = 100 for Tem; N = 102 for pH; N = 97 for E. coli; N = 98 for TSS; N = 98 for TP). The beneficial use support status of the Snake River from Lower Salmon Falls to Clover Creek, based on water quality monitoring conducted by DEQ at the Shoestring Bridge monitoring site, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. However, the numeric criterion for Tem is not met 49.0% of the time (because the 13°C value is exceeded). The TMDL numeric criterion for TSS is met. However, the TP TMDL numeric criterion is not met 67.3% of the time.

- PCR. The numeric criterion for E. coli in general meets the beneficial use for PCR; indicating that in general, the PCR beneficial use is met for E. coli.

Snake River: From Clover Creek to King Hill (King Hill Monitoring Site)

DEQ has a high confidence on this assessment based on the high number of samples collected (N = 99 for DO; N = 98 for Tem; N = 100 for pH; N = 97 for E. coli; N = 98 for TSS; N = 98 for TP). The beneficial use support status of the Snake River, from Clover Creek to King Hill based on water quality monitoring conducted by DEQ at the King Hill monitoring site, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL. In the case of pH, only 1% of the samples exceeded the pH 9.0 criterion, which is well below 10% of the total percent of exceedances that is allowed to compensate for variability.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. However, the numeric criterion for Tem is not met 46.9% of the time (because the 13°C value is exceeded). The TMDL numeric criterion for TSS is met. However, the TP TMDL numeric criterion is not met 56.1% of the time.

- PCR. The numeric criterion for E. coli in general meets the beneficial use for PCR; indicating that in general, the PCR beneficial use is met for E. coli.

Table 21. Summary of the Beneficial Use Status of the Tributaries

STREAM	ASSESSMENT UNIT	BENEFICIAL USES	BENEFICIAL USE EVALUATION
Dry Creek: HW to Medley Creek	17040212SK022_02	Ag, CWAL, SS, SCR	Data Gap: No water quality monitoring was conducted.
Dry Creek: Medley Ck to Snake River	17040212SK022_03	Ag, CWAL, SS, SCR	CWAL: DO: 25.0%values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SS: DO: 25.0% values < 6.0 mg/L Tem: 75.0% values > 13°C TSS: 0% values > 52 mg/L TP: 100% values > 0.1 mg/L SCR: E. coli: 100.0% values > 576
Dry Creek, West Fork	17040212SK023_02	Ag, CWAL, SCR	Data Gap: No water quality monitoring was conducted.

Tool Box Creek: HW to Fifth Fork Rock Creek	17040212SK017_02	Ag, CWAL, SS, PCR, SCR	TSS: 0% values > 52.0 mg/L TP: 0% values > 0.1 mg/L CWAL: DO: 0%values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SCR: E. coli: 0% values > 576
Rock Creek: HW to Rock Creek town	17040212SK016_04 17040212SK018_04	Ag, D, CWAL, SS, PCR, SCR, SRW	CWAL: DO: 0% values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 6.7% values > 13°C TSS: 0% values > 52 mg/L TP: 0% values > 0.100 mg/L PCR: E. coli: 4.7% values > 406 SCR: E. coli: 4.7% values > 576
Rock Creek: Rock Creek town to Snake River	17040212SK013_04 17040212SK013_05	Ag, CWAL, SS, SCR	CWAL: DO: 1.1% values < 6.0 mg/L Tem:0 %values > 22°C pH: 0.5% values > pH 9.0 SS: DO: 1.1% values < 6.0 mg/L Tem: 43.8% values > 13°C TSS: 6.2% values > 52 mg/L TP: 23.0% values > 0.1 mg/L E. coli: 14.2% values > 406 SCR: E. coli: 22.2% values > 576
Cottonwood Creek: HW to Mouth	17040212SK014_04	Ag, CWAL,SCR	CWAL: DO: 0% values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 DO: 0% values < 6.0 mg/L Tem: 100.0% values > 13°C TSS: 100% values > 52 mg/L TP: 100% values > 0.1mg/L SCR: E. coli: 0% values > 576
McMullen Creek: HW to Cottonwood Creek	17040212SK015_02 17040212SK015_03	Ag, CWAL, SCR	TSS: 33.3% values > 52 mg/L TP: 66.6% values > 0.1 mg/L CWAL: DO: 33.3%values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SCR: E. coli 0% values > 576

Vinyard Creek: HW to Mouth	17040212SK027_00	Ag, CWAL, SCR	CWAL: DO: 0%values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 60.0% values > 13°C TSS: 0% values > 52 mg/L TP: 0% values > 0.1 mg/L SCR: E. coli: 0% values > 576
Alpheus Creek: HW to Mouth	17040212SK019_02	Ag, CWAL, SS, PCR	CWAL: DO: 0%values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 100% values > 13°C TSS: 0% values > 52 mg/L TP: 0% values > 0.1 mg/L E. coli: 0% values > 576
Ellison Creek: HW to Mouth	17040212SK007_02	Ag, CWAL, SS, PCR	TSS: 0% values > 52 mg/L TP: 0% values > 0.100 mg/L CWAL: DO: 0%values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SCR: E. coli: 0% values > 576
Crystal Springs: HW to Mouth	17040212SK007_02	Ag, CWAL, SS, PCR	CWAL: DO: 0% values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 100.0% values > 13°C TSS: 0% values > 52 mg/L TP: 0% values > 0.100 mg/L PCR: E. coli: 0% values > 406 SCR: E. coli: 0% values > 576:
Cedar Draw: HW to Mouth	17040212SK012_02	Ag, CWAL, SS, SCR	CWAL: DO: 0%values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 54.5% values > 13°C TSS: 38.5% values > 52 mg/L TP: 76.9% values > 0.1 mg/L SCR: E. coli: 11.1% values > 576

Clear Lakes: HW to Mouth	17040212SK028_02	Ag, CWAL, SCR	CWAL: DO: 0% values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 DO: 0% values < 6.0 mg/L Tem: 83.3% values > 13°C TSS: 0% values > 52 mg/L TP: 83.3% values > 0.1 mg/L E. coli: 16.7% values > 406 E. coli: 0% values > 576
Riley Creek: HW to Mouth	17040212SK006_02	Ag, D, CWAL, SS, PCR, SRW	CWAL: DO: 0% values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 0% values > 13°C TSS: 0% values > 52 mg/L TP: 0% values > 0.100 mg/L PCR: E. coli: 0% values > 406 SCR: E. coli: 0% values > 576
Blind Canyon Creek: HW to Mouth	17040212SK007_02	Ag, CWAL, SS, PCR	CWAL: DO: 0%values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 50.0% values > 13°C TSS: 0% values > 52 mg/L TP: 100% values > 0.1 mg/L SCR: E. coli: 0% values > 576
Mud Creek: HW to Mouth	17040212SK010_03 17040212SK011_02	Ag, CWAL, SS, SCR	CWAL: DO: 0%values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 33.3% values > 13°C TSS: 0% values > 52 mg/L TP: 100% values > 0.1 mg/L SCR: E. coli: 20.0% values > 576
Deep Creek: HW to Mouth	17040212SK008_02 17040212SK008_03	Ag, CWAL, SS, SCR	CWAL: DO: 0%values < 6.0 mg/L Tem: 0%values > 22°C pH: 16.7% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 33.3% values > 13°C TSS: 40% values > 52 mg/L TP: 80% values > 0.100 mg/L SCR: E. coli: 0% values > 576

Sand Springs Creek: HW to Mouth	17040212SK031_02	Ag, CWAL, SCR	CWAL: DO: 0%values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 80.0% values > 13°C TSS: 0% values > 52 mg/L TP: 0% values > 0.100mg/L SCR: E. coli: 0% values > 576
Billingsley Creek: HW to Mouth	17040212SK033_02	Ag, D, CWAL, SS, PCR, SCR, SRW	CWAL: DO: 0%values < 6.0 mg/L Tem: 0%values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 77.8% values > 13°C TSS: 0% values > 52 mg/L TP: 0% values > 0.1 mg/L PCR: E. coli: 0% values > 406 SCR: E. coli: 0% values > 576
Clover Creek: Pioneer Reservoir to Snake River	17040212SK034_04	Ag, CWAL, SS, PCR	CWAL: DO: 0% values < 6.0 mg/L Tem: 16.7%values > 22°C pH: 0% values > pH 9.0 SS: DO: 0% values < 6.0 mg/L Tem: 50.0% values > 13°C TSS: 0% values > 52 mg/L TP: 16.7% values > 0.1 mg/L PCR: E. coli: 0% values > 406 SCR: E. coli: 0% values > 576
HW = Headwaters. CWAL = Cold Water Aquatic Life. PCR = Primary Contact Recreation. SCR = Secondary Contact Recreation. SS = Salmonid Spawning. DO = Dissolved Oxygen. Tem = Temperature. E. coli = Escherichia coli. TSS = Total Suspended Solids. TP = Total Phosphorus.			

Dry Creek (Headwaters to Medley Creek) Assessment Explanation

This is a data gap. DEQ was not able to monitor this stretch of Dry Creek for the 5-Year Review.

Dry Creek (Medley Ck to Snake River) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 4 for DO; N = 4 for Tem; N = 4 for pH; N = 3 for E. coli; N = 3 for TSS; N = 3 for TP). The beneficial use support status of Dry Creek, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO and Tem in general meet the beneficial use for CWAL. However, the pH numeric criterion is not met 16.7% of the time.

- SS. The numeric criterion for Tem and pH in general meets the beneficial use for SS. The numeric criterion for DO does not meet the beneficial use for SS 25% of the time. The TMDL numeric criterion for TSS is met. And, the TMDL numeric criterion for TP is not met 100% of the time.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general does not meet the beneficial use for SCR 100% of the time.

Dry Creek, West Fork Assessment Explanation

This is a data gap. DEQ was not able to monitor this stretch of Dry Creek for the 5-Year Review.

Tool Box Creek (Headwaters to Fifth Fork Rock Creek) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 3 for DO; N = 3 for Tem; N = 3 for pH; N = 2 for E. coli; N = 2 for TSS; N = 2 for TP). The beneficial use support status of Tool Box Creek, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.

- TMDL. The numeric criteria for TSS and TP in general meet the beneficial uses of the stream.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR.

Rock Creek (Headwaters to Rock Creek town) Assessment Explanation

DEQ has a moderate confidence on this assessment based on the low number of samples collected (N = 45 for DO; N = 45 for Tem; N = 45 for pH; N = 43 for E. coli; N = 45 for TSS; N = 45 for TP). The beneficial use support status of Rock Creek (headwaters to Rock Creek town), based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.

- SS. The numeric criterion for DO and Tem in general meets the beneficial use for SS. However, the numeric criterion for Tem is not met 6.7% of the time, which is well below 10% of the total percent of exceedances that is allowed to compensate for variability. The TSS TMDL criterion is met. And, the TP TMDL criterion is met.

