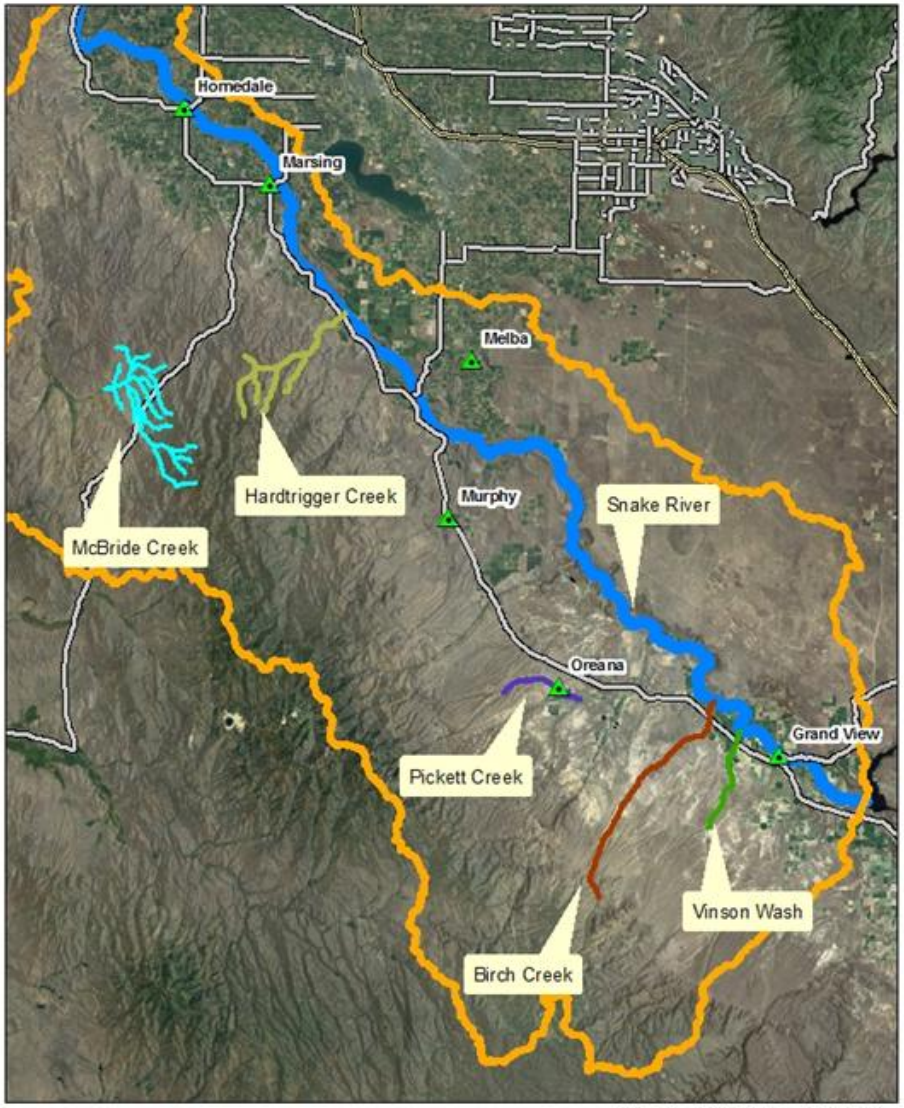
Mid Snake River/Succor Creek Watershed Advisory Group Meeting
April 23, 2013

Draft TMDL for Birch, Hardtrigger, McBride, Pickett Creeks, and Vinson Wash

Middle Snake River/Succor Creek Sediment TMDL Tributaries



N

0 2.5 5 10 15 20 25 Miles

4th Field HUCS (USGS)

Middle Snake-Succor

Major Highways

Highways

Interstate

WAG Participation in TMDL Process

- ✓ DEQ develops a strategy paper and ***updates the WAG***
- ✓ DEQ requests WQ data, if necessary, and ***shares WQ data with WAG***
- ✓ DEQ drafts the SBA with ***WAG input***
- ✓ DEQ develops WQ targets, TMDL load analysis, and with ***WAG input***
- ✓ DEQ provides draft TMDL to ***WAG for review***
- ✓ DEQ provides draft TMDL to EPA for review
- DEQ considers/incorporates/responds to ***WAG comments***
- DEQ Tech Editing
- If WAG is not in agreement with an SBA/TMDL, the position and the basis for it will be documented in the notice of public availability
- ***Public Comment*** opportunity
- If the WAG still disagrees with the SBA/TMDL after public comments have been considered and incorporated, ***DEQ must incorporate the WAG's dissenting opinion*** in the TMDL that is submitted to U.S. EPA
- DEQ submits TMDL to the U.S. EPA for approval
- DEQ and ***WAG*** help develop implementation plan for goals

Assessment Units & Pollutants

Birch Creek

Assessment Unit	Beneficial Use	Pollutant(s)
ID17050103SW021_03 & _04 Start of 3rd order to the Snake River	COLD	Sedimentation/Siltation

Hardtrigger Creek

Assessment Unit	Beneficial Use	Pollutant(s)
ID17050103SW008_02 Headwaters to the Snake River	COLD	Sedimentation/Siltation

McBride Creek

Assessment Unit	Beneficial Use	Pollutant(s)
ID17050103SW004_02 & _03 Headwaters to the Oregon State Line	COLD	Sedimentation/Siltation

Pickett Creek

Assessment Unit	Beneficial Use	Pollutant(s)
ID17050103SW016 _03 Bates Creek to Browns Creek	COLD	Sedimentation/Siltation

