Sediment and Bacteria Allocations
Addendum to the Lower Boise River TMDL

FINAL

Lower Boise Watershed Council
and the
Department of Environmental Quality

April 2008

Table 15 Wasteload Allocations Total Suspended Solids
Revised June 12, 2012 and April 15, 2014

Introduction

This is an addendum to the Lower Boise River TMDL for sediment and bacteria, approved by the U.S. Environmental Protection Agency on January 25, 2000. The purpose of the change is to provide the Avimor Development and the City of Kuna, Idaho with wasteload allocations for total suspended solids and E. coli bacteria for a discharge to Dry Creek and Indian Creek respectively. DEQ also outlines in this addendum the manner in which the sediment reserved for growth shall be allocated to new and existing sources in the future. The bolded changes are made on pages 61, 62, 64 and 72 of the original document. This change will be subject to public comment and the Department of Environmental Quality held a 30 day comment period from February 25, 2008 to March 28, 2008.

Sediment

The Avimor Development and the City of Kuna have been given an allocation for total suspended solids based on their projected design flow of 0.67 MGD (168 lbs / day monthly average) and 3.5 MGD (876 lbs / day monthly average) respectively. This allocation was taken from the reserve for growth of 3.62 tons / day. The remaining reserve for growth is 3.098 tons / day. DEQ will allocate the remaining reserve on a first come, first served basis as explained on page 64 below. (See Table 15, Revised June 12, 2012)

Bacteria

The Avimor Development (2008) and the City of Kuna (2009) wastewater treatment plants will be coming on line with 0.67 and 3.5 MGD respectively and will need an allocation for E. coli. Their allocation will be 126 CFU / 100 ml, based on the geomean of 5 samples collected within a 30 day period, year round. This is the state water quality standard and is equivalent to an end of pipe effluent limitation.

Suspended Solids Waste Load Allocations

The point source dischargers in the lower Boise River watershed contribute suspended solids to the river. Relative to the mass of sediment entering the river through tributaries, the point source discharges are quite small. All of the treatment plants in the valley are expected to grow in flow volume over time due to increasing numbers of service connections. As flows expand, suspended solids discharges expand as well. Changes in loads from treatment plants have negligible effects on the Boise River itself, since sediment contributions come largely from tributaries. For example, a 35 percent reduction in suspended solids loads from the two City of Boise facilities results in only a 1 percent net change in the river. Since most of the treatment plants in the valley already remove 85 percent or more of suspended solids, further treatment at this time would result in high costs with little tangible benefit to the river. The Wasteload allocations for total suspended solids are based upon NPDES permit limitations for each facility, either in current or draft permits. The allocations are displayed in Table 15. All facilities must meet minimum percent removal requirements as stated in their NPDES permits.

The Avimor Development and the City of Kuna have been given allocations for total suspended solids based on their projected design flow of 0.67 MGD (168 lbs / day monthly average) and 3.5 MGD (876 lbs / day monthly average) respectively. This allocation was taken from the reserve for growth of 3.62 tons / day. The reserve for growth is now 3.098 tons / day.

Table 15. Waste Load Allocations Total Suspended Solids

Total Load Capacity for Waste Load Allocations and Reserve for Growth			**12.02 tons / day**
Facility Name	**Design Flow, MGD**	**Monthly Average Permit Limit TSS, mg/l**	**TSS Average Waste Load Allocations lbs/day**
Lander Street	15	30	3400 lbs / day monthly[1] 5000 lbs / day weekly[1] 2500 lbs / day monthly[2] 3750 lbs / day weekly[2]
West Boise	24	30	6200 lbs / day monthly 9300 lbs / day weekly
Meridian	**10.2**	30	**2550** lbs / day monthly **3820** lbs / day weekly
Nampa	**18.0**	30	**4503** lbs / day monthly **6755** lbs / day weekly
Caldwell	8.48	30	2125 lbs / day monthly 3183 lbs / day weekly
Star	**1.85**	**30**	**463** lbs / day monthly **694** lbs / day weekly
Middleton	1.83	70	1070 lbs / day monthly 1605 lbs / day weekly
Notus	0.056	70	33 lbs / day monthly 50 lbs / day weekly
XL Four Star Beef	0.475	None	125 lbs / day monthly 154 lbs / day weekly
Kuna	**3.5**	**30**	**876 lbs / day monthly** **1314 lbs / day weekly**
Avimor	**0.67**	**30**	**168 lbs / day monthly** **251 lbs / day weekly**
Greenleaf	**0.24**	**30**	**60 lbs / day monthly** **90 lbs/ day weekly**
TOTAL WLAs			**10.79 tons/day[3] monthly average**
Remaining Reserve for Growth			**1.23 tons/day**

[1] April 1 - September 30
[2] October 1 - March 31
[3] Using April - September limits Boise City, monthly limits all facilities
Facilities shown in bold have received portions of the TSS Reserve for Growth.