- PCR: The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for PCR. However, the numeric criterion for E. coli is not met 4.7% of the time, which is well below 10% of the total percent of exceedances that I allowed to compensate for variability.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR. However, the numeric criterion for E. coli is not met 4.7% of the time, which is well below 10% of the total percent of exceedances that I allowed to compensate for variability.

Rock Creek (Rock Creek town to Snake River) Assessment Explanation

DEQ has a high confidence on this assessment based on the low number of samples collected (N = 182 for DO; N = 183 for Tem; N = 182 for pH; N = 162 for E. coli; N = 161 for TSS; N = 161 for TP). The beneficial use support status of Rock Creek (Rock Creek town to Snake River), based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL. However, the numeric criteria for DO and pH is not met 1.1% and 0.5% of the time, respectively; which is well below 10% of the total percent of exceedances that I allowed to compensate for variability.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. However, the numeric criterion for Tem is not met 43.8% of the time. The TSS TMDL criterion is met. And, the TP TMDL criterion is met. However, the numeric criterion for TSS is not met 6.2% of the time, which is well below 10% of the total percent of exceedances that I allowed to compensate for variability. The TP TMDL criterion is not met 23% of the time.

- PCR: The numeric criterion for E. coli (based on instantaneous values) in general does not meet the beneficial use for PCR 14.2% of the time.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general does not meet the beneficial use for SCR 22.2% of the time.

Cottonwood Creek (Headwaters to mouth)Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 6 for DO; N = 6 for Tem; N = 6 for pH; N = 6 for E. coli; N = 6 for TSS; N = 6 for TP). The beneficial use support status of Cedar Draw, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. The numeric criterion for Tem does not meet the beneficial use for SS 100% of the time. The TMDL numeric criterion for TSS is not met 100% of the time. And, the TMDL numeric criterion for TP is not met 100% of the time.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR.

McMullen Creek (Headwaters to Cottonwood Creek) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 3 for DO; N = 3 for Tem; N = 3 for pH; N = 3 for E. coli; N = 3 for TSS; N = 3 for TP). The beneficial use support status of Ellison Creek, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for Tem and pH in general meet the beneficial use for CWAL. The DO numeric criterion is not met 33.3% of the time.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR.

- TMDL. The numeric criterion for TSS does not meet the beneficial uses of the stream 33.3% of the time. The numeric criterion for TP does not meet the beneficial uses of the stream 66.7% of the time.

Vinyard Creek (Headwaters to mouth) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 6 for DO; N = 5 for Tem; N = 6 for pH; N = 6 for E. coli; N = 6 for TSS; N = 6 for TP). The beneficial use support status of Vinyard Creek, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. The numeric criterion for Tem is not met 60% of the time. The TSS TMDL criterion is met. And, the TP TMDL criterion is met.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR.

Alpheus Creek (Headwaters to mouth) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 3 for DO; N = 3 for Tem; N = 3 for pH; N = 3 for E. coli; N = 3 for TSS; N = 3 for TP). The beneficial use support status of Alpheus Creek, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. The numeric criterion for Tem is not met 100.0% of the time. The TMDL numeric criteria for TSS and TP are met.

- SCR. The numeric criterion for E. coli in general meets the beneficial use for SCR.

Ellison Creek (Headwaters to mouth) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 5 for DO; N = 5 for Tem; N = 5 for pH; N = 5 for E. coli; N = 5 for TSS; N = 5 for TP). The beneficial use support status of Ellison Creek, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general does not meet the beneficial use for SCR 100% of the time.

- TMDL. The numeric criteria for TSS and TP meet the beneficial uses of the stream.

Crystal Springs (Headwaters to mouth) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 6 for DO; N = 6 for Tem; N = 6 for pH; N = 6 for E. coli; N = 6 for TSS; N = 6 for TP). The beneficial use support status of Crystal Springs, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.
- SS. The numeric criterion for DO in general meets the beneficial use for SS. The numeric criterion for Tem does not meet the beneficial use for SS 100.0% of the time. The TSS TMDL criterion is met. And, the TP TMDL criterion is met.
- PCR: The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for PCR.
- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR.

Cedar Draw (Headwaters to mouth) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 6 for DO; N = 6 for Tem; N = 6 for pH; N = 6 for E. coli; N = 6 for TSS; N = 6 for TP). The beneficial use support status of Cedar Draw, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.
- SS. The numeric criterion for DO in general meets the beneficial use for SS. The numeric criterion for Tem does not meet the beneficial use for SS 83.3% of the time. The TSS TMDL criterion is met. And, the TP TMDL criterion is not met 83.3% of the time.
- PCR: The numeric criterion for E. coli (based on instantaneous values) in general does not meet the beneficial use for PCR 16.7% of the time.
- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR.

Mud Creek (Headwaters to mouth) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 6 for DO; N = 6 for Tem; N = 6 for pH; N = 5 for E. coli; N = 5 for TSS; N = 5 for TP). The beneficial use support status of Mud Creek, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.
- SS. The numeric criterion for DO in general meets the beneficial use for SS. The numeric criterion for Tem does not meet the beneficial use for SS 33.3% of the time. The TMDL numeric criterion for TSS is met. And, the TMDL numeric criterion for TP is not met 100% of the time.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general does not meet the beneficial use for SCR 20% of the time.

Riley Creek (Headwaters to mouth) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 11 for DO; N = 11 for Tem; N = 11 for pH; N = 9 for E. coli; N = 9 for TSS; N = 9 for TP). The beneficial use support status of Riley Creek, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.

- SS. The numeric criterion for DO and Tem in general meets the beneficial use for SS. The TSS TMDL criterion is met. And, the TP TMDL criterion is met.

- PCR: The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for PCR.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR.

Deep Creek (Headwaters to mouth) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 6 for DO; N = 6 for Tem; N = 6 for pH; N = 5 for E. coli; N = 5 for TSS; N = 5 for TP). The beneficial use support status of Deep Creek, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO and Tem in general meet the beneficial use for CWAL. However, the pH numeric criterion is not met 16.7% of the time.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. The numeric criterion for Tem does not meet the beneficial use for SS 16.7% of the time. The TMDL numeric criterion for TSS is not met 40% of the time. And, the TMDL numeric criterion for TP is not met 80% of the time.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR.

Blind Canyon Creek (Cedar Draw Creek; Headwaters to mouth) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 3 for DO; N = 4 for Tem; N = 4 for pH; N = 3 for E. coli; N = 3 for TSS; N = 3 for TP). The beneficial use support status of Blind Canyon Creek (which is also Cedar Draw Creek), based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. The numeric criterion for Tem does not meet the beneficial use for SS 50% of the time. The TMDL numeric criterion for TSS is met. The TMDL numeric criterion for TP is not met 100% of the time.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR all of the time.

Sand Springs Creek (Headwaters to mouth) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 5 for DO; N = 5 for Tem; N = 5 for pH; N = 5 for E. coli; N = 5 for TSS; N = 5 for TP). The beneficial use support status of Sand Springs Creek, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. The numeric criterion for Tem is not met 80% of the time. The TSS TMDL criterion is met. And, the TP TMDL criterion is met.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR.

Billingsley Creek (Headwaters to mouth) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 9 for DO; N = 9 for Tem; N = 9 for pH; N = 5 for E. coli; N = 5 for TSS; N = 5 for TP). The beneficial use support status of Billingsley Creek, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO, Tem and pH in general meet the beneficial use for CWAL.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. The numeric criterion for Tem does not meet the beneficial use for SS 77.8% of the time. The TMDL numeric criteria for TSS and TP are met.

- PCR: The numeric criterion for E. coli (base on instantaneous values) in general meets the beneficial use for PCR.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR.

Clover Creek (Pioneer Reservoir to Snake River) Assessment Explanation

DEQ has a low confidence on this assessment based on the low number of samples collected (N = 6 for DO; N = 6 for Tem; N = 6 for pH; N = 6 for E. coli; N = 6 for TSS; N = 6 for TP). The beneficial use support status of Cedar Draw, based on water quality monitoring conducted by DEQ, is summarized as follows:

- CWAL. The numeric criteria for DO and pH in general meet the beneficial use for CWAL. The numeric criterion for Tem in general does not meet the beneficial use for CWAL 16.7% of the time.

- SS. The numeric criterion for DO in general meets the beneficial use for SS. The numeric criterion for Tem does not meet the beneficial use for SS 50.0% of the time. The TSS TMDL criterion is met. And, the TP TMDL criterion is not met 16.7% of the time.

- PCR: The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for PCR.

- SCR. The numeric criterion for E. coli (based on instantaneous values) in general meets the beneficial use for SCR.

3.4.3 Beneficial Use Impairment Linkage to Land Use

This section discusses the impairment of beneficial uses and its linkage to land use. In general and as described by the NRCS, the primary specific resource concerns in the Upper Snake Rock Subbasin linked to land use are as follows:

- Surface Irrigated Row Crops – Erosion. Erosion rates (measured in the 1980s and 1990s by USDA-ARS) from surface irrigated row crops are estimated on 0-3% slopes to average 10 tons/acre/year. The crops most susceptible to erosion are sugar beets, beans and corn, which can have surface irrigation-induced erosion rates ranging from 30 to 53 tons/acre/years. Slopes over 3% can average 30 tons/acre/year for a typical rotation. Soil loss from sugar beets, beans and corn, for any one year, can be as great as 51 to 89 tons/acre/year on these steeper slopes (NRCS 2006 [p 12]).

- Sheet and Rill Erosion. Sheet and rill erosion by water on the subbasin croplands, pasturelands and Conservation Reserve Program (CRP) lands have been essentially static since 1982. Sheet and rill erosion is not a major issue on cropland in this subbasin. Susceptibility to sheet and rill erosion is low in this subbasin because the natural precipitation is low and the cropland is relatively flat (NRCS 2006 [p 13]).

- Wind Erosion. Wind erosion on the subbasin croplands and pasturelands has held essentially static since 1982 with a small increase shown in 1987 (NRCS 2006 [p 13]). The acreage of low residue crops in the subbasin increased by about 50 percent in the time period between 1982 and 1997 but the corresponding wind erosion rate remained virtually static due to conservation practices applied by farmers and ranchers to reduce the effects of wind erosion (NRCS 2006 [p 14]).