Vinson Wash

Assessment Unit	Beneficial Use	Pollutant(s)
ID17050103SW023_03 Poison Creek to Snake River	COLD	Sedimentation/Siltation

Streams Proposed for Delisting in the 2012 Integrated Report

Delisted for sediment based on bank stability analyses

- ID17050103SW024_03 Shoofly Creek
- ID17050103SW016_02 Pickett Creek
- ID17050103SW025_02 Corder Creek
- ID17050103SW026_02 Rabbit Creek
- ID17050103SW019_02, 03, 04 Browns Creek
- ID17050103SW021_02 Birch Creek
- ID17050103SW005_02 Jump Creek

Delisted for temperature based on a thermograph data

- ID17050103SW004_02 McBride Creek (2nd order)

Idaho Water Quality Standards

- **01. Aquatic Life**.
  - **a.** Cold water (COLD): water quality appropriate for the protection and maintenance of a viable aquatic life community for cold water species.

- **01. Aquatic Habitat Parameters**. These parameters may include, but are not limited to, stream width, stream depth, stream shade, measurements of sediment impacts, bank stability, water flows, and other physical characteristics of the stream that affect habitat for fish, macroinvertebrates or other aquatic life.

Idaho Water Quality Standards

- **35. Ephemeral Waters**. A stream, reach, or water body that flows naturally only in direct response to precipitation in the immediate watershed and whose channel is at all times above the water table.

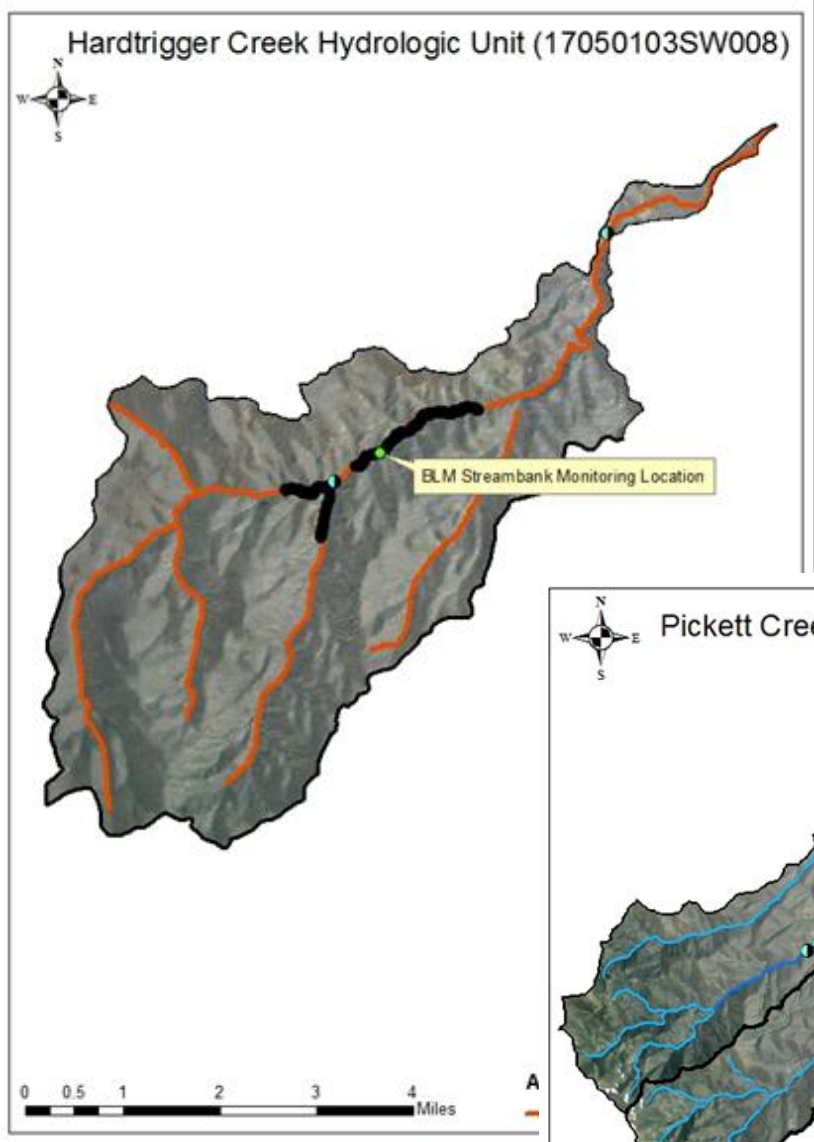
- **53. Intermittent Waters**. A stream, reach, or water body which naturally has a period of zero (0) flow for at least one (1) week during most years. Where flow records are available, a stream with a 7Q2 hydrologically-based unregulated flow of less than one-tenth (0.1) cubic feet per second (cfs) is considered intermittent. Streams with natural perennial pools containing significant aquatic life uses are not intermittent.