Fish Hatcheries

The total suspended solids and sediment concentrations generated by the fish hatcheries on Eagle Island and in Nampa are reported according to existing NPDES permit requirements. The fish hatcheries are required to meet an instantaneous maximum limit of 15 mg/l total suspended solids in their effluent. The requirements in the permit are adequate to meet the needs of the TMDL, since effluent at or below 15 mg/l for TSS provides dilution with respect to the criterion, and because the two facilities are quite small in total volume of effluent.

Additional NPDES Permitted Discharges

Certain types of discharge that have active NPDES permits in the watershed are not sources of solids to the river. Non solids producing permit types include groundwater remediation sites, geothermal discharges, and non-contact cooling water sources. For the types of sources just noted, waste load allocations total suspended solids are not required.

Reserve for Growth

The general form of the waste load allocations is a mass limit based on existing flows and currently permitted TSS concentrations. To account for growth, a reserve of TSS load is included, based on twenty year build out scenarios for each facility. The reserve for growth for treatment plants is the sum of the expected suspended solids loads that occur in a twenty - year build out scenario, relative to the wasteload allocations. Thus, the size of the reserve represents the difference between current design flows and the flows expected after 20 years of population growth in the Treasure Valley. The reserve, if used by the treatment plants, will not exceed the TSS targets established in the TMDL. The mass balance capacity check described below incorporates the full reserve for growth in addition to the waste loads from Table 15, and shows that a margin of safety still exists with respect to the 50 mg/l, 60 day duration criterion.

How Should the Reserve be Factored into Permits?

The total reserve is 3.62 tons of total suspended solids. The reserve is available for any new point source discharger or for existing facilities that need an additional allocation to account for growth. Until the reserve is gone, DEQ shall allocate the remaining reserve on a first come first served basis. When a new or existing facility receives a draft NPDES permit from EPA, the facility may contact DEQ and request an allocation based on new or expanded flows. If there is sufficient reserve available, DEQ shall amend Table 15 to reflect the new or changed allocations taken from the reserve. At this time, the Avimor Development and the City of Kuna have draft NPDES permits for new discharges, and have requested allocations from the reserve. Therefore, DEQ has amended Table 15 to reflect allocations for these two new dischargers. (Table 15 Revised June 12, 2012 to include Greenleaf, Revised April 15, 2014 to increases allocations for Star, Meridian and Nampa.)

Judging Compliance with Bacteria Load Allocations

The bacteria load allocations are designed to target the geometric mean criteria for E. coli, but compliance with those criteria must be judged using an appropriate number of samples and averaging. Tributaries should discharge bacteria in quantities that do not exceed state criteria for bacteria assuming little likelihood for dilution and minimal die-off. Thus, one measurement of bacteria at the mouth of a tributary that is greater than 126 colonies per 100 ml does not constitute a violation of the allocation. Compliance is judged when a tributary does not cause exceedences of the seasonally applicable criteria in the Boise River. The load allocations are thus flow variable, and the geometric mean targets shown in table 22, above are the most stringent case within the variable scenario.

New discharging facilities will be considered in compliance with the bacteria TMDL WLA so long as the discharge meets Idaho Water Quality Standards for E. coli and which is 126 colonies per 100 ml.

Non Point Source Loads

Non point sources of bacteria loading to the river, such as pasture lands in the Boise River floodplain, should be managed to prevent the movement of bacteria into the river.

Bacteria Waste Load Allocations

Waste load allocations for bacteria in general form contain a concentration requirement equal to existing permit limits, and flow variable loads of E. coli units per day. The limits are designed to ensure that instream criteria for bacteria are always met, expressed in colonies of E. coli per 100 milliliters of water. Actual loads and loading capacity will change based on daily discharge variability. No reductions are necessary for the NPDES permitted facilities, as shown by comparing the effluent geometric mean values in column two and three of Table 23 to the permit limits column.

The Avimor Development (2008) and the City of Kuna (2009) wastewater treatment plants will be coming on line with 0.67 MGD (Dry Creek) and 3.5 MGD (Indian Creek) discharges respectively and will need an allocation for E. coli. Their allocation will be 126 CFU / 100 ml, based on the geomean of 5 samples collected within a 30 day period, year round. This is the state water quality standard and is equivalent to an end of pipe effluent limitation.