- Major Pollutants. Nutrients, sediment and temperature are the major pollutants, which impact beneficial uses of surface waters in this subbasin. The Middle Snake River is a managed water system with altered flow regimes. The Middle Snake River and its tributaries are impacted by runoff from irrigated crop production, rangeland, pastureland, animal holding areas, feedlots, dredging, hydro-modification, and urban runoff. Natural springs have exhibited hydro-modification and stream bank alteration has occurred from activities relating to sedimentation, aquaculture, hydropower, irrigated crop production, and land development. Additionally, the watershed contains three areas where groundwater is impacted by nitrates (designated Nitrate Priority Areas). Conservation practices that can be used to address these water quality issues include erosion control, grazing management, irrigation water management, residue management, nutrient management and riparian buffers (NRCS 2006 [p 15])

- Land Use Management Progress. Progress in the last seven years has been focused on erosion control, irrigation water management, nutrient management, and pest management (NRCS 2006 [p 20]).

- Ongoing Land Use Management Concerns. Resource concerns that require ongoing attention include erosion control, irrigation water management, nutrient management, water quality and water quantity, and prescribed grazing (NRCS 2006 [p 20]).

Table 22 provides a summary of the land use effects on the beneficial use impairment per water body. The table is based on NRCS assessment(s) (NRCS 2006 [p 14]) and DEQ's field assessment and water quality monitoring assessment (Table 16 and Table 17). It is noted that these assessments may be affected by the seasonal influence of agricultural irrigation.

In the case of the Snake River, and with many of the tributaries, flow alteration (QAlt) is a significant characteristic that may potentially affect the water quality and the beneficial uses of the stream. Table 22is meant to provide direction for future implementation projects based on available funding and resources.

Table 22. Pollutant Impairments Linked to Land Use

WATER BODY	LAND USE POLLUTANT IMPAIRMENTS					
	TSS	TP	E. coli	Tem	DO	QAlt
Snake River (SR) Segments & Reservoirs						
SR: Milner Dam to Twin Falls (Milner Dam Monitoring Site)	No	Yes	No	Yes	No	Yes
SR: Twin Falls to Rock Creek (Pillar Falls Monitoring Site)	No	Yes	No	No	No	Yes
SR: Rock Creek to Box Canyon Creek (Crystal Springs Monitoring Site)	No	Yes	No	No	No	Yes
SR: Box Canyon Creek to Lower Salmon Falls (Gridley Bridge & Box Canyon Monitoring Sites)	No	Yes	No	No	No	Yes
SR: Lower Salmon Falls to Clover Creek (Shoestring Bridge Monitoring Site)	No	Yes	No	No	No	Yes
SR: Clover Creek to King Hill (King Hill Monitoring Site)	No	Yes	No	No	No	Yes
Pioneer Reservoir: the entire reservoir	Yes	Yes	Yes	Yes	Yes	Yes
Tributaries						
Dry Creek: HW to Medley Creek	No	No	No	No	No	No
Dry Creek: Medley Ck to Snake River	No	Yes	Yes	Yes	Yes	Yes
Dry Creek, West Fork	No	No	No	No	No	No
Tool Box Creek: HW to Fifth Fork Rock Creek	No	No	No	No	No	No
Rock Creek: HW to Rock Creek town	No	No	No	Yes	No	Yes
Rock Creek: Rock Creek town to Snake River	No	Yes	Yes	No	No	Yes
Cottonwood Creek: HW to Mouth	Yes	Yes	No	No	No	Yes
McMullen Creek: HW to Cottonwood Creek	Yes	Yes	No	Yes	Yes	Yes
Vinyard Creek: HW to Mouth	No	No	No	No	No	Yes
Alpheus Creek: HW to Mouth	No	No	No	No	No	Yes
Ellison Creek: HW to Mouth	No	No	No	No	No	No
Crystal Springs: HW to Mouth	No	No	No	No	No	Yes

WATER BODY	LAND USE POLLUTANT IMPAIRMENTS					
	TSS	TP	E. coli	Tem	DO	QAlt
Cedar Draw: HW to Mouth	Yes	Yes	Yes	Yes	No	Yes
Clear Springs: HW to Mouth	No	Yes	No	No	No	Yes
Mud Creek: HW to Mouth	No	Yes	Yes	Yes	No	Yes
Deep Creek: HW to Mouth	Yes	Yes	No	Yes	No	Yes
Riley Creek: HW to Mouth	No	No	No	Yes	No	Yes
Blind Canyon Creek: HW to Mouth	No	Yes	No	No	No	Yes
Sand Springs Creek: HW to Mouth	No	No	No	No	No	Yes
Billingsley Creek: HW to Mouth	Yes	Yes	No	No	No	Yes
Clover Creek: Pioneer Reservoir to Snake River	No	Yes	No	Yes	No	Yes
DO = Dissolved Oxygen. Tem = Temperature. E. coli = Escherichia coli. TSS = Total Suspended Solids. TP = Total Phosphorus. QAlt = Flow Alteration.						

3.4.4 Trends in water quality, TMDL targets or criteria exceedances.

With the exception of the Snake River, there is insufficient water quality monitoring data to suggest or establish trends on tributary streams. However, general TMDL targets or criteria exceedances have been summarized in Table 18, Table 19, Table 20, and Table 21.

The Snake River water quality monitoring data does not indicate a statistically relevant trend on a monthly basis for TSS or TP. This conclusion is indicated by Figure 4 and Figure 5 for TSS and TP, respectively. Figure 4 indicates a relatively low R^2 value of statistical significance; likewise, Figure 5 for TP, using a 2^{nd} degree polynomial regression.

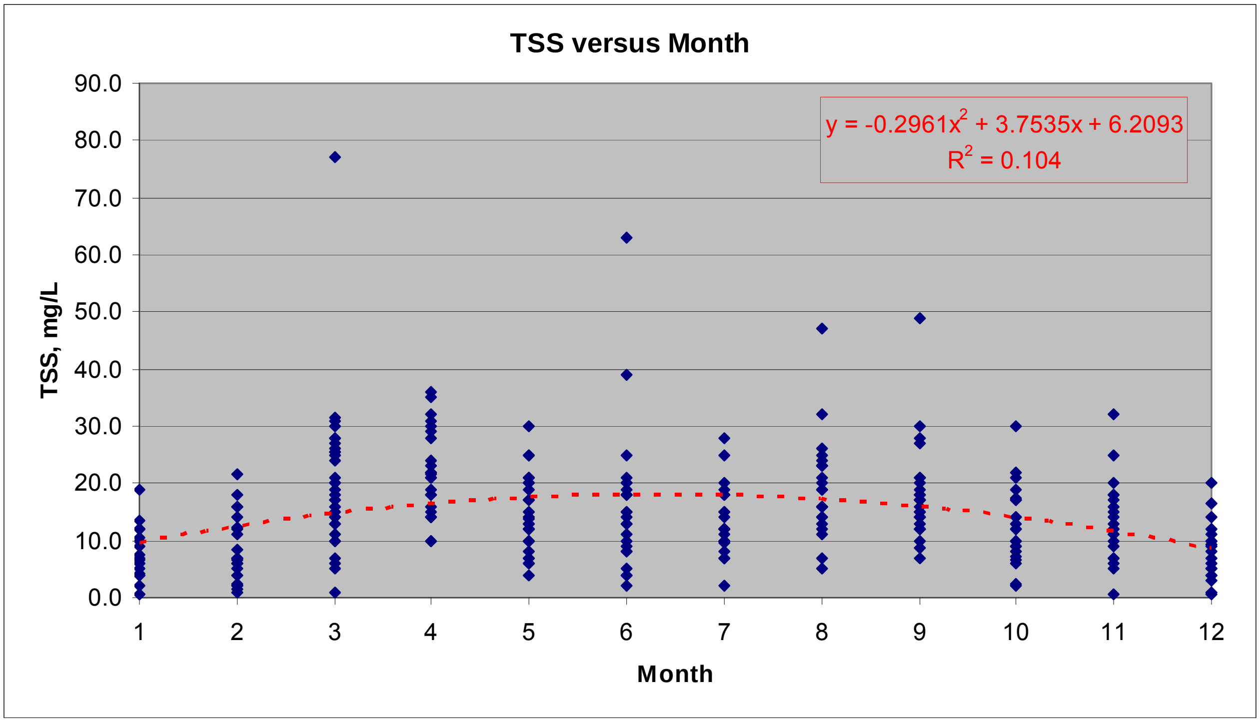

Figure 4. TSS Trend Analysis – Snake River – 1990-2008

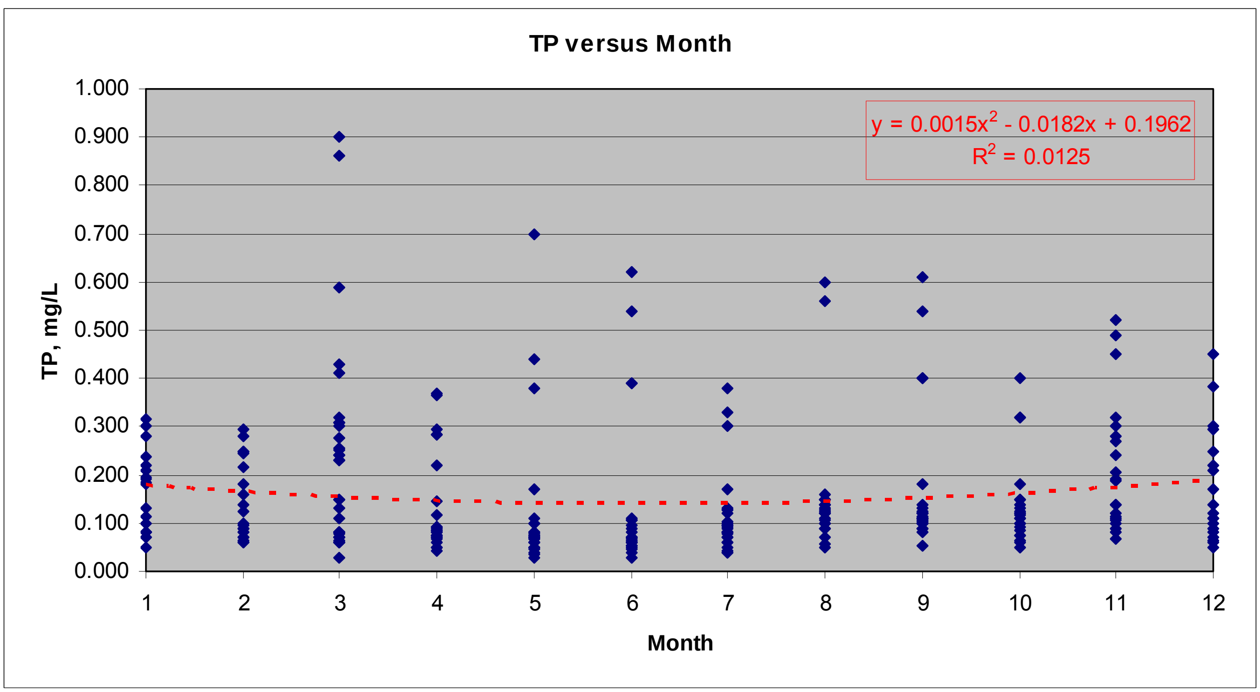

Figure 5. TP Trend Analysis – Snake River – 1990-2008.

