The Fall Creek Total Maximum Daily Load (TMDL)

of the

Lake Walcott Watershed Management Plan (Lake Walcott TMDL)

by

Dr. Balthasar B. Buhidar, Ph.D
Regional Manager – Water Quality Protection
Idaho Department of Environmental Quality
Twin Falls Regional Office

November 9, 2006

FINAL SUBMISSION

The Fall Creek Total Maximum Daily Load (TMDL) of the Lake Walcott Watershed Management Plan (Lake Walcott TMDL)

By

Dr. Balthasar B. Buhidar, Ph.D.
Regional Manager – Water Quality Protection
Idaho Department of Environmental Quality
Twin Falls Regional Office

November 9, 2006

INFORMATION AT A GLANCE	
303(d) Waterbody	Snake River
Non 303(d) Waterbody	Fall Creek
Pollutants of Concern	Sediment, nutrients, bacteria
National Pollutant Discharge Elimination System (NPDES) Permitted Facilities	ID-0026719 – Upper Facility ID-0026816 – Lower Facility
Approved TMDL	Lake Walcott TMDL
Appendix A	Fall Creek Drainage and Fish Hatcheries
Appendix B	Response to Public Comment

I. INTENT AND PURPOSE

The intent and purpose of the Fall Creek Total Maximum Daily Load (or Fall Creek TMDL) is to establish water quality load allocations for sediment, nutrients and bacteria in Fall Creek as part of the overall Lake Walcott TMDL. Fall Creek is not a §303(d) listed waterbody (Lay 2000, p 99), but is described in the Lake Walcott Total Maximum Daily Load (i.e. Lake Walcott TMDL) as a "perennial stream feeding the Snake River in the Walcott Subbasin" (Lay 2000, p32).

The receiving waterbody to Fall Creek is the Snake River, which is §303(d) listed. Consequently, the Fall Creek TMDL is necessary to protect the beneficial uses of the Snake River as part of the Lake Walcott TMDL. The Fall Creek TMDL is not a TMDL modification of the Lake Walcott TMDL; it is an addition to the Lake Walcott TMDL and does not modify in any way the Lake Walcott TMDL that presently exists in the Snake River. Rather, the intent is to bring the aquaculture facilities associated with Fall Creek into alignment with the NPDES General Aquaculture Permit so that wasteload allocations can be applied to these aquaculture facilities under the Lake Walcott TMDL to meet water quality provisions for the Snake River.

The Fall Creek TMDL, is an iterative watershed management tool for implementing State water quality standards based on the relationship between pollution sources and instream water quality conditions. The TMDL establishes the allowable loadings or other quantifiable parameters for Fall Creek and thereby provides the basis for the state to establish water quality-based controls that should provide the pollution reduction necessary to achieve downstream water quality standards and beneficial uses of the Snake River. The Fall Creek

TMDL may require more stringent reductions through implementation of other best management practices or limitations if water quality standards and beneficial uses are not achieved.

II. IDENTIFICATION OF WATERBODY, POLLUTANTS OF CONCERN, POLLUTANT SOURCES, AND PRIORITY RANKING

Fall Creek is identified by Lay (2000) as a tributary to the Snake River. Its confluence is at approximately River Mile 697.3 (Lay 2000, p 172) of the Massacre Rocks to Lake Walcott Reach of the Snake River—a 22-mile low-gradient section at a relative slope of 0.23 feet per mile (Lay 2000, pp 48-49).

See Appendix A of the Lake Walcott TMDL for a site map of the Fall Creek drainage and associated fish hatcheries.

As defined in the Lake Walcott TMDL, Fall Creek discharges in Segment 2 of the Lake Walcott Snake River Reach (Lay 2000, p 144). Segment 2 is defined according to the mass balance model used in the TMDL to establish the loading analysis (Lay 2000, pp 143-144). Fall Creek is also designated as US-7 under IDAPA §58.01.02.150.11 with undesignated beneficial uses.

Since the Snake River is the §303(d) receiving waterbody, the pollutants of concern are based on the water quality impairments defined in the Lake Walcott TMDL . Therefore, the primary pollutants-of-concern include sediment (as total suspended sediment), nutrients (as total phosphorus) and bacteria (as *Escherichia coli*).

The Snake River Reach from Massacre Rocks to Lake Walcott has a high priority ranking. Consequently, all tributaries (whether §303(d) or not) that discharge into the high priority stream have received a loading capacity (as informational TMDLs) for the high priority stream to meet its water quality target. In addition, certain provisions apply for the high priority stream once the TMDL is completed:

> (1) Until a TMDL or equivalent process is completed, new or increased discharge of pollutants that have caused the water quality limited listing may be allowed if interim changes, such as pollutant trading, or some other approach for the pollutant(s) of concern, are implemented and the total load remains constant or decreases within the watershed. In this situation, the Lake Walcott TMDL was completed and approved in 2000 by EPA (Lay 2000).
>
> The information contained in the Lake Walcott TMDL states that the two fish hatcheries on Fall Creek were not in operation at the time the TMDL was developed, finalized and approved (Lay 2000, pp 32, 99). Since then EPA's Idaho General Aquaculture Permit was developed and both of the Fall Creek facilities have determined to come back into operation, making it necessary to formally develop the Fall Creek TMDL as a component of the Lake Walcott TMDL. As such, the TMDL process for the Snake River (as the water quality limited water body) in the Lake Walcott Subbasin is still in effect; the Fall Creek TMDL is only an additional component of that same process that more fully addresses the sources of pollutants that eventually discharge (through Fall Creek) into the Snake River.