Public Comments

Comments From: Timothy A. Burgess, PE Civil Survey Consultants, Inc.	**Response**
The TMDL modification request submitted by the City of Kuna on November 16, 2007 requested that DEQ amend the final TMDLs for sediment and bacteria for the Lower Boise River to include reserve allocations for growth that includes new dischargers and that a compliance schedule for existing dischargers is developed. Upon review of the draft addendum I find that you have only considered Kuna in this request and not considered other "new dischargers" in the addendum. I know that NPDES permit applications have been submitted for new treatment facilities at the Cliffs Planned Community and Avimor Planned Community that have not been processed by the EPA due to the phosphorous TMDL issue. It is my opinion that failure to include other known applications for "new dischargers" in this addendum will cause the EPA to delay processing these applications until the sediment and bacteria issues are resolved. It is also my opinion that only identifying existing facilities in Table 15 of the Addendum creates a situation where by any future TSS allocation request will be protested by the facilities that are specifically listed for a reserve allocation. I am requesting that Table 15 be modified to include a TSS allocation for unspecified "new dischargers".	DEQ is basing allocations for new dischargers on the existence of draft NPDES permits. When Cliffs Planned Community receives a draft NPDES permit from the EPA, we will modify this document accordingly.
Comments From: Cecil Kester, Kuna	
876 pounds of solids per day will equal over 13 tons of solids per month. I do not know the flow route of Indian Creek but it probably discharges into either Lake Lowell or the Boise River. I personally think this is a large amount of solids to let build up as sludge or fine grime in either the lake or river. Then with that much pollutants entering the water supply, I worry about what problems they will cause with the fish/wildlife/swimming and water quality. At one time, I read that the discharge waste water would be clean enough for drinking (I think) or possibly using in the pressurized irrigation system. I think this is an excessive amount of solid waste/bacteria to be discharging into a waterway.	The treatment facility being constructed by the City of Kuna will be a membrane bioreactor that is capable of achieving very low concentrations of pollutants including phosphorus, suspended solids and bacteria. This water will in all likelihood have less pollutants than Indian Creek and should not result in the accumulation of additional solids in the creek bed.
Comments From: Kevin A. Wentland SunCor (Avimor)	
Thank you for the opportunity to comment on the proposed addendum to the TMDL that addresses the need to provide the City of Kuna, Idaho with a wasteload allocation (WLA) to discharge total suspended solids (TSS) and E. coli bacteria. We	The document will be modified to provide Avimor with an allocation.

support the proposed modifications to the TMDL as reflected in the addendum and also request that additional information be added to the addendum to accommodate growth as noted below. The modifications correctly reflect that the identified reserve growth for TSS in the TMDL should be treated as a lumped reserve growth allocation. This lumped reserve allocation can be used to accommodate growth either in existing WWTF such as Kuna, or to new WWTFs such as Avimor (SunCor) and the Cliffs not specifically identified in the 2000 TMDL. This recommendation for additional modifications is based on the short-term need to assure that these facilities receive a WLA to allow their draft NPDES permits to be issued. Although we support the addendum with the modifications as defined above to address the short-term need in particular for Avimor (SunCor), as part of the next periodic review of the 2000 TMDL the following will need to be further accessed: 1. Now that stormwater has been re-classified as a point source and is subject to NPDES requirements, the 2000 TSS TMDL should be revised to reflect this. 2. When land use such as Avimor's are converted from agricultural to a planned community, the TMDL should provide a mechanism for conversion of credits for reduction in discharges. Since in most cases this change in use results in a significant net reduction. In lieu of the need to request allocation from the lumped reserve, land use change projects such as Avimor would not cut into the reserve, but conversely be a net reduction for which consideration could be given to add this reduction to the reserve. 3. In situations where new or expansions to existing WWTFs result in discharge TSS levels at or below the 30 mg/l such as the case with Avimor, the net result is a dilution flow and again it does not appear to be a need to deplete the WLA reserve growth allocation.	
Comments From: Lower Boise Watershed Council	
This letter is submitted on behalf of the Lower Boise Watershed Council, which is the designated watershed advisory group for the Lower Boise River in Idaho. Our stakeholders consist of citizens and operators of facilities that generate and reduce	DEQ is basing allocations for new dischargers on the existence of draft NPDES permits. When Cliffs Planned Community receives a draft NPDES permit from the EPA, we will modify this document accordingly. The document will also be modified to

through treatment or application of Best Management Practices (BMPs) point and non-point pollutants.

Thank you for the opportunity to comment on the proposed addendum to the TMDL that addresses the need to provide the City of Kuna, Idaho with a wasteload allocation (WLA) to discharge total suspended solids (TSS) and *E. coli* bacteria. The LBWC supports the proposed modifications to the TMDL as reflected in the addendum, and also requests that additional information be added to the addendum.