3.4.5 Land Use

A summary of land use for the Upper Snake Rock Subbasin is shown in Table 23.

Table 23. Land Use Summary for Upper Snake Rock Subbasin.

Land Use	Pre-TMDL Estimate	Post-TMDL Estimate
Forestland	3.0%	< 1.0%
Rangeland	54.0%	42.0%
Agriculture land	41.0%	56.5%
Urban lands	1.0%	1.0%
Other	< 1.0%	< 1.0%
Total Lands	99.5%	100.5%
Total Acres	1,536,880 acres	1,608,990 acres

Pre-TMDL Estimate from Upper Snake Rock TMDL (1999, Table 6, p 17).

Post-TMDL Estimate from NRCS 2006 (p 4).

In general, agricultural land use increase from 1999 to 2006 by 37.8%, whereas rangeland use decreased by 22.2%. The total lands and total acres increase was probably due to better refinement of the GIS tool use in both estimates. The Pre-TMDL Estimate utilized ArcView, whereas the Post-TMDL Estimate utilized ArcGIS.

3.4.6 Climate

Table 24 provides a summary of the climatic characteristics for the Upper Snake Rock Subbasin.

Table 24. Climatic characteristics for the Upper Snake Rock Subbasin

Climatology	Pre-TMDL Estimate	Post-TMDL Estimate
Annual Precipitation	10.5 inches	9.7 inches
January Temperature	29.4°F	19.3°F
July Temperature	72.7°F	88.0°F

Pre-TMDL Estimate from Upper Snake Rock TMDL (1999, Section 2.1.1.2, p 13).

Post-TMDL Estimate from www.intellicast.com for Annual Precipitation, January Temp and July Temp for Cities of Twin Falls, Jerome, Filer and Buhl.

In general, January temperatures have declined on average whereas July temperatures have increased. Annual precipitation has stayed relatively the same for the semi-arid environment.

3.4.7 Hydrology, Flooding and Drought

The hydrology of the Upper Snake Rock Subbasin is interconnected by tributaries and canalways that discharge to the Middle Snake River and the Eastern Snake River Plain Aquifer, which discharges to the

Middle Snake River and which has experienced water volume reductions in recent years. To understand the hydrology of the Upper Snake Rock, it is important to compare the annual mean discharge volumes of the Middle Snake River segments under the low flow scenario (1988-1995) against the high flow scenario (1983-1987, 1996-1998) and against the baseline years 1991 and 1992. This comparison can be done by reviewing the Upper Snake Rock TMDL (1999, Table 10, pp 21-22), and then comparing this data to the post-TMDL (> 1999) timeframe to see what differences (if any) have occurred. Table 25, Table 26, and Table 27 provide this comparison. The USGS gage stations were used in this comparison and were based on annual statistics. :

Table 25. Flow comparisons for Baseline Water Year.

USGS Gage Station	Baseline Water Years		
	WY 1991	WY1992	Average
Milner Gage, 13088000	388.3 cfs	366.2 cfs	377.3 cfs
Kimberly Gage, 13090000	715.8 cfs	646.7 cfs	681.3 cfs
Buhl Gage, 13094000	2,341 cfs	2,116 cfs	2,228.5 cfs
Hagerman Gage, 13135000	5,991 cfs	5,366 cfs	5,678.5 cfs
Bliss Gage, 13153776		7,377 cfs	7,377 cfs
King Hill Gage, 13154500	7,929 cfs	7,384 cfs	7,656.5 cfs

Source: http://waterdata.usgs.gov/id/nwis/annual

Table 26. Flow Comparisons for Low Q and High Q Years.

USGS Gage Station	TMDL Years Investigated	
	Low Q Years	High Q Years
Milner Gage, 13088000	576 cfs	6,904 cfs
Kimberly Gage, 13090000	1,164 cfs	7,327 cfs
Buhl Gage, 13094000	2,662 cfs	8,961 cfs
Hagerman Gage, 13135000	6,220 cfs	12,753 cfs
Bliss Gage, 13153776	8,153 cfs	15,299 cfs

King Hill Gage, 13154500	8,025 cfs	14,769 cfs

Source: Upper Snake Rock TMDL (1999), Table 10, pp 21-22. Low Q (Flow) Years = 1988-1995). High Q (Flow) Years = 1983-1987, 1996-1998.

Table 27. Flow Comparisons for Post-TMDL Years.

USGS Gage Station	Post-TMDL Years Investigated	
	≤ Average Baseline	> Average Baseline
Milner Gage, 13088000	319.5 cfs	1,396.4 cfs
Kimberly Gage, 13090000	593.8 cfs	1,557.0 cfs
Buhl Gage, 13094000	2,006.0 cfs	3,779.3 cfs
Hagerman Gage, 13135000	5,306.5 cfs	7,039.7 cfs
Bliss Gage, 13153776	6,744.9 cfs	9,231.0 cfs
King Hill Gage, 13154500	6,957.1 cfs	9.685.5 cfs

Source: Source: http://waterdata.usgs.gov/id/nwis/annual. Post-TMDL Years = ≥ 2000. Post-TMDL Years Investigated is based on a comparison to the average baseline years.

Table 15 summarizes the hydrology of the Middle Snake River based on the following provisions:

- Baseline Years Average as a point of reference.
- TMDL Low Q Years (1988-1995) and TMDL High Q Years (1983-1987, 1996-1998).
- Post-TMDL (2000 +) years comparison to the lower than average (LTA) of the baseline years and the greater than average (GTA) of the baseline years.

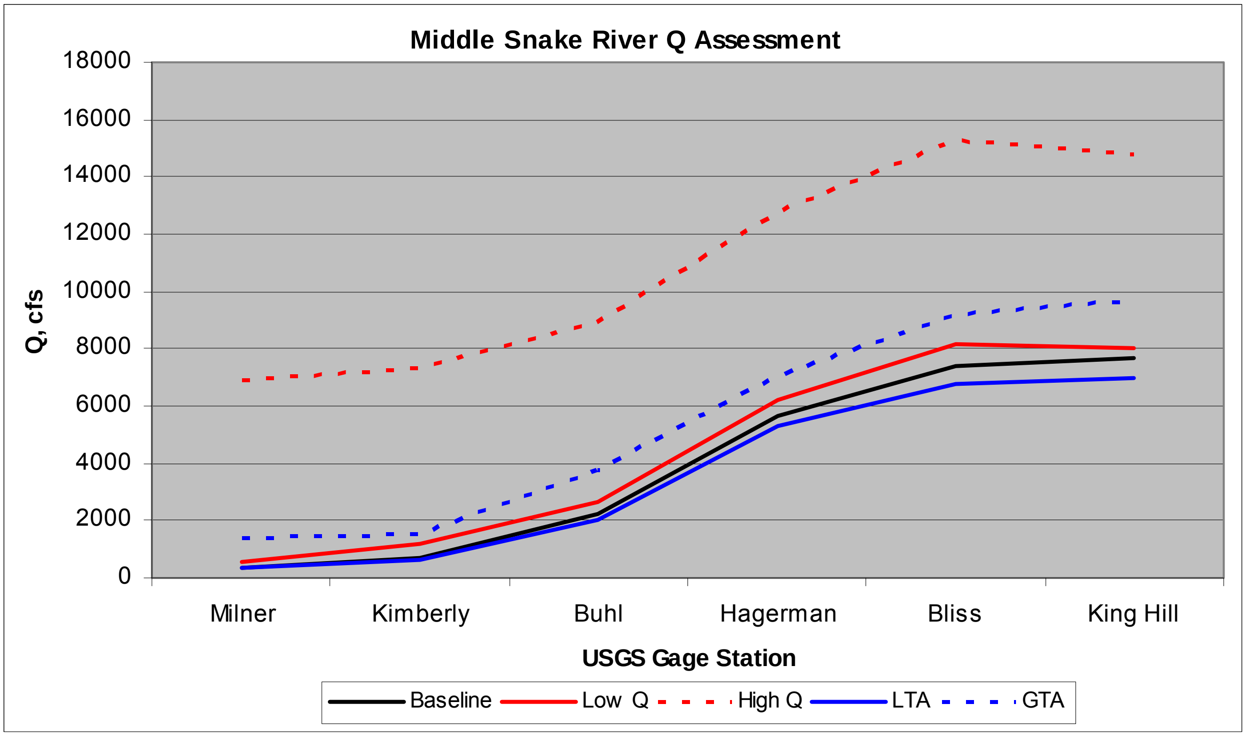

Figure 6. Middle Snake River Q Assessment.

The graph reflects the following:

- Since 2000, the LTA flow conditions in the Middle Snake River have been below the baseline years and the Low Q years.
- Since 2000, the GTA flow conditions in the Middle Snake River have been above the baseline years and the Low Q years.
- In general, the overall flow conditions in the Middle Snake River since 2000 have not approached the High Q years.

3.4.8 Wildfires

The Idaho Department of Lands, in conjunction with other multi-agency cooperators, has developed the Idaho County Wildfire Protection Plans for each county. These plans may be found at http://www.idl.idaho.gov/nat_fire_plan/county_wui_plans/index.htm. The following four (4) counties represent the larger counties covering the Upper Snake Rock Subbasin and their associated wildfire protection or mitigation plans:

- Twin Falls County Wildfire Protection Plan (version September 2004). See http://www.idl.idaho.gov/nat_fire_plan/county_wui_plans/twinfalls/twinfalls.htm.
- Jerome County Wildfire Protection Plan (version October 2004). See http://www.idl.idaho.gov/nat_fire_plan/county_wui_plans/jerome/jerome.htm.

- Gooding County Wildfire Protection Plan (version September 2004). See http://www.idl.idaho.gov/nat_fire_plan/county_wui_plans/gooding/gooding.htm.

- Cassia County Wildfire Protection Plan (version August 2004). See http://www.idl.idaho.gov/nat_fire_plan/county_wui_plans/cassia/cassia.html.

In general and depending on the amount of available fuel from fire season to fire season, the following describes the risk of wildfires in the four (4) major counties as defined in their individual wildfire protection plans:

- Twin Falls County. High risk of wildfires due to human caused conditions.

- Jerome County. High risk of wildfires due to human caused conditions.

- Gooding County. Moderate risk of wildfires, but high in the Snake River Canyon.

- Cassia County. Moderate to high risk of wildfires.

3.4.9 Landslides

Much of the main four (4) county areas of the Upper Snake Rock (i.e. Twin Falls, Jerome, Gooding and Cassia Counties) are predominantly characterized by gently rolling lava plain from which rise scattered prehistoric shield volcanoes. These areas are generally not prone to landslide risk characteristics. However, in the Snake River Canyon, as well as in deep canyon areas of certain tributaries (i.e. Rock Creek, Deep Creek, Cedar Draw, etc.), shallow drainageways have developed along fault scarps and increases between lava flows and shield volcanoes that have aided in landslide activities.