(2) Once the TMDL or equivalent process is completed (as has occurred with the Lake Walcott TMDL), any new or increased discharge of causative pollutants will be allowed only if consistent with the approved TMDL (i.e. the Lake Walcott TMDL). The Fall Creek TMDL meets the overall intent of the Lake Walcott TMDL in meeting the loading capacity of the Snake River as the high priority stream under the Lake Walcott TMDL.

(3) Nothing in the development and implementation of the Fall Creek TMDL (as a component of the Lake Walcott TMDL) is intended or shall be interpreted as requiring best management practices for agricultural operations not adopted on a voluntary basis.

III. DESCRIPTION OF THE APPLICABLE WATER QUALITY STANDARDS AND NUMERIC WATER QUALITY TARGET

The Massacre Rocks to Lake Walcott Reach of the Snake River is designated for primary contact recreation, secondary contact recreation, cold water aquatic life, drinking water supply, and agricultural water supply (Lay 2000, p 54). As noted in Section II, this reach is defined as Segment 2 of the Lake Walcott Snake River Reach in the Lake Walcott Subbasin.

Table 1 shows the National Assessment Database (EPA 2002) entry for the Lake Walcott Watershed, providing the assessment units (AUs), catalog number, and water quality status of Segment 2.

Table 1. Lake Walcott Segment 2 Snake River Reach Assessment Units and Water Quality Status

SEGMENT 2	LAKE WALCOTT SNAKE RIVER REACH SEGMENT 2 ASSESSMENT UNIT(S)	WATER QUALITY STATUS PER AU
Massacre Rocks to Lake Walcott	American Falls Dam to Rock Creek (ID-17040209SK011_02,07,03)	I, I, NA
	Rock Creek to Raft River (ID-17040209SK006-07,02,03)	I, NA, NA
	Raft River to Lake Walcott (ID-17040209SK005_07)	I
	Minidoka Dam to Heyburn/Burley Bridge (ID-17040209SK002_07,02)	I, NA
	Heyburn/Burley Bridge to Milner Dam (ID-17040209SK002-07,03,02)	I, NA, NA
AU = Assessment Unit. ID = Idaho. I = Impaired. NA = Not Assessed.		

The numeric water quality standards imposed by the Lake Walcott TMDL are as follows:

1. Sediment. Water quality in this reach of the Snake River has been reported to have total suspended sediment (TSS) at of 22.5 mg/L (mean) with maximum concentrations of 230.0 mg/L TSS (Lay 2000, p 68, Table 13). The recommended instream water quality target for TSS is 25 mg/L (average monthly) in the Snake River and 50 mg/L (average monthly) in the tributaries (Lay 2000, p 138). The load capacity for sediment (as TSS) for the Snake River reach is 329 ton/day (Lay 2000, p 146, Table 46).

2. Nutrients. Water quality in this reach of the Snake River has been reported to have total phosphorus (TP) at 0.060 mg/L (mean) with maximum concentrations of 0.111 mg/L TP (Lay 2000, p 68, Table 13). The recommended instream water quality target for TP is 0.080 mg/L TP in the Milner Pool (Lay 2000, p 143). No load capacity for TP was set in the Snake River reach in the Lake Walcott TMDL.

3. Bacteria. Water quality in this reach has been reported to have fecal coliform bacteria at 81 CFU/100 mL (mean) with maximum concentrations of 2,000 cful/100 mL (Lay 2000, p 68, Table 13). Bacteria as *Escherichia coli* (*E. coli*) were not assessed in the Lake Walcott TMDL; at the time the Idaho IDAPA rules and regulations for bacteria for recreational streams had water quality standards only for fecal coliform as a surrogate for *E. coli*. Since then, the rules and regulations define *E. coli* as the water quality standard (IDAPA §58.01.02.251.01.a) for primary recreational standard as 126 CFU/100 mL geometric mean. Therefore, the application of the primary contact recreation geometric mean standard (126 CFU *E. coli* /100 mL) will be applied on Fall Creek to meet the beneficial uses of the Snake River.

IV. LOADING CAPACITY – LINKING WATER QUALITY AND POLLUTANT SOURCES

The loading capacity (LC) is the greatest amount of loading that a water body can receive without violating water quality standards. In the case of Fall Creek, the LC is dictated (as explained in Sections II and III) by the LC of the Snake River as the receiving §303(d) listed waterbody. For the Snake River to meet its water quality standards, it is imperative that the tributaries to the Snake River meet water quality standards as well. Otherwise, attainment of water quality standards (and beneficial uses) cannot be achieved.