The modifications correctly reflect that the identified reserve growth for TSS in the TMDL should be treated as a lumped reserve growth allocation. This lumped reserve allocation can be used to accommodate growth either in existing wastewater treatment facilities (WWTFs) identified in the 2000 TMDL, or to new WWTFs not specifically identified in the 2000 TMDL.

The City of Kuna is not the only discharger that needs permit limits, but was not previously identified in the 2000 TMDL. Therefore, we propose that the following facilities be included in the addendum:

provide Avimor with an allocation.

Facility Name	Receiving Stream	Design Flow (MGD)	Effluent Concentration (mg/L)	WLA (lbs/day)	WLA (tons/day)
Avimor (Suncor)	Dry Creek	0.67	30	168	0.084
The Cliffs	Lower Boise River	0.45	30	113	0.056

Together with the draft WLA for the City of Kuna (0.44 tons/day), this leaves the reserve growth at 3.042 tons/day.

This recommendation is based on the short-term need to assure that these facilities receive a WLA and their draft NPDES permits can be issued. In addition, facilities that are awaiting permit renewal (for example, the Darigold facility located in Caldwell, Idaho) should also be given WLAs that are consistent with the effluent concentrations listed above.

Although we support the addendum as drafted with the additions noted above, we do so recognizing that as part of the next periodic review of the 2000 TMDL, the following issues related to WWTF facilities and reserve growth will need to be further assessed:

• The TMDL for TSS was based on meeting instream target concentrations of 50 mg/L and 80 mg/L under different duration periods. Secondary and tertiary WWTF facilities discharge TSS levels at or below 30 mg/L. In these situations where the effluent is actually a dilution flow that increases assimilative capacity and the associated mass load limit, there is no apparent need to deplete the WLA reserve growth for either concentration or mass.
• The proposed TSS approach should be consistent with how the agencies have addressed *E. coli*, where application of the standard (126 CFU/mL) at end-of-pipe ensures that the instream criteria for bacteria, and subsequently the TMDL, are always met.
• The 2000 TMDL for TSS was based on meeting concentration targets, but demonstrated via the mass balance that WLAs did not exceed the loading capacity. A similar analysis would be required to assess the increased assimilative capacity due to WWTF flow growth and its affect on the available reserve for growth.
  • For example, in 2000 for existing facilities, the total mass TSS wasteload allocation was 8.4 tons/day (as a monthly average, Table 15). The existing TSS load for the same time period was 1.51 tons/day (Table 16). This means that the actual WWTF load discharged to the system was only 18% of the WWTF mass wasteload allocation.
  • Future analyses will need to take into consideration existing conditions and growth over a longer-term horizon than the twenty years originally used in the 2000 TMDL.
• Lagoon facilities would need to be evaluated separately, recognizing that they may discharge higher TSS effluent concentrations and potentially consume some reserve growth.
• A reserve growth for all pollutants is required and needs to be provided (concentration and/or mass depending on the pollutant). To the extent that a narrative description of the treatment requirements and authorization for use of a reserve for growth can be crafted for all WWTFs to accommodate growth, we can minimize re-opening the TMDL as each facility	

grows or comes on line. • For pollutants where treatment levels are equal to or less than the secondary treatment standard and/or the ambient water quality standard, a narrative approach should work well because additional discharges will actually increase the assimilative capacity – associated mass load - within the watershed. The analysis for mass loading limits should recognize that some facilities in the watershed will implement tertiary treatment levels and as a result, TSS or other pollutants will be discharged at levels that are lower (cleaner) than necessary to meet water quality targets. We understand that the IDEQ will perform the periodic review of the 2000 TMDL in cooperation with, and under advisement, from the LBWC. As part of adaptive implementation and management, resolution of these issues may affect WWTFs in the watershed that discharge TSS.	
Comments From: Shelley M. Davis, Barker Rosholt & Simpson, LLP Counsel to Boise-Kuna Irrigation District	
During discussions with the engineers for this project there was some concern about discharge of treated waste water from the facility not meeting the USDA water quality requirements for irrigation use for crop growth and in urban pressurized irrigation systems. It appeared at that time, that the new Kuna Wastewater facility would only treat the effluent to the C grade whereas the USDA requires A grade or B grade in order to be used for agricultural irrigation and lawn sprinkling. To the extent that the Kuna Wastewater facility still fails to treat effluent to the appropriate grade for agricultural irrigation re-use, Boise-Kuna Irrigation District remains concerned about the area of discharge into the Bureau of Reclamation Arrowrock Division area, and requests additional information regarding the specific place of proposed discharge.	The treatment facility being constructed by the City of Kuna will be a membrane bioreactor that is capable of achieving very low concentrations of phosphorus, suspended solids and bacteria and meeting Class A standards.