Coeur d'Alene Lake Tributaries Watershed Advisory Group
Thursday March 3, 2011
Coeur d'Alene Public Library – Community Room
10:00 – 12:00

Agenda

Introductions
WAG Roles/Responsibilities
Coeur d'Alene Lake and River Sub-basin Assessment and Proposed TMDL 5-year review
Other

Coeur d'Alene Lake and River TMDL 5-Year Review

presented to
Coeur d'Alene
Watershed Advisory Group
March 3, 2011

Kristin Keith

Subbasin Assessment/Total Maximum Daily Load (TMDL) Process

- A subbasin Assessment is an evaluation and summary of current water quality status, pollutant sources, and control actions a watershed.
  - While this is not a requirement of the TMDL, the assessment ensures impairment listings are up to date and accurate.

- A TMDL is an estimation of the maximum pollutant amount that can be present in a water body and still allow that water body to support beneficial uses.
  - TMDL is water body, and pollutant specific
  - It allocates allowable discharges of individual pollutants among the various sources.

TMDL

- TMDL:

$$LC = LA + WLA + NB + MOS$$

LC = Load Capacity of the waterbody

The load capacity must be based on critical conditions

LA = Load allocation (nonpoint sources)

WLA = Waste Load Allocation (point sources)

NB = Natural Background

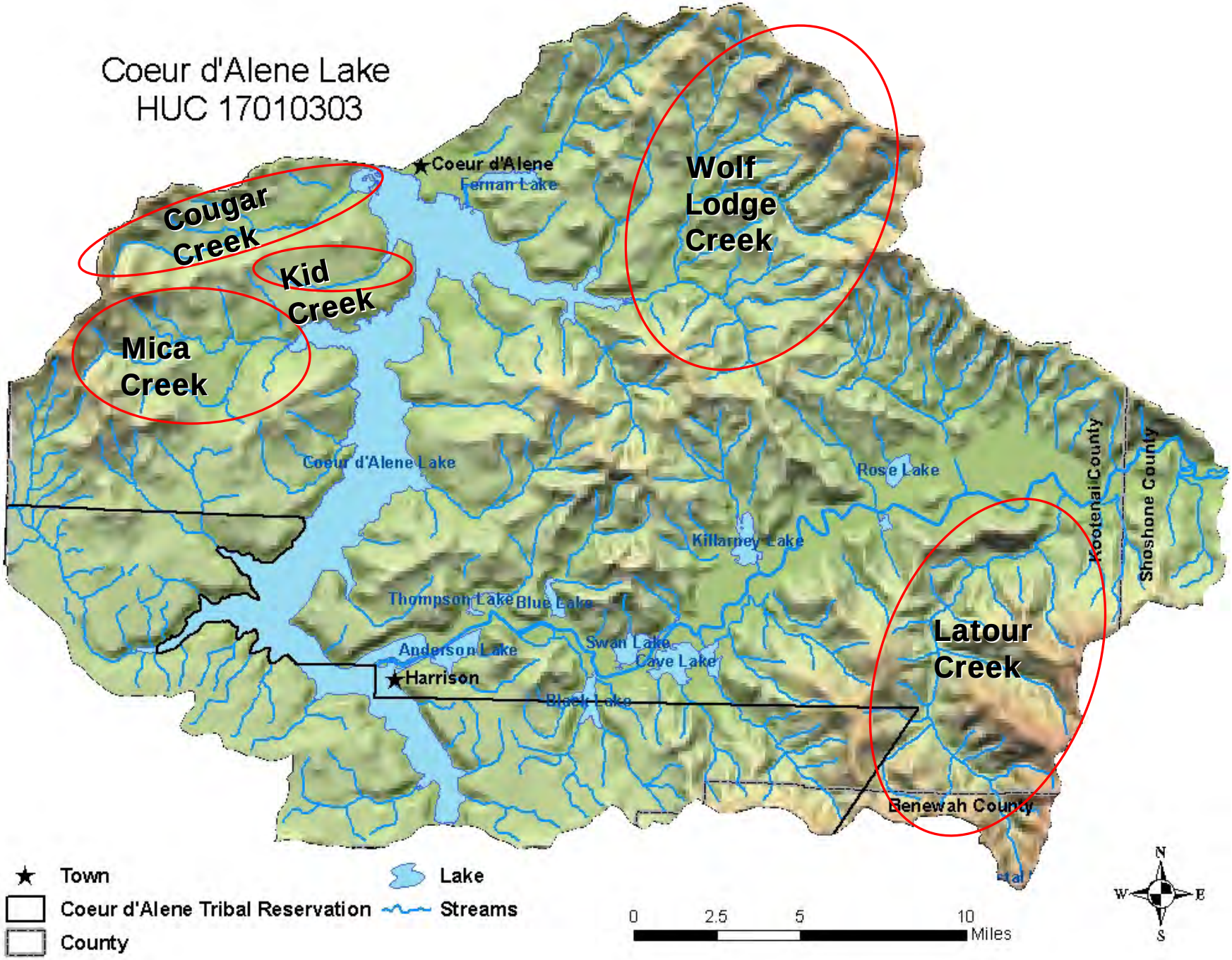
MOS = Margin of Safety

A load is fundamentally a quantity of a pollutant discharged over some period of time, and is the product of concentration and flow.

Coeur d'Alene Lake and River (17010303) Subbasin Assessment and Proposed TMDL

- "Coeur d'Alene Lake and River TMDL"
- Approved by the EPA in 2000

Watershed	Watershed Acres	Streams Addressed in the TMDL	Pollutant
Cougar Creek	10,711	Cougar, North Fork Cougar, Unnamed Tributary to Cougar Creek	Sediment
Kid Creek	3,738	Kid Creek	Sediment
Latour Creek	33,359	Latour, Baldy, Butler, Larch	Sediment
Mica Creek	14,941	Mica, North Fork Mica, South Fork Mica	Bacteria Sediment
Wolf Lodge Creek	39,720	Wolf Lodge, Stella, Phantom, Blue Grouse, Lonesome, Halladay, Unnamed Tributary to Wolf Lodge Creek, Marie Creek and its tributaries, Cedar Creek and its tributaries	Sediment