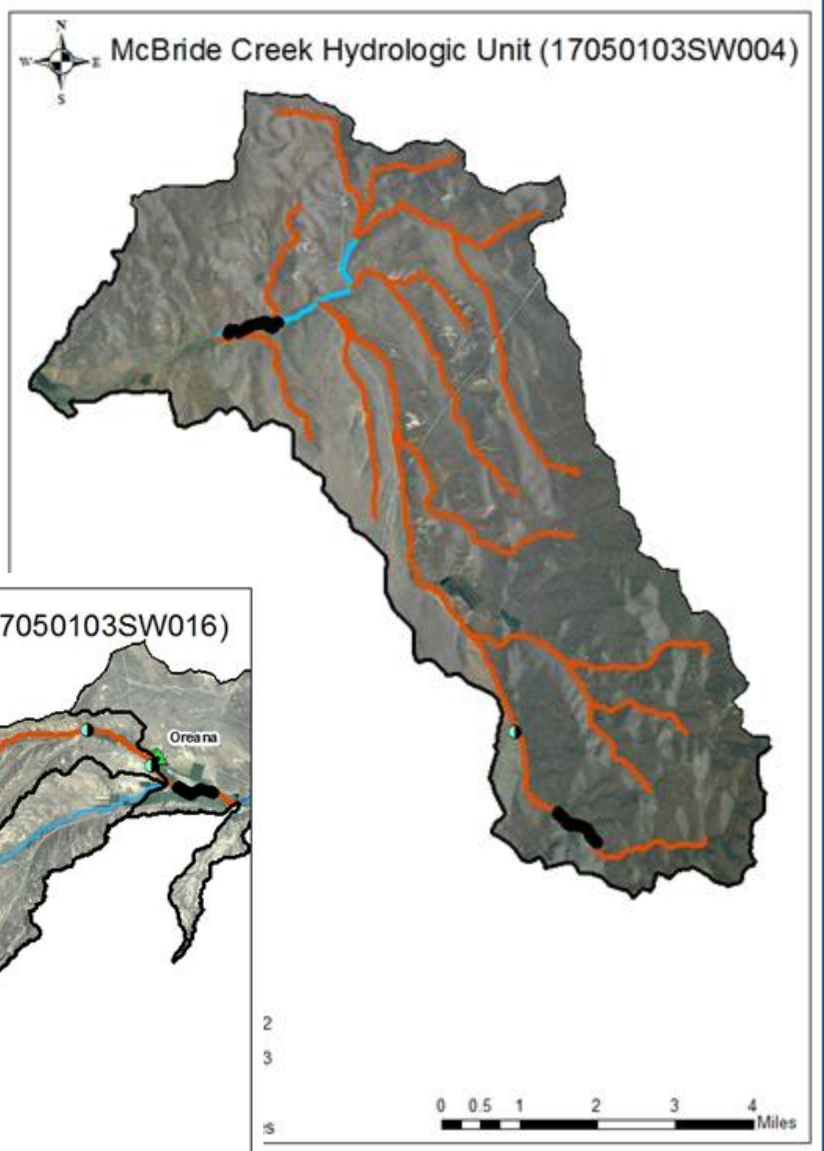
Idaho Water Quality Standards

- **08. Sediment**. *Sediment shall not exceed quantities* specified in Sections 250 and 252, or, in the absence of specific sediment criteria, quantities *which impair designated beneficial uses*. Determinations of impairment shall be based on water quality monitoring and surveillance and the information.
  - **250.02.e (Cold Water Aquatic Life)** – Turbidity, below any applicable mixing zone set by the Department, shall not exceed background turbidity by more than fifty (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days.
  - **252.01.b.1 (Water Supply Use) –** Increased by more than five (5) NTU above natural background, measured at a location upstream from or not influenced by any human induced nonpoint source activity, when background turbidity is fifty (50) NTU or less.
  - **252.01.b.2 (Water Supply Use) –** Increased by more than ten percent (10%) above natural background, measured at a location upstream from or not influenced by any human induced nonpoint source activity, not to exceed twenty-five (25) NTU, when background turbidity is greater than fifty (50) NTU.

Approach 1: Hardtrigger, McBride, and Pickett Creeks

- Bank stability ≥ 80%
- Year Round Targets


Hardtrigger Creek Hydrologic Unit (17050103SW008)
BLM Streambank Monitoring Location
0 0.5 1 2 3 4
Miles