Based on the Lake Walcott TMDL provisions for instream water quality standards (or targets), the Fall Creek LC is defined as follows (as previously described in Section III):

1. Sediment (as TSS): The water quality target for TSS is 50 mg/L (average monthly) in the tributaries. Fall Creek average flow is approximately 25.0 cfs. Therefore, based on the TMDL formula for calculating LC for TSS for Fall Creek:

   TSS LC = Water Quality Target x Flow, cfs x 5.4
   TSS LC = 50 mg/L TSS x 25.0 cfs x 5.4
   TSS LC = 6,750.0 lb/day TSS LC

2. Nutrients (as TP): The recommended instream water quality target for TP is 0.080 mg/L TP in the Milner Pool (Lay 2000, p 143). No load capacity for TP was set in the Snake River reach of the Lake Walcott TMDL. However, as a conservative approach to meet the Milner Pool 0.080 mg/L TP water quality target, the Snake River reach would need to be at least the same value, or 0.080 mg/L TP, for the Snake River and 0.100 mg/L TP for tributaries. This same approach has precedence in the Middle Snake River under the approved Upper Snake Rock TMDL (Buhidar 1999, Buhidar 2000, Buhidar 2005). Therefore, based on the TMDL formula for calculating LC for TP for Fall Creek:

   TP LC = Water Quality Target x Flow, cfs x 5.4
   TP LC = 0.100 mg/L TP x 25.0 cfs x 5.4
   TP LC = 13.50 lb/day TP LC

3. Bacteria (as *E. coli*): The primary recreational standard for the Snake River Reach is 126 CFU/100 mL geometric mean based on a minimum of five (5)

samples taken every three (3) to five (5) days over a thirty (30) day period. The "trigger" for this target will be an instantaneous value of 406 *E. coli* organisms/100 mL based on the primary contact recreational standard of the Snake River (IDAPA §58.01.02.251.01.b.i). Therefore, based on the TMDL formula for calculating LC for *E. coli* for Fall Creek:

E. coli LC = Water Quality Target x Flow, cfs x 0.02445
E. coli LC = 126 CFU/100 mL *E. coli* x 25.0 cfs x 0.02445
E. coli LC = 77.0 cfu^9/day *E. coli* LC

The current or existing load is calculated from the monitored pollutant concentrations in Fall Creek. For Fall Creek, the existing load for TSS (32.0 mg/L) and TP (0.118 mg/L) is based on the Lake Walcott TMDL (Lay 2000, p 65, Table 10). *E. coli* information was not monitored and is therefore not available for determination of the existing water quality condition.

V. WASTELOAD ALLOCATIONS (WLAs)

The wasteload allocation (WLA) is the portion of a receiving water's LC that is allocated to one of its existing or future point sources of pollution. The WLA is the allocation for an individual point source that ensures that the level of water quality to be achieved by the point source is derived from and complies with all applicable water quality standards. As specified in Section I, Fall Creek is not currently on the §303(d) list of the federal Clean Water Act. Therefore, the application of water quality standards is based on the LC of Fall Creek for achieving the beneficial uses of the Snake River. Fall Creek must meet the water quality standard of the Snake River by having its own LC.

Only two (2) point sources are known to exist on Fall Creek. (1) Fall Creek Upper Facility (NPDES No. ID-0026719) and (2) Fall Creek Lower Facility (NPDES No. ID-0026816). The WLAs for both these facilities are based on the discharge monitoring records for the period of record from January 1996 to November 1998 (or N = 35) for both facilities. Both facilities were not operated (until recently) since 1998, and are presently seeking WLAs for their NPDES permits. The average flow for both facilities is 21.4 cfs and 24.9 cfs, respectively. Therefore:

1. TSS WLA: The TSS limitation for raceway effluent discharges is 5.0 mg/L Net TSS. This limitation has foundation and precedence as an NPDES permit limitation in the Mid-Snake fish hatcheries of the Upper Snake Rock TMDL (Buhidar, 1997, Buhidar 1999, Buhidar 2000, and Buhidar 2005). DEQ-Twin Falls Regional Office (TFRO) concludes that the application of this limitation on the Fall Creek facilities is consistent and provides a rational basis for use of this provision. Therefore,

   Upper Facility: 5.0 mg/L TSS x 21.4 cfs (mean) x 5.4 = 577.8 lb/day TSS
   Lower Facility: 5.0 mg/L TSS x 24.9 cfs (mean) x 5.4 = 672.3 lb/day TSS
   Overall TSS Total WLA: 577.8 lb/day + 672.3 lb/day = 1,250.1 lb/day TSS

   Based on the discharge monitoring reports for the period of record for the Upper Facility, the raceway average TSS net load is never exceeded. The average TSS out load for the offline settling pond exceeded the TSS WLA one (1) time in 35 sampling months or 2.86% of the time. Relative to the Lower Facility, the average TSS net load never exceeded the TSS WLA.