Coeur d'Alene Lake
HUC 17010303
Coeur d'Alene
Fernan Lake
Cougar Creek
Kid Creek
Mica Creek
Wolf Lodge Creek
Coeur d'Alene Lake
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IDAPA 58.01.02.200.08

- Narrative water quality standard for sediment:
  - *sediment shall not exceed quantities . . . which impair designated beneficial uses.*

IDAPA 58.01.02.200.08

- The *Coeur d'Alene Lake and River TMDL* evaluated sediment impairment to streams by estimating sediment yield to streams using sediment transport model coefficients and GIS.

Sediment Modeling

- WATSED: Forested Land
- RUSLE: Agriculture and County Roads
- CWE: road erosion 200 feet on either side of road crossings, not total road mileage
- CWE + McGreer relationship: road surface erosion
- Road fill failures: CWE divide by 10
- Road encroachment: roads within 50 feet of stream were given a set erosion rate
- Wolf Lodge Creek: 33 tons/yr bank recession

TMDL Targets

- The *Coeur d'Alene Lake and River TMDL* set an interim load capacity of the streams based on the following assumptions:
  - Natural background levels of sedimentation would be fully supportive of the beneficial uses;
  - The stream system can function at a sedimentation rate greater than background rates and be fully supportive of beneficial uses.

- Given these assumptions, the interim load capacity was set equal to natural background conditions.

Coeur d'Alene Lake and River TMDL

$$LC = LA + \cancel{WLA} + \cancel{NB} + MOS$$

$$LA = NB + MOS$$

LC = Load Capacity of the waterbody
LA = Load allocation (nonpoint sources)
WLA = Waste Load Allocation (point sources)
NB = Natural Background
MOS = Margin of Safety

TMDL Margin of Safety

- Implicit: conservative assumptions
- Explicit: typically is 10% when used

Conservative Assumptions

- 100 percent delivery from forest and agricultural lands.
- 100 percent delivery from all road miles up to 200 feet from a stream crossing.
- 100 percent delivery from roads within 50 feet of the stream.
- Fill failure estimations developed from CWE field assessments were over-estimated by 60 percent.