McBride Creek Hydrologic Unit (17050103SW004)
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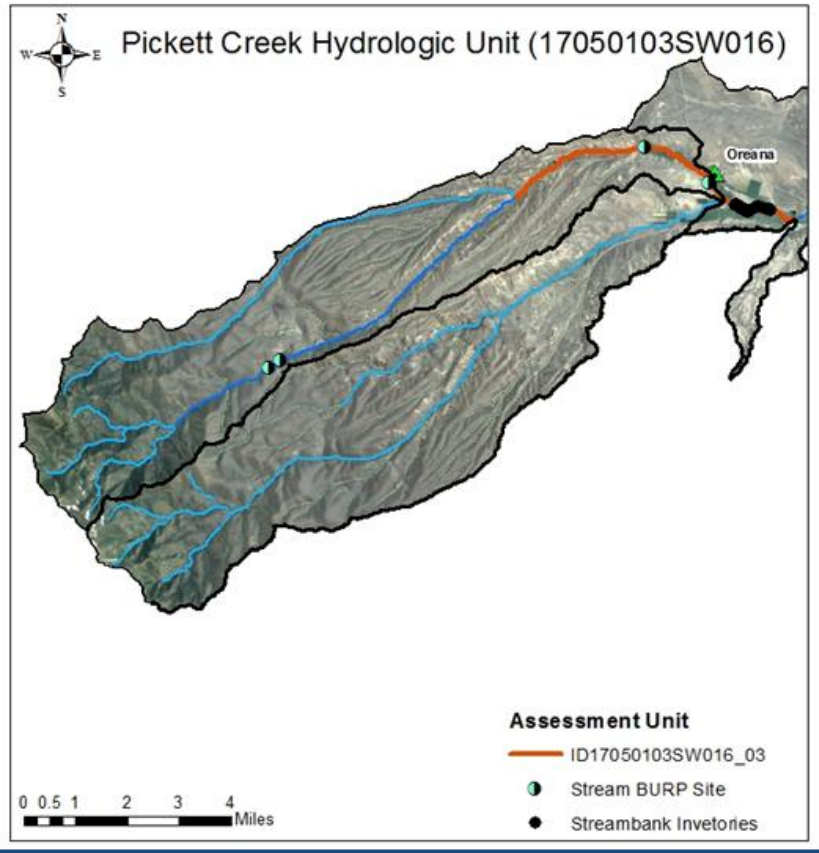
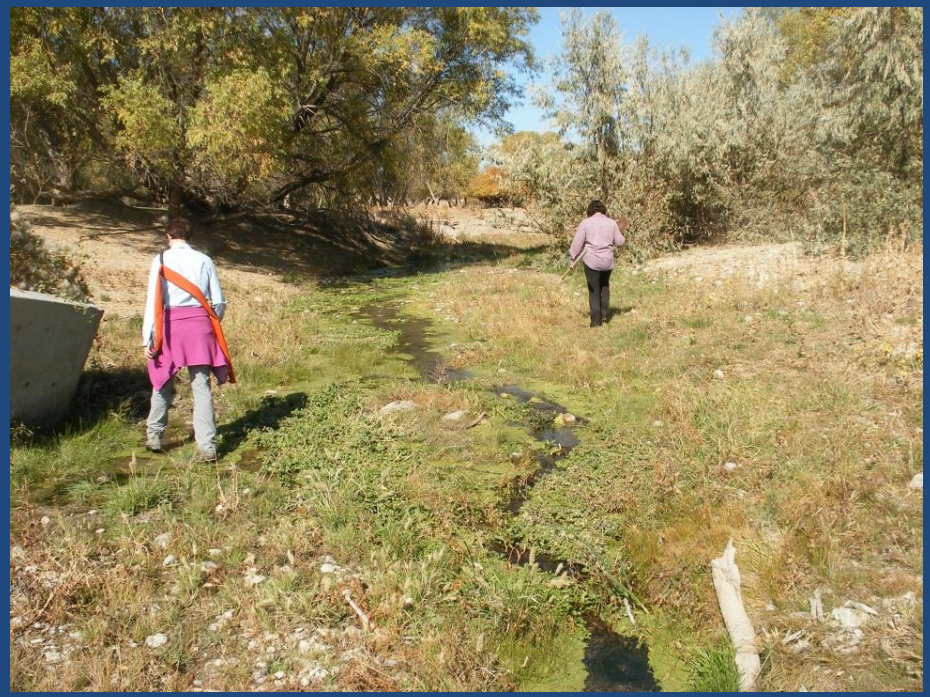
Miles


Pickett Creek Hydrologic Unit (17050103SW016)
Oreana
0 0.5 1 2 3 4
Miles
Assessment Unit
ID17050103SW016_03
Stream BURP Site
Streambank Invetories

Bank Stability/Erosion

- Low Erosion/High Stability



- High Erosion/Low Stability

Bank Erosion Calculations

Erosion Rate at Sampled Reach (E): $E = [A_E * R_{LR} * D_B]/2000$

where: A_E = eroding area (ft^2)

R_{LR} = lateral recession rate (ft/year)

D_B = bulk density of bank material (lps/ft^3)

Bank Erosion Rate (ER) of total segment length: $E_R = E/L_{BB}$

where: E_R = bank erosion rate (tons/mile/year)