2. TP WLA: The basis for the TP WLA is premised on a concentration target that will meet the water quality standard for the Snake River (as the receiving waterbody) in the Lake Walcott Subbasin. To follow precedence and maintain consistency, and to provide a rational basis for such precedence and consistency, the use of the Upper Snake Rock TMDL approach (not the 0.075 mg/L TP instream target in the Middle Snake River) for aquaculture facilities was applied here (Buhidar, 1997, Buhidar 1999, Buhidar 2000, and Buhidar 2005), as defined in the Lake Walcott TMDL for the Snake River. Therefore, a concentration-based target of 0.080 mg/L TP (as defined in the Lake Walcott TMDL) was used to set the TP limitations for both facilities together, based on the 0.080 mg/L TP in the Snake River and a flow rate of 24.9 cfs that represents the greater average flow rate of both facilities:

   TP WLA (Both Facilities): 0.080 mg/L TP x 24.9 cfs x 5.4 = 10.76 lb/day TP

   To segregate the WLA for both facilities, a production-based approach was applied based on discussions with facility personnel on March 10, 2006. The overall total annual production for both facilities is 800,000 lb. The following was the basis for the segregation of the 10.76 lb/day TP:

   Upper Facility: 500,000 lb annual production = 62.50% of 800,000 lb
   Lower Facility: 300,000 lb annual production = 37.50% of 800,000 lb
   Overall: 800,000 lb annual production = 100.00%

   Upper Facility: 10.76 lb/day TP x 62.50% = 6.73 lb/day TP
   Lower Facility: 10.76 lb/day TP x 37.50% = 4.03 lb/day TP
   Overall: 6.73 lb/day + 4.03 lb/day = 10.76 lb/day TP

   Together, both facilities shall receive a TP limitation of 10.76 lb/day TP to meet the beneficial uses of Fall Creek (as an informational TMDL as described in Section II) so that the Snake River achieves its water quality standards under the Lake Walcott TMDL. This means that the offline settling ponds associated with the Upper Facility (as part of the WLA for the facility) must also meet the WLA specific for the Upper Facility (6.73 lb/day TP). The Lower Facility must meet the 4.03 lb/day TP WLA. Together, both facilities with their offline settling ponds shall not exceed 10.76 lb/day TP WLA.

   Unfortunately, no information was available from the discharge monitoring reports for the TP load for the period of record to assess the necessary reduction percentages that would be needed to meet the beneficial uses of the Snake River. But, discussions with facility personnel indicated that these WLAs were doable and appropriate for both facilities.

3. *E. coli* WLA: As stipulated in Buhidar and Sharpnack (2003):

   > Relative to the aquaculture industry in the Upper Snake Rock subbasin, the fecal coliform or *E. coli* criteria are not indigenous to cold water fish hatcheries or warm water fish hatcheries. Total coliform bacteria are a collection of relatively harmless microorganisms that live in man and warm- and cold-blooded animals. They aid in the digestion of food. A specific subgroup of

> this collection is the fecal coliform bacteria, the most common member being *E. coli*. Fecal coliform bacteria and *E. coli* are generated in the intestines of man or warm-blooded animals. Fish, whether raised in cold water or warm water, are cold-blooded animals and do not generate fecal coliform bacteria or *E. coli* in their intestines.

Consequently, no limitations are imposed for *E. coli* on the fish hatcheries of Fall Creek. Because no information was available from the discharge monitoring reports for the *E. coli* load for the period of record and since the fish facilities do not general E*. coli*, the WLA for *E. coli* is zero.

VI. LOAD ALLOCATIONS (LAs)

The load allocation (LA) is the portion of a receiving water's LC attributed either to one (1) of its existing or future nonpoint sources of pollution or to natural background sources.

To define the LA for Fall Creek, the starting point is the LC, which is the greatest amount of loading that water can receive without violating water quality standards. By definition, the components that make up the LC cannot be greater than the LC itself, so the LA for nonpoint sources combined with the WLA for point sources must be less than the LC. To these components must be added the definition of "available load" (AL) which represents the load actually available for allocation between point sources and nonpoint sources after the uncertainty component is considered. That uncertainty component is best defined as the margin of safety (MOS), which is further described in Section VII. Essentially, the available load is the LC minus the MOS:

AL = LA + WLA = LC – MOS

LA = LC – MOS – WLA = LC – (MOS + WLA)

TSS LA = LC – (MOS + WLA)
TSS LA = 6,750.0 lb/day TSS – (675.0 lb/day + 1,250.1 lb/day)
TSS LA = 4,824.9 lb/day TSS

TP LA = LC – (MOS + WLA)
TP LA = 13.50 lb/day TP – (1.35 lb/day + 10.76 lb/day)
TP LA = 1.39 lb/day TP

E. coli LA = LC – (MOS + WLA)
E. coli LA = 77.0 cfu^9/day *E. coli* – (7.7 cfu^9/day + 0.0 cfu^9/day)
E. coli LA = 69.3 cfu^9/day *E.coli*

Within the structure of the Fall Creek TMDL, the LA was further divided into the following three (3) general categories:

1. The first general category is concerned with permitted nonpoint source facilities associated with the Federal Energy Regulatory Commission (FERC) permitted hydropower facilities; all land application facilities (LAFs) that may or may not require a permit from the State; and all confined feeding

operations (CFOs) that may or may not require an NPDES permit from EPA for a 24-hour, 25 year storm event.