As examples, the following are known landslide activities that have occurred in the Upper Snake Rock Subbasin (see http://www.bhs.idaho.gov/Resources/PDF/SHMPFinalw-signatures.pdf [p 145]):

- The Hagerman Fossil Beds National Monument located in northwestern Twin Falls County, Idaho and near the Snake River in Bliss, Idaho, has landslide characteristics along the Snake River Canyon due to perched ground water aquifers causing slope stability problems in relation to measured canal leakage from irrigation water associated with the canal system for that area. A series of major landslides have struck the plateau along the Snake River located in Hagerman Fossil Beds National Monument since 1979. These large slope failures have occurred approximately every two years, and typically affected areas ranging in size from 300 to 800 feet wide and up to 1000 feet long. The 1987 event destroyed a million-dollar irrigation pumping facility and nearly killed two workers.

- Gooding County, 1993: On July 24, 1993, approximately 100 acres of ground failed and slid into the Snake River just south of Bliss. The river was temporarily dammed and a new set of rapids was created. The access road to the south side of the river was destroyed. The initial slide and subsequent erosion of the toe introduced a large amount of sediment into the river. The landslide site shows extensive evidence of earlier activity.

- Twin Falls County, 1999+: The Bluegill Landslide (near Buhl on Salmon Falls Creek, 5 to 10 miles from its confluence with the Snake River) was first noted during the summer of 1999, when local rock climbers noted changes in the bedrock cliffs, an unusual amount of rock fall, and fractures opening up on the trail. Subsequently, a twelve-acre block of canyon rim, composed of basalt and sediments, has begun sliding into Salmon Falls Creek. This slide activity may threaten irrigation pumping stations and may generate flood risks to upstream and downstream development. The slide is still active and moving.

3.4.10 Sensitive, threatened, or endangered species designations

The Middle Snake River, associated with springfed tributary habitats, is the home to five (5) Threatened and Endangered species listed under the Endangered Species Act:

- Banbury Springs Lanx, Lanx sp.
- Utah Valvata, Valvata utahensis
- Idaho Springsnail, Pyrgulopsis idahoensis
- Snake River Physa, Physa natricina
- Bliss Rapids Snail, Taylorconcha serpenticola

These same invertebrate species were defined in the Mid-Snake TMDL (1997), the Upper Snake Rock TMDL (2000), and the Upper Snake Rock TMDL Modification (2005). The most current development with these T & E species comes from the State of Idaho's Office of Species Conservation:

> "Five separate species of snails that reside in the main stem, or in tributaries or springs flowing into the Middle Snake River in Idaho, were listed in 1992 as either Endangered or Threatened under the ESA: Bliss Rapids snail (Threatened), Banbury Springs lanx (Endangered), Idaho springsnail (Endangered), Snake River physa snail (Endangered), and Utah valvata (Endangered). After years of research and analysis, OSC and others have decided to petition the USFWS to de-list three of the five snails: the Idaho springsnail, the Utah valvata, and the Bliss Rapids snail. All three petitions are currently undergoing the review process." (See http://species.idaho.gov/list/snails.html.)

Section 4: Review of Implementation Plan and Activities

This section of the 5-Year Review references the *Upper Snake Rock Implementation Plan,* which was developed in conjunction with the Upper Snake Rock Watershed Management Plan. It lists all of the parties that created the document and provides a table or a summary of what each participant planned to do (or may be doing).

4.1 Introduction

The Upper Snake Rock Implementation Plan was developed in 2000 as part of the Upper Snake Rock Watershed Management Plan (Section 3.6, Reasonable Assurance and Implementation Schedule, p. 200-212) for point sources, as well as the designated land management agencies. The express purpose is to restore the beneficial uses and/or water quality standards of the Section 303(d) streams in the Upper Snake Rock Subbasin; but has since grown to include the assessment unites that may include those original Section 303(d) streams. Oversight and preparation of the plan was done by DEQ with assistance from State designated agencies for specific water user industries and the Middle Snake WAG.

The primary purpose of the Upper Snake Rock Implementation Plan as part of Idaho's TMDL process is:

- To identify and describe the specific pollution controls and management measures to be undertaken.
- To identify the mechanisms by which the selected pollution control and management measures will be put into action.
- To incorporate the authorities, regulations, permits, contracts, commitments, or other evidence sufficient to ensure that implementation will take place.

The Middle Snake WAG has been instrumental in implementing the overall purpose by endorsing those Section 319 projects that target those Section 303(d) water bodies under the Upper Snake Rock TMDL. DEQ has assisted in this process by providing technical assistance to those who have sought Section 319 funds. DEQ will continue to pursue these on-the-ground type water quality clean-up efforts with cooperation and support from the Middle Snake WAG.

4.2 Accomplished Activities

This section identifies specific accomplishments associated with water quality improvement since the approval of the Upper Snake Rock Watershed Management Plan. These activities are summarized in Table 28.

Table 28. Summary Implementation Projects completed since 2000.

Water body or location	Pollutant	Activity or strategy	Program	Sponsors or Supporters
Snake River	TSS, TP, *E. coli*	Sediment control basins, constructed wetlands	Private	TFCCo
Perrine Coulee	TSS, TP, *E. coli*	Sediment control basins & constructed wetlands	319	Snake River SWCD, TFCCo, TF City, ISCC, DEQ, NRCS
Cedar Draw	TSS, TP, *E. coli*	Sediment control basins & constructed wetlands	319	Balanced Rock SCD, TFCCo, Dickerson Living Trust, ISCC, DEQ, NRCS
McMullen Cr	TSS, TP, *E. coli*	Corral relocation & fencing	319	TF SWCD, TFCCo, ISCC, DEQ, NRCS, Private
Rock Cr	TSS, TP, *E. coli*	Sediment control basin, irrigation system, habitat improvement & remove debris	319	TFCo Commissioners, TFCo Parks, TFCo Research, TFCo Juvenile Corrections
**Jeff Woody Wetland	TSS, TP, *E. coli*	Sediment control basin & constructed wetlands	319	Snake River SWCD, TFCCo
Wilson Cr	TSS, TP, *E. coli*	Sediment control basin, constructed wetlands & habitat improvement	319	Balanced Rock SCD, Twin Falls, Pat Kueny, ISCC, DEQ, NRCS
Rock Cr	TSS, TP, *E. coli*	Sediment control basin, constructed wetlands and restoration, habitat improvement, thermal cover & storm drain BMP	TF Aquatic Ecosystem Restoration Project	TF City, TFCCo, ISCC, DEQ, IDWR, EPA, USACE, TF Chamber of Commerce, NRCS, CSI, Rock Creek Brigade, Southern Idaho Land Trust
J-8 Drain & Snake River	TSS, TP, *E. coli*	Sediment control basins, constructed wetlands & wildlife habitat management	Private	NSCCo, IF&G
J-8 Drain & Snake River	TSS, TP, *E. coli*	Sediment control basin, constructed wetlands, & wildlife habitat management	Private	NSCCo, Nature Conservancy
53WQ	TSS, TP, *E. coli*	Sediment control basins & constructed wetlands	Private	NSCCo
USR & Salmon Falls	TSS, TP, *E. coli*	EQIP BMPs	EQIP	Private, SCD, FSA & NRCS
Snake River	TSS, TP, *E. coli*	Sediment control basins & constructed wetlands	319	TF City, Snake River SCD, TFCCo
Rock Cr	TSS, TP, *E. coli*	Sediment control basins & constructed wetlands	319	Snake River SCD, TFCCo
Clover Cr	TSS, TP, *E. coli*	Sediment control basins & constructed wetlands	319	NSCCo & Private
Rock Cr	NO_3, TSS, TP, *E. coli*	Irrigation & drainage water management, buffer strips, nutrient & fertilizer application management, pasture and riparian water management & wellhead assessment & protection	319	Snake River SCD, TFCCo, SCC, U of I
Billingsley Cr	TSS, TP, *E. coli*	Steam channel stabilization, habitat improvement & management, wetland restoration & wildlife habitat management	Private	Private, NRCS, DEQ
Snake River	NO_3	Irrigation water management, BMP plans for irrigated fields	319	Gooding SCD, SCC, NRCS, Private
Perrine Coulee & Snake River	NO_3, TSS, TP, *E. coli*	Sediment control basins & constructed wetlands	INEL Grant DEQ	INEL Grant from DEQ, TFCo Parks & Rec, TFCCo
Perrine Coulee & Snake River	NO_3, TSS, TP, *E. coli*	Sediment control basins & constructed wetlands	INEL Grant DEQ	INEL Grant from DEQ, CSI, TFCCo
Rock Cr	TSS, TP, *E. coli*	Dispersed campsites and stream bank restoration	USFS	USFS

Water body or location	Pollutant	Activity or strategy	Program	Sponsors or Supporters
Snake River & Various Tribs	TSS	Restricted motor vehicle to designated roads and trails	USFS	USFS
Rock Cr	NO_3, TSS, TP, *E. coli*	Channel stabilization, stream & wetland habitat improvement & management, wetland restoration	INEL Grant DEQ	INEL Grant from DEQ, TFCo, TF Parks & Rec, TFCCo
Snake River Tuanna Gulch Bancroft Springs	TSS, TP, *E. coli*	Channel stabilization, stream & wetland habitat improvement & management, wetland restoration	Private	Idaho Power
TSS = Total Suspended Solids, TP = Total Phosphorus, *E. coli* = Escherichia coli, 319 = 319 Non Point Source Program, TF SWCD = Twin Falls Soil & Water Conservation District, TFCCo = Twin Falls Canal Company, ISCC = Idaho Soil Conservation Commission, DEQ = Department of Environmental Quality, NRCS = Natural Resource Conservation Commission, TFCo = Twin Falls County, SCD = Soil Conservation District, BMP = Best Management Practice, IDWR = Idaho Department of Water Resources, EPA = Environmental Protection Agency, USACE = United States Army Corp of Engineers, CSI = College of Southern Idaho, NSCCo = North Side Canal Company, IF&G = Idaho Fish & Game, FSA = Farm Service Agency, NO_3 = Nitrate, U of I = University of Idaho, INEL = Idaho National Energy Laboratory, USFS = United States Forest Service				

4.3 Section 404 Permitted Implementation Projects

This section covers the Section 404 program. 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 the navigable waters at specified disposal sites. As part of the Section 404 process, the State of Idaho shall provide the licensing or permitting agency a certification in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable waters at the point where the discharge originates or will originate, that any such discharge will comply with the applicable provisions of U.S. Code Title 33, Sections 1311 (effluent limitations), 1312 (water quality related effluent limitations), 1313 (water quality standards and implementation plans), 1316 (national standards of performance), and 1317 (toxic and pretreatment effluent standards) of this U.S. Code Title 33.