E = bank erosion over sampled reach

L_{BB} = bank to bank stream length over sampled reach

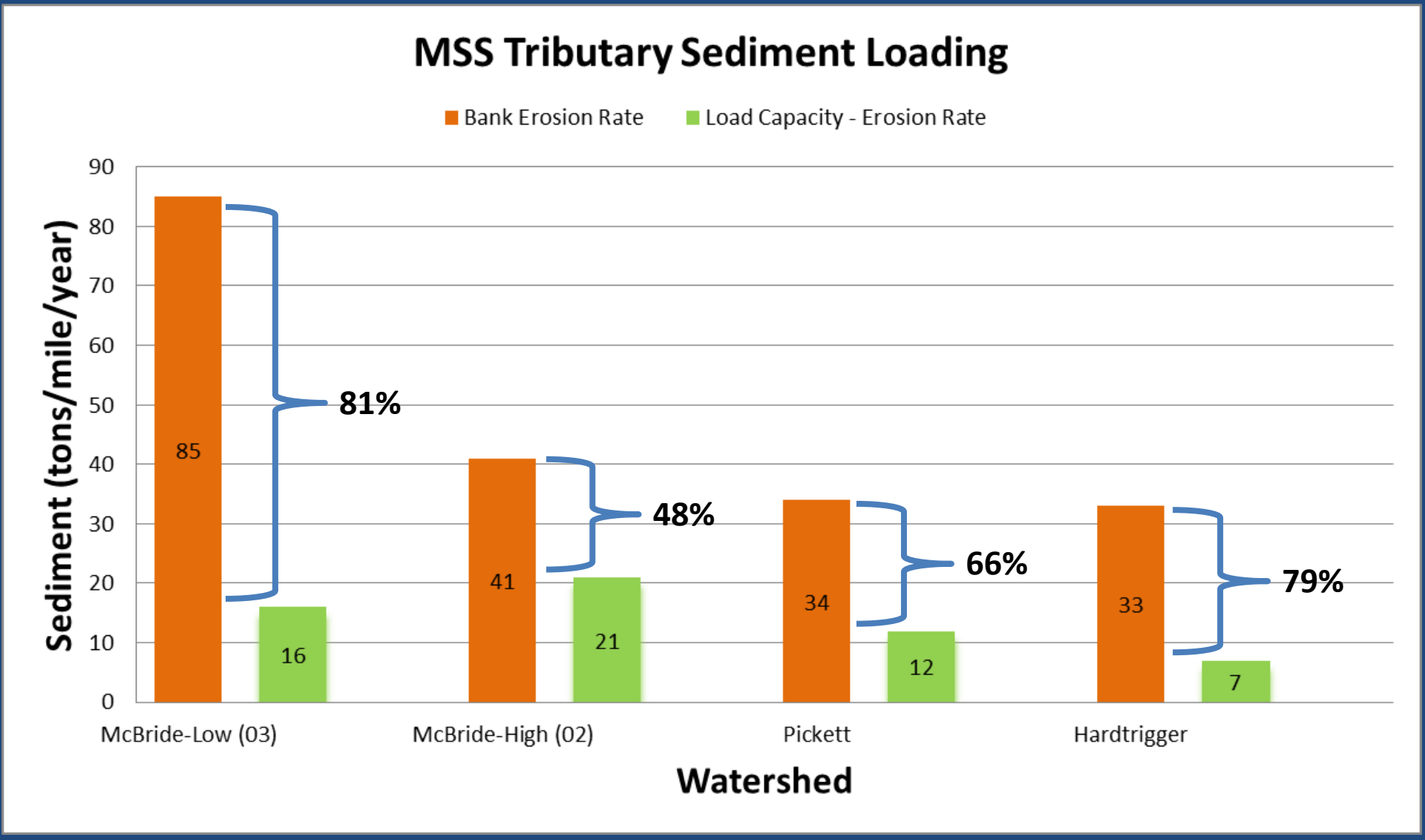
Bank Inventory Results

Target

80% Bank Stability

	Hardtrigger (02)	McBride – Lower (03)	McBride – Upper (02)	Pickett (03)
Bank Stability	60%	61%	52%	80%
Lateral Recession Rate	0.12	0.135	0.04	0.15

Water Body	Current Load - Erosion Rate (tons/mile/year)	Current Load - Total Erosion (tons/year)	Load Capacity -Target Erosion Rate (tons/mile/year)	Load Capacity - Target Total Erosion (tons/year)	Load Reduction (tons/mile/year; %)
Hardtrigger Creek (AU 008_02)	33	435	7	91	26 tons/mile/year 79%
McBride - Lower (AU 004_03)	85	1400	16	267	69 tons/mile/year 81%
McBride - Upper (AU 004_02)	41	706	21	366	20 tons/mile/year 48%
Pickett Creek (AU 016_03)	34	217	12	74	22 tons/mile/year 66%


MSS Tributary Sediment Loading
Bank Erosion Rate
Load Capacity - Erosion Rate
Sediment (tons/mile/year)
90
80
70
60
50
40
30
20
10
0
85
16
41
21
34
12
33
7
81%
48%
66%
79%
McBride-Low (03)
McBride-High (02)
Pickett
Hardtrigger
Watershed

Support for Bank Stability Approach

Focus on Source of Impairment (Instream Bank Erosion)

- 2013 – Proposed Integrated Report Delistings
- 2003 – Mid Snake River/Succor Creek TMDL
- 2001 – Pahsimeroi and Blackfoot TMDLs
- 1999 – Lemhi River TMDL