2. The second general category is concerned with (1) all agricultural lands (inclusive of irrigated and non irrigated lands farmlands); (2) grazing on public lands and state lands; (3) private land ownership that includes all nonpoint source activities; and (4) those nonpoint activities that are more closely related to the Fall Creek stream corridor itself and not necessarily associated with the other components of this category.

3. The third general category is concerned with all construction-type activities that may or may require a general permit (from EPA) that may have a direct impact to Fall Creek. These activities are considered ground-disturbing activities and may require erosion and sediment controls. This third category utilizes a 2% reserve from the overall nonpoint source category and would revert back to this category once the construction activity is finalized. Precedence and justification for this 2% approach may be shown in Buhidar (2005). Calculations for this category are summarized as follows:

   Construction Activities = Pollutant LA x 2%

   TSS Construction Activities = TSS LA x 2%
   TSS Construction Activities = 4,824.9 lb/day x 2%
   TSS Construction Activities = 96.5 lb/day TSS

   TP Construction Activities = TP LA x 2%
   TP Construction Activities= 1.39 lb/day x 2%
   TP Construction Activities = 0.03 lb/day TP

   E. coli Construction Activities = *E. coli* LA x 2%
   E. coli Construction Activities = 69.3 cfu^9/day x 2%
   E. coli Construction Activities = 1.4 cfu^9/day *E. coli*

Although the allocation of 2% from the nonpoint source general category may seem like a small allocation for construction type activities, several things were considered in that determination:

1. First, such activities, regardless of size, will need to incorporate best management practices that effectively protect water quality of the receiving waterbody associated with the stream corridor. As such, the designated land management agencies have been empowered to assist applicants with the selection of authorized best management practices for water quality protection.

2. Second, these construction activities are short-term when compared to other nonpoint source activities that are year-round and continual.

3. Third, depending on the size of the construction activity, the applicant may need to apply for a Construction General Permit from EPA and define erosion and sediment control measures under their stormwater pollution prevention plan.

4. Fourth, the Lake Walcott Watershed Advisory Group (WAG) was supportive of this approach. This same approach had similar support from the Mid-Snake WAG and the Wood River WAG in south-central Idaho.

In terms of future growth for nonpoint sources, no specific allocation was set aside, so the allocation is zero. However, as a general consideration, it is noted that future growth of the Fall Creek drainage that incorporates a land use change (such as from agricultural or grazing lands to subdivisions) may occur. Such changes, or any similar to it, will still be considered a part of the overall nonpoint source category that is associated with the LA and must demonstrate compliance with the overall water quality goals of the Fall Creek TMDL to meet the LC of Fall Creek.

VII. MARGIN OF SAFETY (MOS)

A 10% margin of safety (MOS) was applied on all pollutants-of-concern to account for any lack of knowledge concerning the relationship between effluent limitations and water quality:

TSS MOS = TSS LC x10%
TSS MOS = 6,750 lb/day x 10%
TSS MOS = 675.0 lb/day

TP MOS = TP LC x 10%
TP MOS = 13.50 lb/day x 10%
TP MOS = 1.35 lb/day

E. coli MOS = E. coli LC x 10%
E. coli MOS = 77.0 cfu^9/day x 10%
E. coli MOS = 7.7 cfu^9/day

VIII. SEASONAL VARIATION

Seasonal variation is a component of a TMDL. The application of a seasonal component into the TMDL for Fall Creek was not considered because little information existed to allow for this. Therefore, the seasonal variation is zero. However, it is reasonable to assume that future iterations of the Fall Creek TMDL may require seasonal considerations and are therefore deferred until such time as more information is provided to justify this.

IX. OVERALL TMDL TABLE BASED ON THE LC FOR FALL CREEK

Table 2, the overall TMDL for Fall Creek, summarizes Sections IV, V, VI, VII and VIII. The table is based on the water quality instream targets set for Fall Creek for TSS (50.0 mg/L), TP (0.100 mg/L) and *E. coli* (126 CFU/100 mL geometric mean). The flow provisions are based on the average flows of 25.0 cfs for Fall Creek, 21.4 cfs for the Upper Facility and 24.9 cfs for the Lower Facility.

Table 2. Fall Creek Overall TMDL Table

TMDL COMPONENTS	TSS, lb/day	TP, lb/day	*E. coli*, cfu^9/day
NONPOINT SOURCES			
FERC, LAFs, CFOs	0.0	0.0	0.0
Ag, Graze, Private, Corridor	4,728.4	1.36	67.9
Stormwater – Construction – 2%	96.5	0.03	1.4
NPDES PERMITTED POINT SOURCES			

Upper Facility WLA	577.8	6.73	0.0
Lower Facility WLA	672.3	4.03	0.0
Margin of Safety – 10%	675.0	1.35	7.7
Loading Capacity	6,750.0	13.50	77.0

E. coli = *Escherichia coli*. TSS = Total Suspended Solids. TP = Total Phosphorus. WLA = Wasteload Allocation for an NPDES permitted point source facility. Seasonal variation is not a component in the Fall Creek TMDL at this time. FERC = Federal Energy Regulatory Commission permitted hydropower facilities. LAFs = Land Application Facilities. CFOs = Confined Feeding Operations like dairies and feedlots of all sizes. Seasonality is not a component that was considered in Table 2 as described in §VIII.

