Mid Snake River/Succor Creek Addendum
Tributary TMDL Draft Strategy Paper
Birch, Hardtrigger, McBride, and Pickett Creeks

Staff
Troy Smith

Watershed Description
The Mid Snake River/Succor Creek Subbasin is a 2,002 square mile semi-arid watershed that lies in the Snake River Basin. To the north of the Snake River, the terrain is primarily a gently rolling basaltic plain occasionally studded by gently sloped buttes. To the south lies a dissected lowland plateau of valleys, canyons, and mesas that increases in elevation as they rise to meet the Owyhee Mountains. The tributaries to the Snake River are primarily low volume rangeland streams that run through sagebrush steppe country. While the Mid Snake River/Succor Creek watershed extends into Oregon, this Subbasin Assessment and Total Maximum Daily Load (TMDL) addendum will concentrate on those streams within this watershed in Idaho that are still in need of a TMDL for sediment (Figure 1).

Tributary TMDLs
A sediment Subbasin Assessment and TMDL addendum for Birch Creek, Hardtrigger Creek, McBride Creek, and Pickett Creek will be developed by the end May 2013. Other pollutants will be covered at a later date, as needed in a separate addendum(s).

Subbasin Assessment Monitoring
Sufficient water quality data exists for the Assessment Units' (AUs) TMDL development; stream bank stabilization inventory data was collected in 2011 and 2012.

Sediment Target Development
Suspended sediment TMDLs for each tributary will be developed using a bank stability or other approach, whichever is appropriate, based on an evaluation of flows/diversions and other available information. The TMDL load allocation for each tributary will be consistent with existing Mid Snake River/Succor Creek TMDL allocations.

Bank stability targets of ≥80% have been used as a surrogate measure in other TMDLs, including the Mid Snake River/Succor Creek TMDL (DEQ 2003), and are based on findings by Overton et al. (1995). Using NRCS-derived equations (1983), erosion rates and total tons of eroded sediment/year can be calculated using bank inventory ratings. An 80% bank stability target has been linked to 28% fines in the Lemhi, Blackfoot, Pahsimeroi TMDLs (DEQ 1999, 2001a and 2001b) and has been shown to support salmonids. Therefore, this approach is proposed to assess suspended sediment concentrations that support beneficial uses, specifically cold water aquatic life, in these Mid Snake River/Succor Creek tributaries. Additionally, reference sites in the Mid Snake River/Succor Creek watershed have exhibited bank stabilities of 85%, so when the target bank conditions are attained, the overall percent fines will be less than 28%. Thus, using stability targets of 85% will result in an implicit Margin of Safety (MOS).