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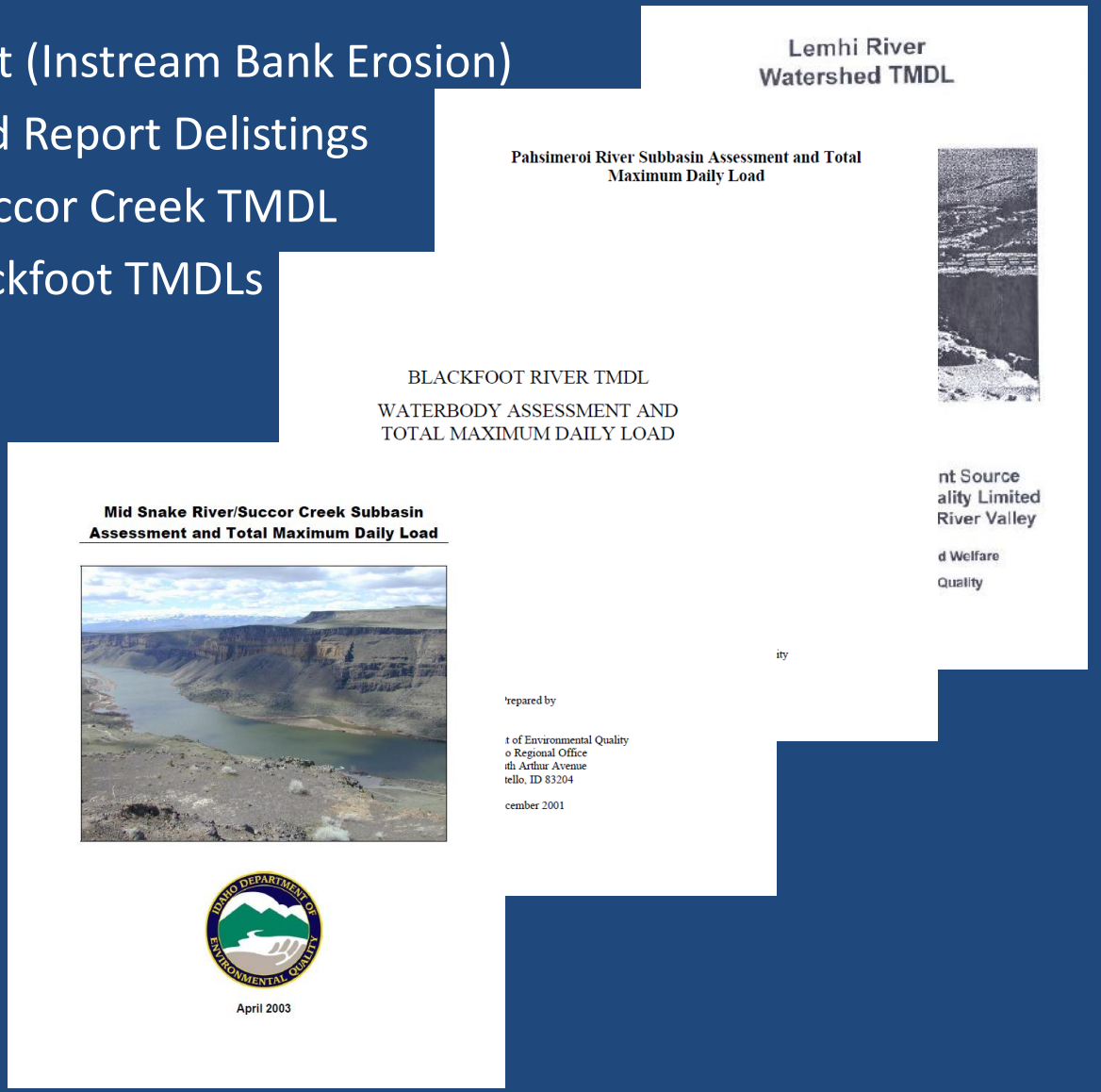
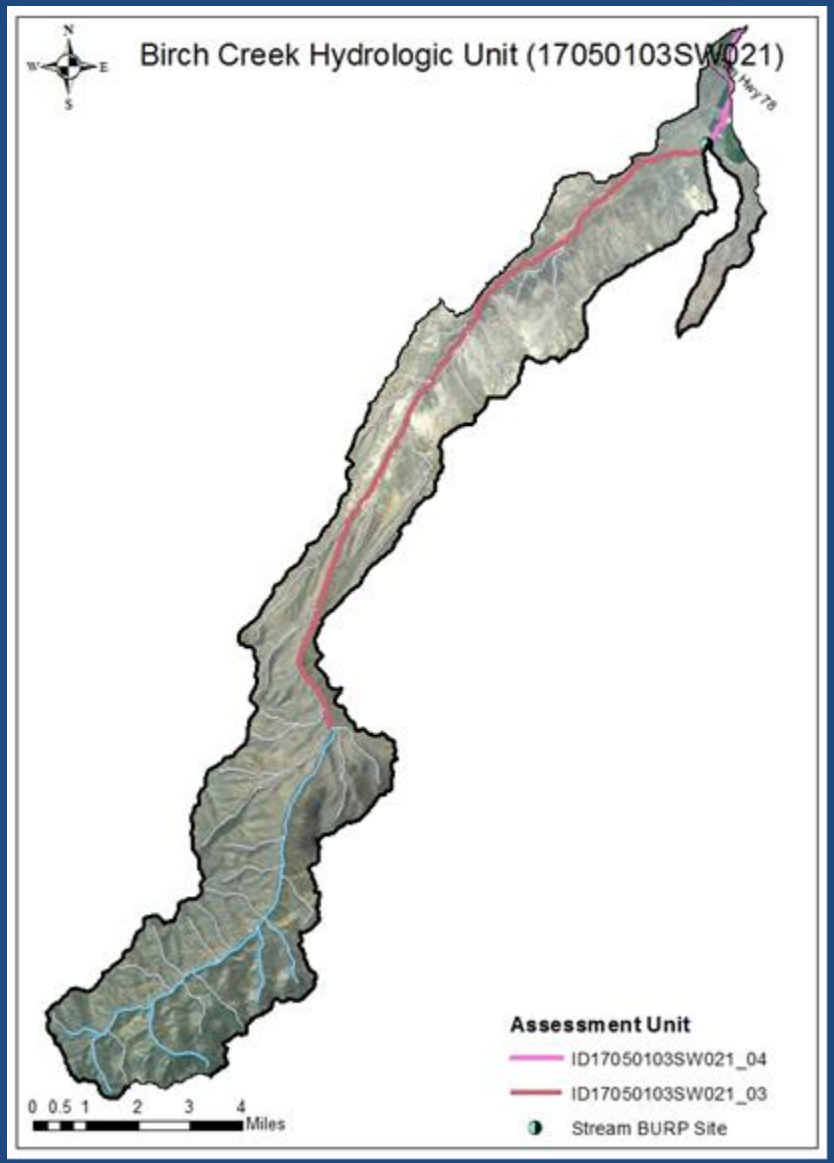
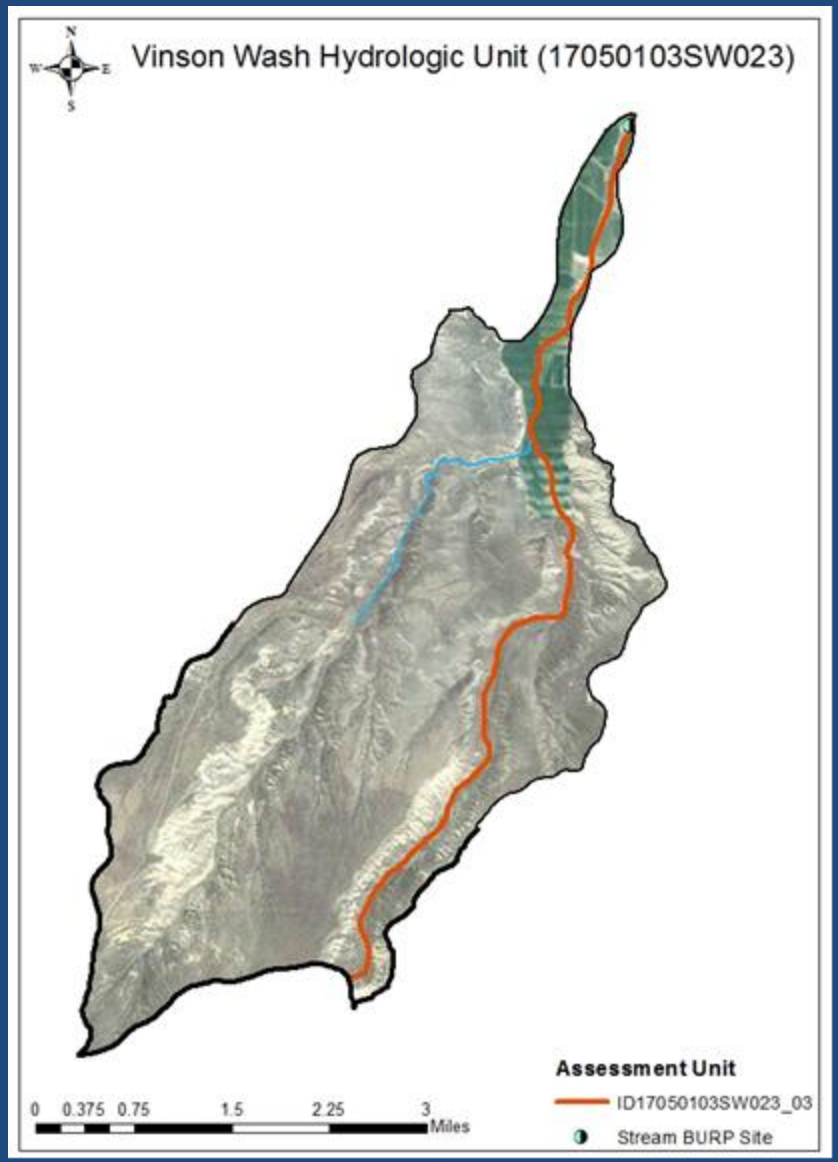