Since 2000, various Section 404 implementation projects have been permitted in the Upper Snake Rock Subbasin with a Section 401 water quality certification. These implementation projects are summarized in Table 29.

Table 29. Summary of 404 permitted projects completed since 2000

ACOE Permit Number	Water Body	Year Project Initiated	Business or Agency	Project Description
SNAKE RIVER SECTION 404 PERMITTED IMPLEMENTATION PROJECTS				
002200820	Snake River	2000	IDFG	NWP 18
012200550	Snake River	2001	BOR	NWP 23
042100049	Snake River, Bliss Bridge	2004	TF Hwy Dist	NWP 3
053200152	Snake River	2005	Idaho Power	NWP 3
06XXXXXXX	Snake River	2006	Private	Road/ditch stabilization

ACOE Permit Number	Water Body	Year Project Initiated	Business or Agency	Project Description
2006-567-I02	Snake River	2006	Private	NWP 13
2006-586-I01	Snake River	2006	Private	NWP 18
063200055	Snake River, Dolman Rapids	2006	Idaho Power	NWP 3
2007-705-I01	Snake River	2007	Idaho Power	NWP 36
2007-414	Snake River	2007	Idaho Power	NWP 3
2007-1253-I02	Snake River – TFC3	2007	Private	NWP 12 & 14
2008-133-I02	Snake River	2008	Private	NWP 14
TRIBUTARY SECTION 404 PERMITTED IMPLEMENTATION PROJECTS				
053200066	Cedar Draw	2005	IDFG	NWP 36
053200076	Unnamed tributary to Snake River	2005	Clear Springs Food	NWP 18 & 33
063300068		2006	Buhl Hwy Dist	NWP 3
063300093	Perrine Coulee to Snake River	2006	TFCo Parks	NWP 27
2007-1036-I01	Unnamed drainage to Snake River	2007	Idaho Power	NWP 18
012200340	Rock Creek	2001	TF City	NWP 3 & 33
022100660		2002	Private	NWP 13
032500300		2003	TF Hwy Dist	NWP 13
042600044		2004	Private	NWP 13
063300077	Mud Creed	2006	Buhl Hwy Dist	NWP 3, 13 & 33
012300080	Cedar Draw Creek	2001	ITD	NWP 14 & 33
032100540		2003	Chevron	NWP 3 & 27

TF = Twin Falls, TFCo = Twin Falls County, IF&G = Idaho Fish & Game, BOR = Bureau of Reclamation, TF Hwy Dist = Twin Falls Highway District, Hwy Dist = Highway District, ITD = Idaho Transportation Department, NWP – Nation Wide Permit

4.4 Future Strategy

The future strategy of the Upper Snake Rock implementation planning effort is highly dependent on sufficient monitoring, sufficient resources (i.e. labor and funds) and sufficient on-the-ground water quality restoration projects. It also is dependent on the coordination and mutual cooperation of DEQ and the Middle Snake WAG:

- DEQ, with cooperation from the Middle Snake WAG, will continue to pursue a monitoring strategy to obtain water quality monitoring information on the Section 303(d) listed water bodies (and assessment units). This includes monitoring on the Snake River at the 7 compliance points and tributary (both manmade and natural water bodies) monitoring at the pour point of each assessment unit. This effort is based on fulfilling Idaho Code § 39-3607 in order to determine the status of designated beneficial uses in each water body.

- DEQ, with cooperation from the Middle Snake WAG, shall implement such measures to determine the appropriate designated uses and the status of the designated beneficial uses (through such instruments as 5-Year Reviews). Theses reviews shall include appropriate water quality standards as identified in the rules of the DEQ in conjunction with biological or aquatic habitat measures that may include, but are not limited to the following:

  - Stream width
  - Stream depth
  - Stream shade
  - Sediment
  - Bank stability
  - Water flows
  - Physical characteristics of the stream that affect habitat for fish, macroinvertebrate species or other aquatic life.
  - The variety and number of fish or other aquatic life.

- DEQ, with cooperation from the Middle Snake WAG, will continue to pursue 319 Grant Projects on this Section 303(d) listed water bodies (and assessment units); but more particularly where the projects enhance existing riparian lands and promote the restoration of wetlands along stream channels.

- DEQ, with cooperation from the Middle Snake WAG, will incorporate Idaho Code § 39-3611 into its implementation planning effort. Specifically, DEQ and the Middle Snake WAG shall:

  - Review and provide an analysis of why current control strategies are not effective in assuring full support of designated beneficial uses.
  - Review and provide a plan to monitor and evaluate progress toward meeting water quality standards.

- Review and provide pollution control strategies for both point sources and nonpoint sources.

- Review and provide identification of the period of time necessary to achieve full support of designated beneficial uses through implementation of pollution control strategies, which take into account any expected changes to applicable water quality standards.

- DEQ will continue to cooperate with the Middle Snake WAG and will incorporate Idaho Code § 39-3611, such that the Upper Snake Rock TMDL and any supporting subbasin assessment shall be developed and periodically reviewed and modified in consultation with the Middle Snake WAG for the Upper Snake Rock Subbasin in which the water bodies are located. Consultation shall include, but not be limited to the following:

  - Providing the Middle Snake WAG, upon request, with all available information in the possession of the DEQ concerning applicable water quality standards, water quality data, monitoring, assessments, reports, procedures and schedules for developing and submitting the Upper Snake Rock TMDL and any supporting subbasin assessment to the EPA.

  - Utilizing the knowledge, expertise, experience and information of the Middle Snake WAG in assessing the status, attainability or appropriateness of water quality standards, and in developing the Upper Snake Rock TMDL and any supporting subbasin assessment.

  - Providing the Middle Snake WAG with an adequate opportunity to participate in drafting the documents for the Upper Snake Rock TMDL and any supporting subbasin assessment and to suggest changes to the documents.

- DEQ shall assist the Middle Snake WAG as specified in Idaho Code § 39-3616 in recommending those specific actions needed to control point and nonpoint sources of pollution within the watershed so that, within reasonable periods of time, designated beneficial uses are fully supported and other state water quality plans are achieved. In addition, the Middle Snake WAG shall consult with and participate in the development of each TMDL and any supporting subbasin assessment for water bodies within the watershed, and shall develop and recommend status actions needed to effectively control sources of pollution. Finally, the Middle Snake WAG shall employ all means of public involvement deemed necessary or required in chapter 52, title 67, Idaho Code, and shall cooperate fully with the public involvement or planning processes of other appropriate public agencies.

4.5 Planned Time Frame

Implementation timelines are identified in the Upper Snake Rock Watershed Management Plan (Section 3.6.01 3.6, Point Source Short & Long-term Goals, p. 201-202 and Section 3.6.02, Nonpoint Source Short and Long-term Goals, p. 206-207). These timelines are based on the pollutant-of-concern and are specific for a particular industry. To the extent practicable, these timelines will be continued until the TMDL is reopened as some time in the future. Until such time, the implementation time frame will continue as follows:

- Each industry will develop its more specific timelines within their individual implementation plan.

- DEQ will provide oversight for review and assessment of short-term and long term goals.

- DEQ will maintain a database for purposes of review and assessment of wasteload allocation limits.

- Reviews and/or assessments of the TMDL will be done on a regular basis with contents from the WAG being incorporated.

The Middle Snake River Watershed Management Plan was the first phase, in the development of a phased TMDL. As part of the long-term strategy, it proposed "20-30% reduction in nuisance aquatic vegetation within (10) years of final plan implementation" (pg. 5) assuming the 0.075 mg/L TP was achieved. A 10 year assessment period was also suggested in the Upper Snake Rock Watershed Management Plan (pg. 200 – Section 3.6: Reasonable Assurances and Implementation Schedule).

The Upper Snake Rock TMDL Modification scheduled a final assessment of water quality standards and beneficial use support attainment was scheduled for 2010 (pg. 89). Since then, the aquaculture community has undergone the issuance of the general permit in 2007 and local municipalities are currently in the permit renewal process.

To more fully capture the benefits of the TMDL implementation, DEQ suggests the TMDL be reopened in 2010 or shortly thereafter to provide the public and stakeholder with an updated document. This reopening would allow for the consolidation of the Middle Snake River Watershed Management Plan, Upper snake Rock Watershed Management Plan, Upper Snake Rock TMDL Executive Summary 2000, and the Upper Snake Rock TMDL Modification, providing clarity to the public and stake holder and allowing the documents to work in concordance with one another as intended. Given a 5-year renewal and assessment period, along with stakeholder participation, 2015 would be the target for an updated TMDL.

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Section 5: Summary of Five Year Review

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

5.1 Review process

This section summarizes the data requested, how the data was collected and reviewed, and how the data was determined to be relevant to the TMDL.

5.1.1 When was data requested from the WAG?

Data was requested from the Middle Snake WAG since the approval of the Middle Snake River Watershed Management Plan in 1997 and throughout the development of the Upper Snake Rock TMDL in 2000 and the Upper Snake Rock TMDL Modification in 2005; but even more recently since the development of the Upper Snake Rock TMDL 5-Year Review.

5.1.2 How was data collected and reviewed?

DEQ's data was collected under its standard operating field protocols governed under a Quality Assurance Project Plan (QAPP) for the Upper Snake Rock Subbasin. DEQ reviewed its own data under this provision; and applied the same provision to other data submitted from outside sources.

5.1.3 How was data determined to be relevant to the TMDL?

The determination of relevancy to the TMDL was dependent on the following:

- 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 (that provided a numeric value where a narrative standard was defined).

- 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. The provisions of the QAPP included field data determination (i.e. flow, conductivity, pH, temperature, dissolved oxygen, and turbidity) as well as laboratory data determination (i.e. TSS, TP and E. coli)

- Where water quality cleanup projects were identified, selected and implemented, the provisions were applied for field data determination, laboratory data determination; as well as the selection of monitoring points for the project(s).

- Monitoring was conducted at a frequency that was dependent on available resources, which were primarily dictated by resource budget constraints.
- Water quality data was encouraged and solicited from other agencies and organizations with provisions that reflected DEQ's QAPP process.
- 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.
- In order to provide a measure of accountability and potential credit, the year 2000 (or the year that the Upper Snake Rock TMDL was approved) will be used as the baseline year to draw comparisons for post-TMDL applications.

5.2 Changes in Subbasin

This section summarizes changes that have occurred in the Upper Snake Rock Subbasin since the approval of the Upper Snake Rock TMDL.