Coeur d'Alene Lake and River TMDL

$$LC = LA + \cancel{WLA} + \cancel{NB} + \cancel{MOS}$$

$$LC = LA = NB$$

LC = Load Capacity of the waterbody
LA = Load allocation (nonpoint sources)
WLA = Waste Load Allocation (point sources)
NB = Natural Background
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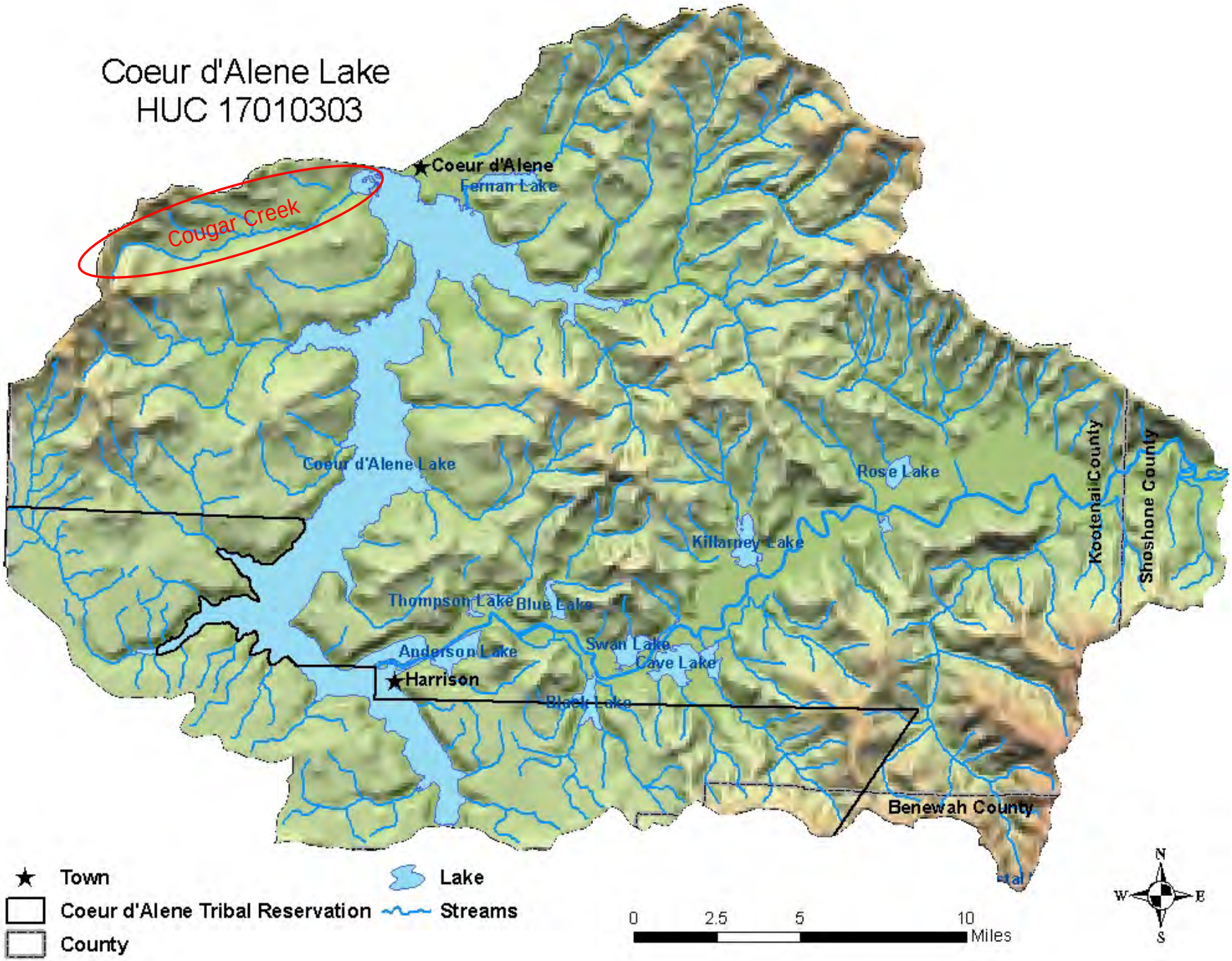
TMDL Load Reductions