Approach 2: Birch Creek & Vinson Wash

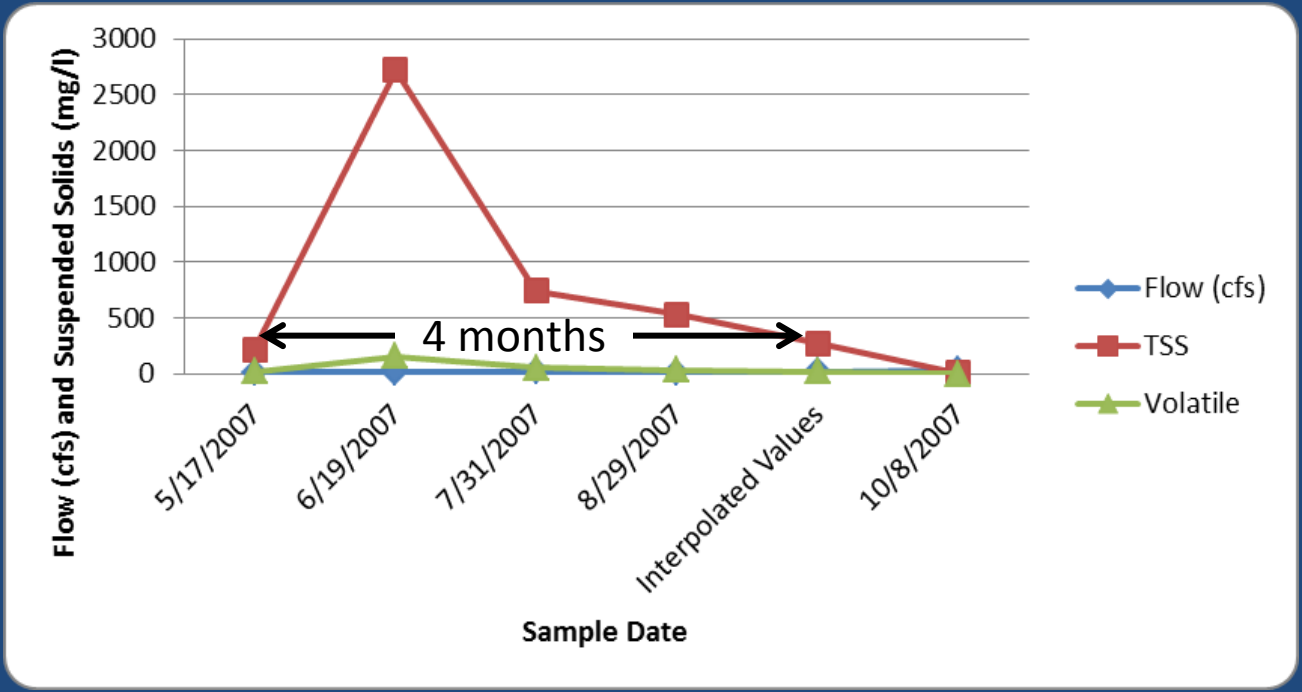
- 20 mg/L TSS 4-month average
- Critical Period (April 1 – September 30)

Sediment Concentration





Sediment Concentration



Date	Flow (cfs)	Suspended Solids (mg/L)	
		Total	Volatile
5/17/2007	15.4	217	18
6/19/2007	15.3	2720	155
7/31/2007	18.8	742	56
8/29/2007	16.2	531	38
10/8/2007	32.3	10	3