5.2.1 Changes to land use, WQS, sources, allocations, etc.

In general, the land use in the Upper Snake Rock Subbasin has not changed dramatically since the TMDLs were approved. However, it is certain that with population growth and economic development, land use changes will occur as urban sprawl approaches the agricultural lands.

The water quality standards are still the same as initially considered in the Upper Snake Rock TMDL with the exception of the standard for bacteria. When the TMDL was approved, the standard for primary and secondary contact recreation was based on fecal coliform, which is a surrogate for E. coli. In 2000, the Idaho Legislature changed the fecal coliform standard to E.coli.

Agriculture and grazing remain the primary nonpoint source pollutant sources. Population growth within Upper Snake Rock Subbasin has increased the demand on community infrastructure. This demand has caused municipalities to reconsider how wastewater NPDES permit limits will be met in the future. Possible solutions that have been considered are; pollutant trading, improved filtration systems, possible land application. The next NPDES permit cycle may put more of these options into practice.

The allocations to point and nonpoint sources have note been modified since the approval of the Upper Snake Rock TMDL. The potential exists, however, that modification to these allocations may occur as population growth and economic development materialize.

DEQ is currently researching elevated nitrogen levels from spring sources within the Upper Snake Rock Watershed. (Times News 11/18/08)

5.2.2 Statistical or other significance of those changes to the TMDL

The primary concern to the Upper Snake Rock TMDL is the potential changes in the subbasin that may impact water quality, may allow impact the pollutant loads to the streams. Unless best management practices are applied in nonpoint source areas to substantially control these additional loads (for excess nutrients, excess sediment and excess bacteria), the water quality resources may degrade beneficial use attainment. Likewise, point sources may be impacted if their ability to plan and control additional volume inputs above their facility design capacity is exceeded due to population growth and economic development.

In essence, long-range planning is encouraged by DEQ of all the point source and nonpoint source industries; but it must be consistent with the concept of sustainability. Consequently, sustainability implies “development that meets the needs of the present without compromising the ability of the future generations to meet their own needs: (WCED 1987). Safeguarding the environment is fundamental to sustainable development. Thus, human activity requires a configuration that allows society, its members and its economies to meet their needs while expressing their greatest potential in the present, but at a the same time preserving biodiversity and natural ecosystems. This ability requires environmental planning and acting to maintain these ideals in the very long-term. Therefore, DEQ supports a sustainable development strategy that demonstrates inter-relationships among the industries of the Upper Snake Rock Subbasin that require the following:

- Integrated economic, environmental, and social planning that extends beyond the current generation.
- Restoring and maintaining the water quality of the Snake River and associated tributaries, and protecting their beneficial uses and water quality standards; such that these uses and standards are recognized as important factors for influencing the future economic and social well-being of the Upper Snake Rock Subbasin.
- Management actions that support practices and recommend policies that lead towards sustainable and responsible development; such that the actions provide mechanisms for regional cooperation in developing long-term environmental, economic and community sustainability plans through watershed reduction plans.
- Each industry (both point source and nonpoint source) making their watershed reduction plans focus on strategies that promote sustainable options.
- Emphasis on soil, water, and energy conservation programs.
- Waste minimization, pollution prevention, and waste recycling programs as central to the success of the Upper Snake Rock TMDL.

5.3 TMDL Analysis

With some exceptions, the overall TMDL assumptions are still valid. However, when considering wasteload allocations for fish processors in the Upper Snake Rock Modification a baseline was established using data from 2000-2003 EPA Discharge Monitoring Reports. The next iteration or review of the TMDL will take into consideration changes in ownership within facilities.

For the Billingsley Creek TMDL, Weatherby Springs Creek a tributary to Billingsley Creek had one point source identified, Jones Fish Hatchery, within the Upper Snake Rock Modification. Based on the current

NPDES, the TMDL identified one discharge from Jones Fish Hatcher to Weatherby Springs Creek. If connectivity to the Snake River can be confirmed, a revision may need to be considered reflecting the Jones Fish Hatchery having two (2) discharges; one to Weatherby Springs Creek and a second to the Bar S Ditch (which may or may not discharge to the Snake River).

The original analyses were appropriate for the development of the TMDL. Current data also confirms in most instances that the original analysis was appropriate.

Wasteload Allocations and Load Allocations are appropriate for beneficial uses on the Snake River and tributaries. No changes to the allocations are proposed.

5.4 Review of Beneficial Uses

The original beneficial uses are appropriate and no changes are recommended at this time. In general, the sediment and *E. coli* TMDLs appear to be meeting beneficial uses for the Snake River. Total Phosphorus has not been reduced sufficiently to meet beneficial uses for the Snake River. Temperature impairment due to excess heat loading in run of river reservoirs, as well as from diversions, water re-use and flow modification presents challenges to achieving cold water aquatic life and salmonid spawning beneficial uses.

5.5 Water Quality Criteria

This section summarizes the water quality criteria used, how these have been changed (if changed), the appropriateness of those changes, the implementation of the TMDL and its effects on the water quality, and any warranted changes based on the data collected.

5.5.1 What criteria have changed that affects the TMDL?

With the exception of E.coli criterion, no other criteria have changed that affects the TMDL. This includes the IDAPA numeric criteria as well as the TMDL numeric criteria for excess sediment and excess nutrients. The E.coli criterion was changed from the fecal coliform surrogate standard by the Idaho Legislature in 2000 to conform to the EPA recommended criterion.

5.5.2 Is the change in criteria appropriate?

The change in the E.coli criterion from the fecal coliform surrogate is appropriate and is presently being applied in NPDES point source permits and in nonpoint source streams.

5.5.3 Has the TMDL been implemented?

The Upper Snake Rock TMDL was approved in 1997, with supplemental documents following in 2000 and 2005. The Upper Snake Rock TMDL has been under implementation planning since 1997. As shown in the water quality monitoring of the Snake River, the following applied:

- E. coli data was not collected prior to the Upper Snake Rock TMDL, fecal coliform was collected as the bacteria indicator within the water quality standards. After the TMDL was approved, the Snake River is at full support.

- TP data indicates that the Snake River was not at full support before the Upper Snake Rock TMDL. After the TMDL was approved, the Snake River was not at full support.

- TSS data indicates that the Snake River was at full support before the Upper Snake Rock TMDL. After the TMDL was approved, the Snake River was still at full support.

5.5.4 What changes in criteria may be warranted based on the data?

No changes in the criteria are warranted or suggested at this time based on the water quality data.

5.6 Watershed Advisory Group Consultation

The Upper Snake WAG was also involved with providing consultation to DEQ on the Upper Snake Rock 5-Year Review immediately after the Upper Snake Rock TMDL was completed and approved by EPA. A summary of the Mid Snake WAG meetings is shown by Table 30. A summary of the official Upper Snake BAG meetings is summarized in Table 31.

Table 30. Summary of the Mid Snake WAG Meetings since 2000

Date	Location	Attendance		Date	Location	Attendance
2000 – January 19	Twin Falls	20		2005 – February 16	Twin Falls	21
2000 – March 15	Twin Falls	19		2005 – May 18	Twin Falls	22
2000 – May 17	Twin Falls	21		2005 – August 17	Twin Falls	17
2000 – July 19	Twin Falls	16		2005 – November 16	Twin Falls	12
2000 – September 20	Twin Falls	23		2006 – February 15	Twin Falls	20
2000 – November 15	Twin Falls	19		2006 – May 17	Twin Falls	12
2001	Meetings held, no record			2006 – September 20	Twin Falls	Agenda
2002 – January 16	Twin Falls	17		2007 – January 24	Twin Falls	15
2002 – March 20	Twin Falls	21		2007 – April 18	Twin Falls	18
2002 - July 17	Twin Falls	23		2007 – June 20	Twin Falls	14
2002 – September 18	Twin Falls	Agenda		2007 – September 19	Twin Falls	18
2002 – November 20	Twin Falls	12		2007 – October 17	Twin Falls	16
2003 – February 19	Twin Falls	17		2007 – November 14	Twin Falls	16
2003 – April 16	Twin Falls	25		2008 – January 16	Twin Falls	15
2003 – June 18	Twin Falls	12		2008 – April 16	Twin Falls	15
2003 – August 20	Twin Falls	18		2008 – July 16	Jerome	10
2004 – January 21	Twin Falls	25		2008 – September 17	Jerome	18
2004 – March 17	Twin Falls	26		2008 – December 11	Twin Falls	15
2004 – May 19	Twin Falls	28		2009 – March 24	Jerome	13
2004 – July 21	Twin Falls	18		2009 – April 29	Jerome	18
2004 – November 17	Twin Falls	13		2009- June 16	Twin Falls	14
2004 – September 15	Twin Falls	18		2010 – January 20	Jerome	10

Table 31. Summary of the Upper Snake BAG Meetings since 2000

Date	Location	Attendance		Date	Location	Attendance
2000 - April 5	Twin Falls	14		2004 – April 7	Twin Falls	27
2000 – June 7	Idaho Falls	20		2004 – September 1	Pocatello	18
2000 – September 6	Sun Valley	26		2004 – December 1	Idaho Falls	16
2000 – November 1	Pocatello	Agenda		2005 – April 6	Twin Falls	20
2000 – December 6	Pocatello	Agenda		2005 – September 7	Pocatello	20
2001 – February 7	Pocatello	17		2005 – November 7	Twin Falls (conference call)	13
2001 – April 4	Twin Falls	17		2005 – December 7	Idaho Falls	27
2001 – June 6	Pocatello	Agenda		2006 – February 23	Twin Falls (conference call)	13
2001- August 1	Pocatello	14		2006 – April 12	Twin Falls	32
2001 – October 3	Twin Falls	12		2006 – September 6	Pocatello	13
2001 – December 5	Idaho Falls	20		2006 – December 6	Idaho Falls	16
2002 – April 3	Pocatello	15		2007 – April 4	Twin Falls	24
2002 – September 4	Idaho Falls	18		2007 – September 5	Driggs	19
2002 – December 4	Twin Falls	13		2007 – December 12	Pocatello	21
2003 – March 3	Twin Falls (conference call)	7		2008 – April 2	Jerome	26
2003 – April 2	Pocatello	26		2008 – July 16	Pocatello	21
2003 – July 9	Idaho Falls	27		2009 – April 1	Idaho Falls	22
2003 – September 9	Twin Falls	18		2009 – July 8	Jerome	41
2003 – November 12	Pocatello	20		2009 – September 16	Twin Falls	20
2004 – February 4	Pocatello	Agenda		2009 – November 4	Pocatello	18

5.7 Recommendations for Further Action

DEQ and the Mid Snake WAG will continue to work together to implement strategies on-the-ground towards meeting the beneficial uses and water quality standards of the Snake River and the tributaries. Point source facilities will operate through their NPDES permits, while nonpoint source entities will operate through the application of best management practices. At this time, DEQ recommends that the implementation strategy be modified by incorporating best management practices that specifically target the TMDL parameters for meeting beneficial uses and water quality standards of the Snake River and its tributaries.