Relative to TSS, the overall nonpoint source category (4,824.9 lb/day TSS) represents 71.48% of the TSS LC. The point source category (1,250.1 lb/day TSS) represents 18.52% of the TSS LC. The remaining 10% is attributable to the TSS MOS.

Relative to TP, the overall nonpoint source category (1.39 lb/day TP) represents 10.30% of the TP LC. The point source category (10.76 lb/day TP) represents 79.70% of the TP LC. The remaining 10% is attributable to the TP MOS.

Relative to *E. coli*, the overall nonpoint source category (69.3 cfu^9/day *E. coli*) represents 90.0% of the *E. coli* LC. The point source category (0.0 cfu^9/day *E. coli*) represents 0.0% of the *E. coli* LC. The remaining 10% is attributable to the *E. coli* MOS.

X. REASONABLE ASSURANCES

Providing reasonable assurance that point sources and nonpoint sources will meet the LC of Fall Creek is a necessary requirement of the Fall Creek TMDL in order to meet the beneficial uses of the Snake River. By determining the LC for Fall Creek (for TSS, TP and *E. coli*) and by allocating allowable limits within the confines of the LC, we have reasonable assurance that the LC can be met by both the point sources and the nonpoint sources (assuming both sources meet their imposed targets). Therefore, reasonable assurance will be provided through the following:

1. Point Sources. Point sources (fish hatcheries) will receive WLAs that are described in Table 2, which are within the LC of the Fall Creek waterbody; and are specifically set up to meet the beneficial uses of the Snake River. Therefore, DEQ-TFRO, in conjunction with EPA, will coordinate with the permitted facilities to incorporate the WLAs through the NPDES permitting process since TP makes up 79.70% of the TP LC in the point source category (as shown in Section IX, Table 2).

2. Nonpoint Sources. Nonpoint sources will receive LAs that are within the LC of the Fall Creek waterbody; and are specifically set up to meet the beneficial uses of the Snake River. Therefore, DEQ-TFRO, in conjunction with appropriate the land management agencies, will coordinate with public and private land ownerships to incorporate water quality cleanup strategies and projects specifically targeted to reducing erosion and sediment sources since TSS makes up 71.48% of the TSS LC in the nonpoint source category (as shown in Section IX, Table 2). Associated with TSS is 90.0% of the *E. coli* that is attributable to the nonpoint source category. Thus, the remediation of TSS will bring about a similar remediation in *E. coli*.

In the case of Fall Creek, both the point source and nonpoint source industries will provide management strategies that support reasonable assurances in meeting the water quality standards and beneficial uses of Fall Creek and the Snake River jointly.

XI. MONITORING PLAN TO TRACK TMDL EFFECTIVENESS

In addition to monitoring that will be conducted by the NPDES permitted facilities, DEQ-TFRO will monitor (depending on available resources) Fall Creek, especially as it pertains to any water quality cleanup projects, as referenced in Section XII. Monitoring will include the following:

(1) Headwaters reach
(2) Immediately above the Upper Facility
(3) Between the Upper and Lower Facilities
(4) Immediately below the Lower Facility
(5) Just above the point of discharge into the Snake River

The importance of this level of monitoring is to ascertain the load characteristics of Fall Creek within the drainage and determine how nonpoint source and point source impacts are affecting the water quality of Fall Creek.

In addition, the Beneficial Use Reconnaissance Program (BURP) will be utilized to ascertain the status of beneficial uses on Fall Creek as defined by the protocols of BURP.

Other monitoring that involves private landowners, public land management agencies, and the Idaho Soil Conservation Commission and the associated Soil and/or Water Conservation District will be assessed. Erosion assessments for nonpoint source considerations will also be determined as monitoring is further developed over the next five years.

XII. IMPLEMENTATION PLANNING

As part of the overall Lake Walcott Implementation Plan, the Fall Creek TMDL is a part of that process, so the development of the Fall Creek Implementation Plan will be incorporated into the Lake Walcott Implementation Plan. DEQ-TFRO is presently assessing potential water quality cleanup projects on Fall Creek with the assistance of the Lake Walcott Watershed Advisory Group and the associated land management agencies.

XIII. PUBLIC PARTICIPATION

DEQ-TFRO did a public notice and conducted a 30-day public review process from August 17, 2006 through September 18, 2006. Comments received and responses to those are summarized in Appendix B and have been incorporated in the body of this final submission document.

XIV. REFERENCES

Buhidar B. B. 1997. The Middle Snake River Watershed Management Plan. Phase 1 TMDL Total Phosphorus. March 25, 1997. Twin Falls (ID): DEQ-TFRO.

Buhidar B. B. 1999. The Upper Snake Rock Watershed Management Plan. December 20, 1999. Twin Falls (ID): DEQ-TFRO.