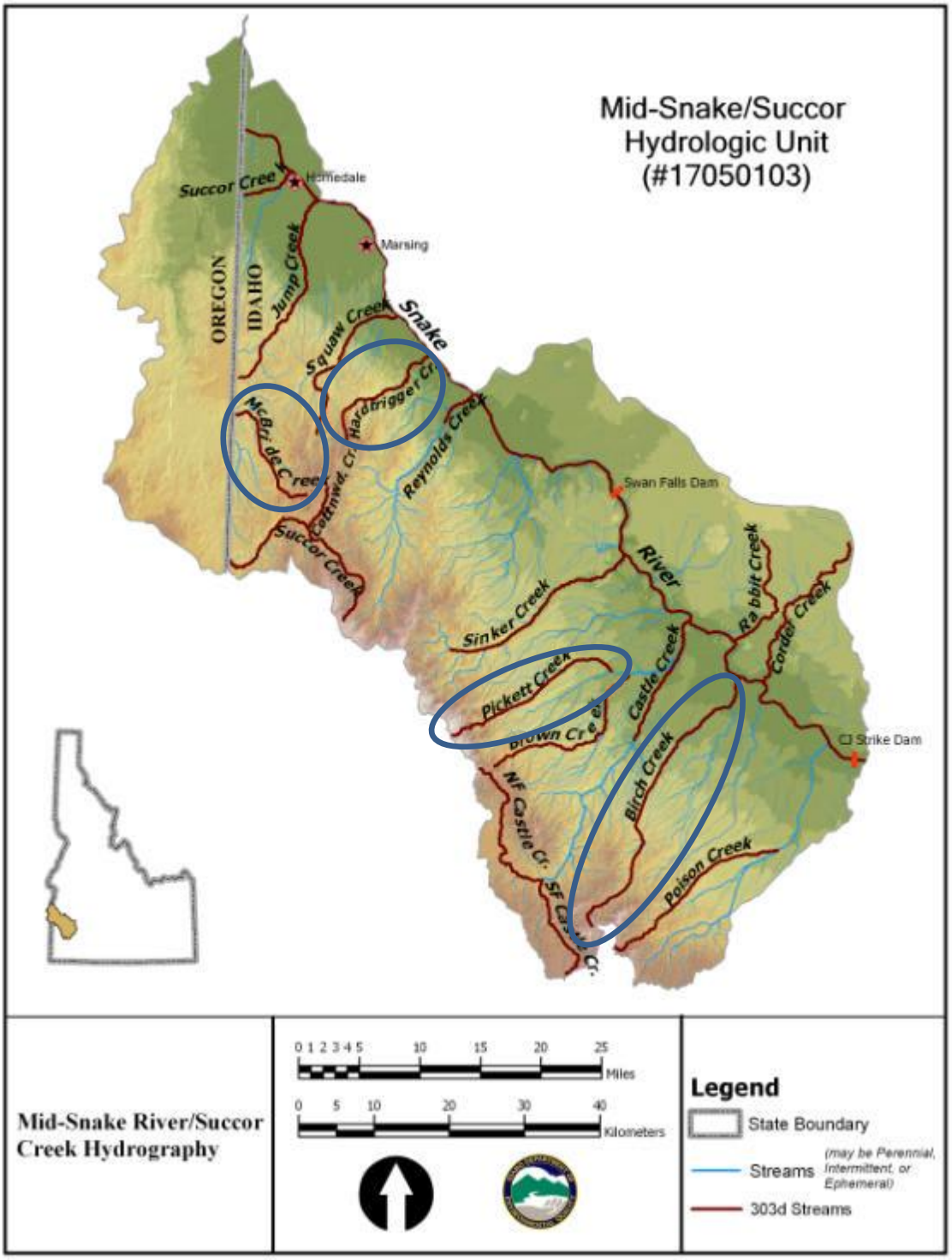

Figure 1. Mid Snake River/Succor Creek Watershed.

WAG Facilitation

The Mid Snake River/Succor Creek Watershed Advisory Group (MSS WAG) is familiar with the TMDL process, beneficial uses and applicable water quality criteria. Because this effort focuses on a TMDL addendum, MSS WAG involvement can focus on bank stability target input and review of the new draft TMDLs. All information used in the TMDL development will be shared with the MSS WAG, while also soliciting their input in selecting alternative suspended sediment targets and approaches that are suitable for the tributaries, if necessary.

The TMDL development process and review will also be shared with EPA throughout to solicit their input.

Sediment TMDL Timeline

DEQ's recently-revised TMDL process ensures WAG input while streamlining the TMDL development. In this instance, by developing sediment/bank stability targets concurrently for each of the tributaries, the process timeframe is considerably shortened. The initial proposed timeline is:

October 2012:	Present TMDL and bank stability/sediment target strategy to WAG.
Nov. – Dec. 2012:	Determine bank stability/sediment targets.
Jan. – Feb. 2012:	Develop TMDL.
March 2013:	Draft TMDL review by WAG.
April 2013:	Public Comment.
May 2013:	Finalize TMDL.

Birch Creek

Assessment Unit	Beneficial Use	2010 IR 303 (d) listed Pollutant(s)
ID17050103SW021_02, _03 & _04 Headwaters to the Snake River	COLD	Sedimentation/Siltation

The Birch Creek AUs extend for a length of 83.81 miles from its headwaters to where it enters the Snake River. McKeeth Wash, which enters Birch Creek near the mouth, is the only major tributary to the stream. McKeeth Wash is 13 miles in length and contributes water only during the spring snowmelt. Flow data for Birch Creek from May 1995 show a flow of 3.8 cfs in the lower segment. Data from July 2001 at the upper segment show a flow of 0 cfs.

- Sediment
    - In 2011, a stream bank erosion inventory was conducted along 15 miles of the Birch Creek watershed. Initial data from the inventory indicate that the rate of stream bank erosion is approximately 288.7 tons of sediment/mile/year. In order to reach an objective of 85% bank stability (which would meet the above-referenced 80% bank stability target and allow for an implicit MOS), a reduction to approximately 35.6 tons of sediment/mile/year (an 88% reduction) would need to be achieved to meet this habitat-based target.