DEQ intends to revise the TMDLs for the Upper Snake/Mid Snake HUC when staff and financial resources become available. A temperature TMDL for the tributaries is planned that will utilize the potential natural vegetation concept to achieve shade that reduces heat loading to the mainstem Snake. DEQ would like to prepare one overarching TMDL document in the future that captures the process and changes over time from the original 1997 Mid Snake Water Plan and subsequent revisions and additions.

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Appendix A. Designated Management Agency Report of Implementation Activities and Effectiveness

This appendix provides the Internet Site location for implementation activities that may have been done (or will be done) by the designated land management agency.

Nonpoint Source Industries

- Private Land Ownership: Private individuals and owners; ISCC

  Upper Snake Rock TMDL Agricultural Implementation Plan: Internet Site: http://scc.idaho.gov/TMDL%20Plans/UpperSnakeRock_aquaculture_wasteload_allocations_modifications.pdf

  Idaho Agricultural Pollution Abatement Plan (March 2003): Internet Site: http://scc.idaho.gov/PDF/AgPlan.pdf

  Idaho Agricultural Best Management Practices – A Field Guile for Evaluating BMP Effectiveness (October 2003): Internet Site: http://scc.idaho.gov/PDF/BMPEffectivenssGuidanceDocument.pdf

- Public Lands Grazing: BLM, USFS

  BLM: "Standards for Rangeland Health and Guidelines for Livestock Grazing Management" for Idaho: Internet Site: http://www.blm.gov/pgdata/etc/medialib/blm/id/publications.Par.91993.File.dat/SGFinal.pdf

  USFS: "Idaho Forestry Best Management Practices: Compilation of Research on Their Effectiveness" (October 1996): Internet Site: http://www.fs.fed.us/rm/pubs_int/int_gtr339.pdf

- State Lands Grazing: IDL

  IDL: "Best Management Practices for (Surface) Mining in Idaho" (November 1992): Internet Site: http://www.idl.idaho.gov/bureau/Minerals/bmp_manual1992/bmp_index.htm

  IDL: "Idaho Forest Practices Act": Internet Site: http://adm.idaho.gov/adminrules/rules/idapa20/0201.pdf

  IDL: "Forest Practices Cumulative Watershed Effects Process for Idaho" (March 2000): Internet Site: http://www.idl.idaho.gov/Bureau/ForestAssist/CWE-Combined.pdf

- Forested Ground: USFS

  Idaho Forest Products Commission: "Forestry for Idaho - Forest Stewardship Guidelines for Water Quality (Best Management Practices)": Internet Site: http://www.idahoforests.org/bmps.htm

  USFS: "Idaho Forestry Best Management Practices: Compilation of Research on Their Effectiveness" (October 1996): Internet Site: http://www.fs.fed.us/rm/pubs_int/int_gtr339.pdf

  USFS: "Sawtooth National Forest": Internet Site: http://www.fs.fed.us/r4/sawtooth/

- Recreation: BLM, USFS, private individuals; State and federal departments of parks and recreation

  USFS: "Sawtooth National Forest – Recreational Activities": Internet Site:
  http://www.fs.fed.us/r4/sawtooth/recreation/

  BLM: "Bureau of Land Management – Recreation": Internet Site:
  http://www.blm.gov/id/st/en/prog/recreation.html

  BLM: Shoshone Field Office Recreation Sites & Activities": Internet Site:
  http://www.blm.gov/id/st/en/fo/shoshone/recreation_sites_.html

  BLM: Burley Field Office Recreation Sites & Activities": Internet Site:
  http://www.blm.gov/id/st/en/fo/burley/recreation_sites_.html

Point Source Industries

- Municipalities – Via their NPDES permits

  EPA: Current NPDES Permits in Idaho: Internet Site:
  http://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/Current+ID1319

  EPA: Draft NPDES Permits for Idaho Dischargers: Internet Site:
  http://yosemite.epa.gov/r10/WATER.NSF/NPDES+Permits/DraftPermitsID

- Industrial Plants – Via their NPDES permits

  http://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/Current+ID1319

  EPA: Draft NPDES Permits for Idaho Dischargers: Internet Site:
  http://yosemite.epa.gov/r10/WATER.NSF/NPDES+Permits/DraftPermitsID

Appendix B. Summary of Point Sources

Permit #	New Permit #	NPDES Facilities	Status
Segment 1 - Milner Dam to Pillar Falls			
	NPDES-ID0022446	City of Hansen	active
Segment 2 - Pillar Falls to Crystal Springs			
GAP-104	IDG-130104	Canyon Springs FH	active
GAP-008	IDG-130008	Blue Lakes FH	active
GAP-008	IDG-130008	Blue Lakes OLSB	active
GAP-018	IDG-130018	Pristine Springs FH	active
GAP-036	IDG-130036	Canyon Trout FH	active
GAP-124	IDG-130124	CSI FH	active
GAP-006	IDG-130006	Crystal Springs FH	active
	NPDES-ID0021270	City of Twin Falls	active
GAP-084	IDG-130084	Daydream Ranch FH	not producing
GAP-091	IDG-130091	Deadman Gulch FH	not producing
GAP-097	IDG-130097	C&M FH	not producing
		Silver Creek FP	non-permitted
Segment 3 - Crystal Springs to Box Canyon			
GAP-016	IDG-130016	Magic Valley Steelhead FH	active
GAP-100	IDG-130100	Gary Wright FH	active
GAP-041	IDG-130041	FBI/Catfish FH	active
GAP-054	IDG-130088	Briggs Creek West FH	active
GAP-054	IDG-130088	Briggs Creek West OLSB	active
GAP-014	IDG-130014	Box Canyon FH	active
GAP-014	IDG-130014	Box Canyon OLSB	active
GAP-010	IDG-130010	Rim View FH	active
GAP-010	IDG-130010	Rim View OLSB combined	active
GAP-028	IDG-130028	Rainbow Trout/Filer FH	active
GAP-059	IDG-130059	Olson Ponds FH	active
GAP-046	IDG-130046	SeaPac of ID	active
GAP-046	IDG-130046	SeaPac of ID OLSB	active
GAP-103	IDG-130103	Stutzman Farm FH	active
GAP-019	IDG-130019	Cedar Draw FH	active
GAP-115	IDG-130115	Leo Martins FH	active
GAP-040	IDG-130040	Tunnel Creek FH	active
GAP-013	IDG-130013	Niagara Springs IPC/FH	active
GAP-013	IDG-130013	Niagara Springs IPC/OLSB	active
GAP-007	IDG-130007	CSF/Middle Hatchery	active
GAP-007	IDG-130007	CSF/Middle Hatchery OLSB combined	active
GAP-125	IDG-130125	Clear Springs Processor	active
GAP-011	IDG-130011	Clear Lakes Trout FH	active
GAP-011	IDG-130011	Clear Lakes Trout OLSB	active
GAP-011	IDG-130011	Idaho Trout Processor	active
GAP-002	IDG-130002	Snake River Farm FH	active
GAP-002	IDG-130002	Snake River Farm OLSB	active
GAP-102	IDG-130102	Snyder Ponds	active
GAP-063	IDG-130063	White's Trout FH	active

Permit #	New Permit #	NPDES Facilities	Status
GAP-064	IDG-130064	W&W Trout FH	active
GAP-116	IDG-130116	First Ascent FH	active
GAP-079	IDG-130079	Blau FH	active
GAP-029	IDG-130029	Rainbow Trout/Buhl FH	active
GAP-070	IDG-130070	Juker Ponds FH	active
GAP-109	IDG-130109	RCP FH	active
GAP-069	IDG-130069	Dolana FH	active
GAP-047	IDG-130047	Peter's FH	active
GAP-080	IDG-130080	Buhl/Fulmer FH	active
GAP-077	IDG-130077	Deep Creek Trout FH	active
GAP-112	IDG-130112	Lively Ponds FH	active
GAP-053	IDG-130053	Jack's Ponds FH	active
GAP-057	IDG-130057	Cox FH	active
GAP-133	IDG-130133	FBI/Gibbs Baker Place	active
GAP-088	IDG-130088	Briggs Creek FH	active
GAP-088	IDG-130088	Briggs Creek OLSB	active
GAP-060	IDG-130060	Blind Canyon FH	active
	NPDES-ID0020168	City of Jerome	active
	NPDES-ID0020061	City of Filer	active
	NPDES-ID0020664	City of Buhl	active
Segment 4 - Box Canyon to Gridley Bridge			
GAP-009	IDG-130009	Pisces/Magic Springs FH	active
GAP-009	IDG-130009	Pisces/Magic Springs OLSB	active
GAP-061	IDG-130061	Ten Springs FH	active
GAP-061	IDG-130061	Ten Springs OLSB	active
GAP-004	IDG-130004	USFWS FH	active
GAP-004	IDG-130004	USFWS OLSB	active
GAP-003	IDG-130003	IDFG FH	active
Segment 5 - Gridley Bridge to Shoestring Bridge			
GAP-111	IDG-130111	FBI/Hensley FH	active
GAP-065	IDG-130065	Buckeye Ranch FH	active
GAP-056	IDG-130056	Big Bend Trout FH	active
GAP-056	IDG-130056	Big Bend Trout OLSB	active
GAP-082	IDG-130082	Billingsley Bay FH	active
GAP-098	IDG-130098	Lyn Clif Farms FH	active
GAP-020	IDG-130020	White Springs FH	active
GAP-020	IDG-130020	White Springs OLSB	active
GAP-090	IDG-130090	FBI/Smith FH	active
GAP-118	IDG-130118	Slane Ponds FH	active
GAP-119	IDG-130119	Fleming Ponds FH	active
GAP-120	IDG-130120	Stevenson Ponds FH	active
GAP-076	IDG-130076	Lemmon Ponds FH	active
	NPDES-ID0025941	City of Hagerman	active
Segment 5 - Billingsley Creek			
GAP-015	IDG-130015	Rangens, Inc	active
GAP-050	IDG-130050	Lee's FH	active
GAP-130	IDG-130130	Johnson's FH	inactive

Permit #	New Permit #	NPDES Facilities	Status
GAP-005	IDG-130005	Jones FH	active
GAP-066	IDG-130066	Billingsley Creek Ranch	active
GAP-001	IDG-130001	University of Idaho #1 & #2	active
GAP-131	IDG-130131	Tupper Springs FH	active
GAP-048	IDG-130048	Hidden Springs FH	active
GAP-017	IDG-130017	Fisheries Development #1 & #2	active
GAP-132	IDG-130132	Emerald Valley Ranch FH	active
GAP-083	IDG-130083	Talbott's FH	active
GAP-096	IDG-130096	Boyer's FH	active