Buhidar B. B. 2000. TMDL Executive Summary – Upper Snake/Rock Subbasin TMDL. July 2000. Twin Falls (ID): DEQ-TFRO.

Buhidar B. B. 2005. The Upper Snake Rock TMDL Modification. July 22, 2005. Twin Falls (ID): DEQ-TFRO.

Buhidar B. B. and Sharpnack R. 2003. Staff Analysis: a determination of reasonable assurance using localized impacts and accumulative impacts assessments on the proposed aquaculture industry wasteload allocations for the Middle Snake River and its tributaries. January 20, 2003. Twin Falls (ID): DEQ-TFRO.

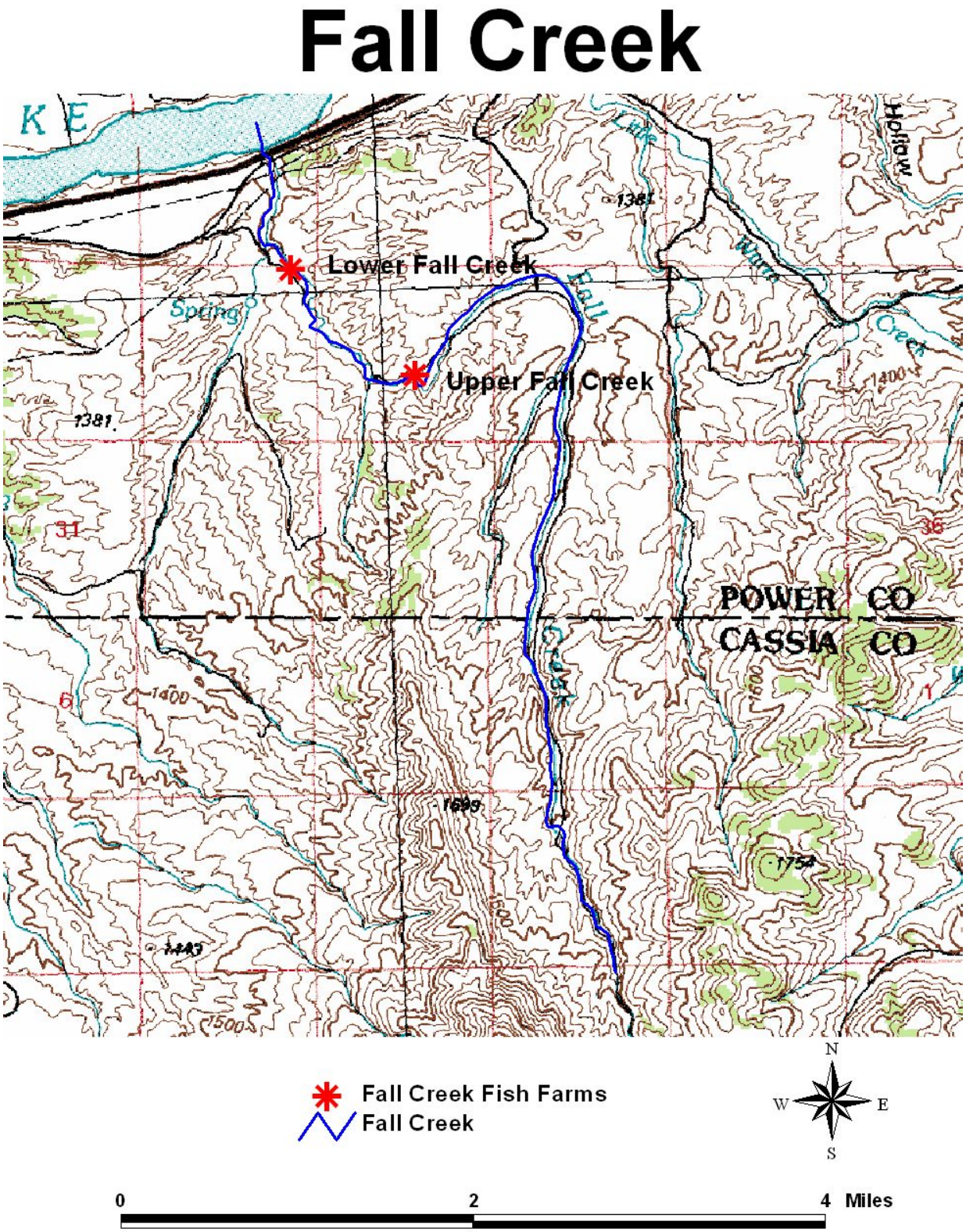
Idaho Code §39.3611. Development and implementation of total maximum daily load or equivalent processes. Internet site: http://www3.state.id.us/idstat/TOC/39036KTOC.html .

IDAPA §58.01.02. Idaho water quality standards and wastewater treatment requirements. Internet site: http://adm.idaho.gov/adminrules/rules/idapa58/0102.pdf .

U. S. Environmental Protection Agency (EPA). 2002. National Assessment Database. URL: http://iaspub.epa.gov/tmdl/w305b_report_v2.huc . Last Updated June 10, 2006.