Hardtrigger Creek

Assessment Unit	Beneficial Use	2010 IR 303 (d) listed Pollutant(s)
ID17050103SW008_02 Headwaters to the Snake River	COLD	Sedimentation/Siltation

The Hardtrigger Creek AU extends for a length of 23.01 miles from its headwaters to where it enters the Snake River. There are no major tributaries to Hardtrigger Creek. Flow data from July 1995 and August 1996 indicate no flow in the upper and lower segments, respectively. Data from June 1998 show a flow of 3.9 cfs in the lower segment and 5.1 cfs in the upper segment. While visiting the stream in March 2002, DEQ staff noted that the flow was less than 1.0 cfs and was beginning to go dry. In a normal year Hardtrigger Creek typically goes dry by mid to late June.

- Sediment
    - In 2011, a stream bank erosion inventory was conducted along 6.1 miles of the Hardtrigger and Little Hardtrigger Creek Watershed. Initial data from the inventory indicate that the rate of stream bank erosion is approximately 25.7 tons of sediment/mile/year. In order to reach an objective of 85% bank stability (which would meet the above-referenced 80% bank stability target and allow for an implicit MOS), a reduction to approximately 13.0 tons of sediment/mile/year (a 49% reduction) would need to be achieved to meet this habitat-based target.

McBride Creek

Assessment Unit	Beneficial Use	2010 IR 303d listed pollutant(s)
ID17050103SW004_02 & _03 Headwaters to the Oregon State Line	COLD	Sedimentation/Siltation

The McBride Creek AUs extend for a length of 80 miles from its headwaters to where it enters Jump Creek. Flow data from June 1996 show flows of 0.20 cfs in the lower segment and 0 cfs in the upper segment. Flow data from July 2001 shows a flow of 0 cfs in the lower segment. There are no major tributaries to McBride Creek and its flow regime is dictated by the water year. In a normal year, McBride Creek typically goes dry by late May or early June.

- Sediment
    - In 2011, a stream bank erosion inventory was conducted along 11.0 miles of the McBride Creek Watershed. Initial data from the inventory indicate that the rate of stream bank erosion is approximately 8.5 tons of sediment/mile/year. In order to reach an objective of 85% bank stability (which would meet the above-referenced 80% bank stability target and allow for an implicit MOS), a reduction to approximately 5.3 tons of sediment/mile/year (a 37% reduction) would need to be achieved to meet this habitat-based target.

Pickett Creek

Assessment Unit	Beneficial Use	2010 IR 303 (d) listed pollutant (s)
ID17050103SW016_02 & _03 Headwaters to Catherine Creek	COLD	Sedimentation/Siltation

The Pickett Creek AUs extend for a length of 33.96 miles from its headwaters to where it enters Catherine Creek, a tributary to Castle Creek. There are no major tributaries to Pickett Creek. The lowermost mile of Pickett Creek generally has year round flows below 1 cfs, except during high water, due to the flow contribution of springs. Flows in the upper reach of Pickett Creek have dropped below 1 cfs in July has gone dry by fall. The middle section of Pickett Creek has gone dry in mid-July approximately 3 miles upstream of where Pickett Creek flows into Catherine Creek. Landowners state that, in general, Pickett Creek is dry in the middle section by mid to late June, depending upon the water year.

- Sediment
  - In 2012, a stream bank erosion inventory was conducted along 1.1 miles of the Pickett Creek Watershed. Initial data from the inventory indicate that the rate of stream bank erosion is approximately 33.81 tons of sediment/mile/year. In order to reach an objective of 85% bank stability (which would meet the above-referenced 80% bank stability target and allow for an implicit MOS), a reduction to approximately 11.27 tons of sediment/mile/year (a 67% reduction) would need to be achieved to meet this habitat-based target.

References

DEQ. 1999. Lemhi River Watershed Total Maximum Daily Load December 1999. Idaho Department of Environmental Quality.

DEQ. 2001a. Pahsimeroi River Subbasin Assessment and Total Maximum Daily Load July 2001. Idaho Department of Environmental Quality.

DEQ. 2001b. Blackfoot Subbasin Assessment and TMDL. Idaho Department of Environmental Quality.

DEQ. 2003. Mid Snake River/Succor Creek Subbasin Assessment and total Maximum Daily Load. Idaho Department of Environmental Quality.

NRCS. 1983. Proceedings from Natural Resource Conservation Service Channel Evaluation Workshop.

Overton, C. K., J. D. McIntyre, R. Armstrong, S. L. Whitwell, and K. A. Duncan. 1995. Users guide to fish habitat: Descriptions that represent natural conditions in the Salmon River basin, Idaho. USDA Forest Service General Technical Report INTGTR-322, Intermountain Research Station, Ogden, UT. 142 pp.