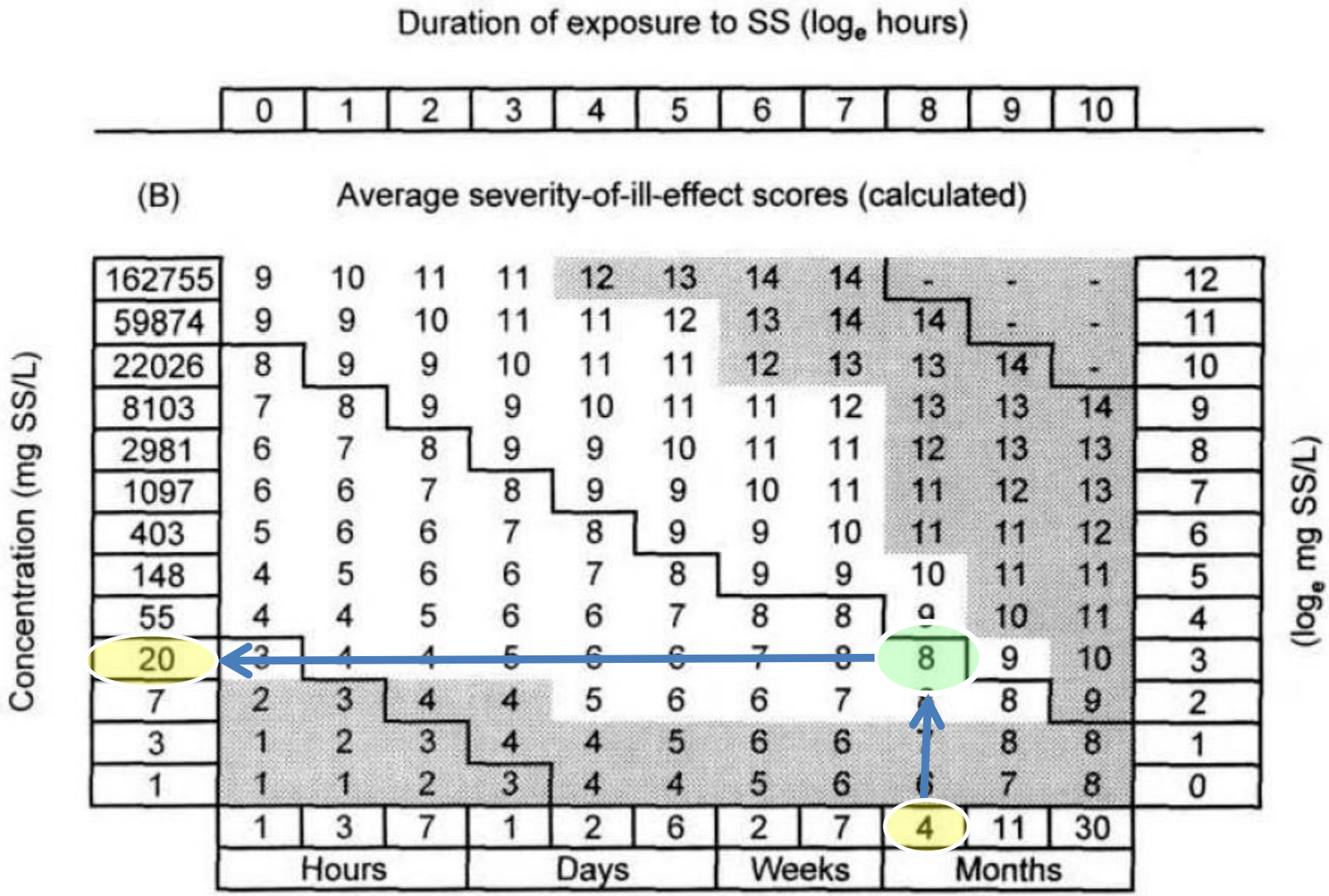
Birch Creek data collected by Idaho Power in 2007.

Sediment and Aquatic Life

- Newcombe and Jensen (1996)
  - Meta-analysis: 80 studies
  - How does sediment affect fish?
    - Grouping of fish
    - Concentration of sediment
    - Duration of sediment

➢ 1 Answer = Severity of Effect on fish

Juvenile Salmonids



Gross TSS Load Allocations for of Birch Creek (AU_03 & 04) and Vinson Wash (AU_03).

Month	Flow (cfs)	TSS (mg/L)	TSS (tons/day)	Avg TSS (tons/day)	Load Capacity @ 20 mg/L (tons/day)	Avg Load Capacity @ 20 mg/L (tons/day)	Avg Load Reduction (tons/day | %)	
April	No Data							
May	15.4	217	9.0	40.0	0.8	1.0	39.0	97.6%
June	15.3	2720	112.4		0.8			
July	18.8	742	37.7		1.0			
August	16.2	531	23.2		0.9			
September	24.32	271	17.8		1.3			
October	32.3	10	0.9	0.9	1.7	1.7	0.0	0

Support for Sediment Concentration Approach

Focus on In-Stream Sediment Concentration

- 1999 Lower Boise River (LBR) Sediment TMDL
- 2013 Little Willow Creek & LBR Tributaries TMDLs (in progress)
  - 20 mg/L for 4 month average
- 2003 Succor Creek and Bissel Creek Sediment TMDLs
  - 22 mg/L April - September

Timeline Progress

- ✓ ***October 2012:*** Present TMDL strategy to WAG
- ✓ ***Nov. – Dec. 2012***: Determine bank stability & sediment targets
- ✓ ***Jan. – Feb. 2013:*** Develop TMDL analysis
- ✓ ***Feb. 2013:*** Discuss TMDL analysis with WAG
- ✓ ***March 2013***: Collect Hardtrigger Streambank Data
- ✓ ***April 2013:*** Draft TMDL review by WAG and EPA
- ***May 2013***: Public Comment
- ***June 2013***: Finalize TMDL

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