Lay C. H. 2000. The Lake Walcott Subbasin Assessment, Total Maximum Daily Load, and Implementation Plan. Twin Falls (ID): DEQ-TFRO.

Appendix A. Fall Creek Drainage and Fish Hatcheries



Appendix B. Response to Public Comment on the Fall Creek TMDL

Start of Public Comment Period: August 17, 2006
End of Public Comment Period: September 18, 2006

The only comments that were received were from the U. S. Environmental Protection Agency on September 28, 2006. These are summarized with DEQ's responses in Table 3.

Table 3. Response to comments on the Fall Creek TMDL

SOURCE OF COMMENT	COMMENTS AND RESPONSES
William C. Stewart U. S. EPA – Boise, Idaho	*Comment 1*. The logic in determining these WLAs is clear and easy to understand and is consistent with the WLAs on the rest of the Snake River aquaculture facilities.
	Response 1. IDEQ appreciates EPA's review and assessment of the WLAs for the Fall Creek TMDL.
William C. Stewart U. S. EPA – Boise, Idaho	*Comment 2*. The over all nonpoint source load allocations for all three of these TMDL modification documents (Fall Creek, Jacks Creek and Rueger Springs Creek) are very small. These may be difficult to meet in the watersheds.
	IDEQ Multiple Response to Comment 2
	Response 2a. The Fall Creek TMDL is not a TMDL modification of the Lake Walcott TMDL. It is an addition to the Lake Walcott TMDL and does not modify in any way the TMDL that presently exists in the Snake River. Rather, the intent is to bring the aquaculture facilities associated with Fall Creek into alignment with the NPDES General Aquaculture Permit that is presently undergoing revision so that WLAs can be applied to these facilities under the Lake Walcott TMDL and meet water quality provisions for the Snake River.
	Response 2b. Table 2 (page 8) of the Fall Creek TMDL shows an overall TSS loading capacity of 6,750.0 lb/day. As described in Section IV, the nonpoint source community, represented by FERC, LAFs, CFOs, agriculture, grazing, private land ownership and the Fall Creek stream corridor, account for 71.48%. The point source category, represented by the two aquaculture facilities, account for 18.52%. The remaining 10.0% is attributable to a margin of safety. The basis of these values (water quality targets) is found in the calculations in Section IV and Section VI. In order to meet the loading capacity for Fall Creek at a flow rate of 25.0 cfs, and based on the best available flow information at the time, these nonpoint source targets are appropriate given a water quality concentration target of 50.0 mg/L as TSS. This same logic and approach has been used in other TMDLs in Southcentral Idaho on nonpoint source streams with support from the nonpoint source community and agricultural industry stakeholders.
William C. Stewart U. S. EPA – Boise, Idaho	*Comment 3*. The load allocation for *E. coli* listed for construction activities was confusing. The explanation for excluding it could be the same one that was used for aquaculture facilities. Construction activities don't produce *E. coli* by themselves. If you are referring to septic tanks from the new construction, 1.3 cfu^9/day doesn't seem to be a workable concentration.
	IDEQ Multiple Response to Comment 3
	Response 3a. The definition of construction activities as defined under the TMDL process has to do with any land disturbing with the potential to create erosion and sedimentation. It is not limited to just septic systems associated with rural subdivisions or other similar ventures; and, it is not just associated with EPA's Construction General Permit. As such, the application of best management practices to limit water pollution from such construction sites is paramount and falls within the guidelines and policies of the state's land management agencies and the federal land management agencies. This identification of construction activities is a component of the nonpoint source community of industries and is a necessary requirement under the TMDL process.
	Response 3b. The confusion that may be apparent as described in category 3 in Section VI on page 7 has to do with using 2% of the overall nonpoint source load for any construction activity that occurs within the stream corridor of Fall Creek. It does not apply outside of that stream corridor. IDEQ refers to this 2% as a "reserve" because it is reserved for such construction activities and only those construction activities. Once the activity is finalized, then the 2% is reverted back to the nonpoint source load for use in other areas of Fall Creek of similar nature.

	Response 3c. The use of 1.3 cfu^9/day is appropriate for such land disturbing activities based on support from the Lake Walcott WAG. Table 26 (p 107) of the Lake Walcott TMDL refers to these activities as Suburban Nonpoint Source and includes construction. It also is in line with IDEQ's No Net Increase Policy as described in the Lake Walcott TMDL (pp 120-121). This value is not reflected in the Lake Walcott TMDL because at that time EPA did not warrant its inclusion as part of the TMDL approval process. Since then it has been incorporated into all TMDLs as a component of the nonpoint source with WAG support.
	Response 3d. IDEQ concurs that general construction type activities do not of themselves generate *E. coli*. However, the ground disturbing aspects of those activities tend to promote sedimentation which provides a source of *E. coli* as direct impairments to streams because the *E. coli* may already be entrained in the sediment from past activities associated with feces from warm blooded animals. The recognition of these latent sources is recognized all over Southcentral Idaho and therefore (and as a consequence of the TMDL process) encourages the nonpoint source community to apply best management practices on all ground disturbing activities that may have an water quality impairment influence on the receiving waterbody.

(END)