Watershed	Pollutant	Estimated Yield to Stream (tons/yr)	Interim Load Capacity (Natural background) (tons/year)	Load Reduction (percent)
Cougar Creek	Sediment	467	407	12.8
Kid Creek	Sediment	176.3	142	19.4
Latour Creek	Sediment	893	767	14.1
Mica Creek	Sediment	648.1	568	12.3
Wolf Lodge Creek	Sediment	1,157	910	21.0

TMDL Load Allocations and Load Reduction by Land Use
(in Tons Per Year)

Watershed	U.S. Forest Service		Private Forest		State Forest		Agriculture/ Ranchettes		BLM	
	LA	LR	LA	LR	LA	LR	LR	LA	LR	LR
Cougar Creek	--	--	291	42.9	16	2.4	100	14.7	--	--
Kid Creek			75	18	--	--	67	16.3	--	--
Latour Creek	23	4	294	48	175	29	77	13	175	28
Mica Creek	--	--	432	60.9	24	3.5	99	13.9	13	1.8
Wolf Lodge Creek	655	178	108	29	--	--	71/ 76	19/ 21	--	--

Subbasin Assessment Addendum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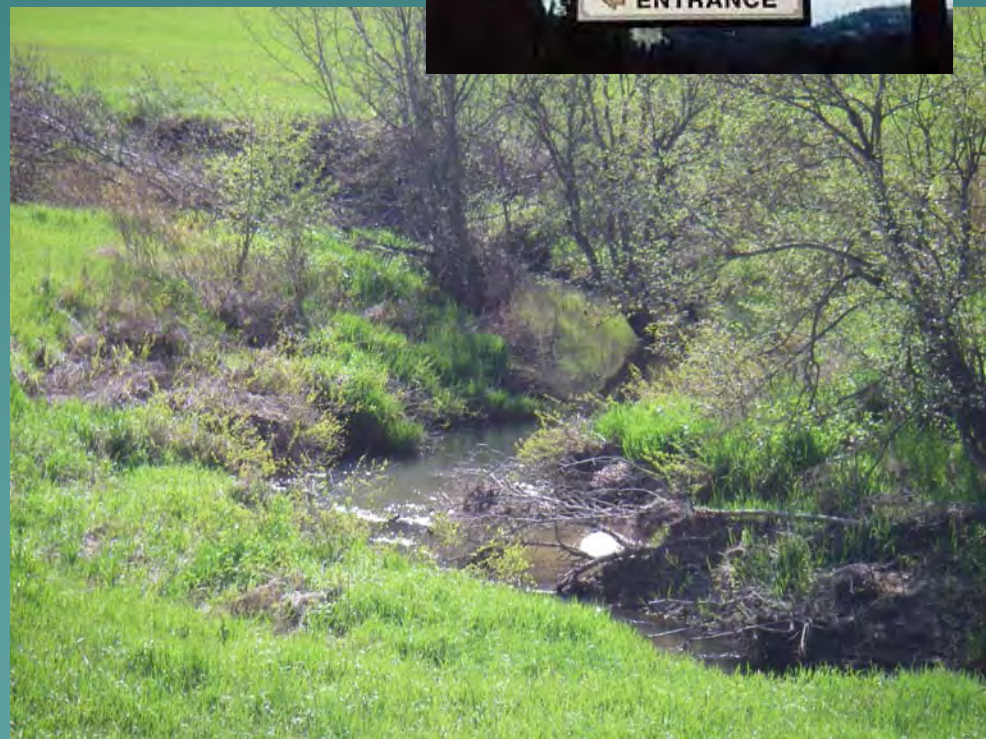
Cougar Creek

- Cougar Creek assessment unit (ID1701033PN02_02) is included in Idaho's draft 2010 Integrated Report as *not supporting* cold water aquatic life and salmonid spawning beneficial uses.
- The cause of impairment is listed as habitat alteration, sedimentation, and temperature.
- The *Coeur d'Alene Lake and River TMDL* identified the sediment interfering with the beneficial use in Cougar Creek is moderate to fine grain sands.

Cougar Creek TMDL Implementation

- Nature Conservancy 88 acres) of property at the mouth. Natural streambank protection and channel revegetation has been restored on that property.
- Upstream of the Nature Conservancy property grazing on 75 acres has been eliminated.
- Conservation easements?



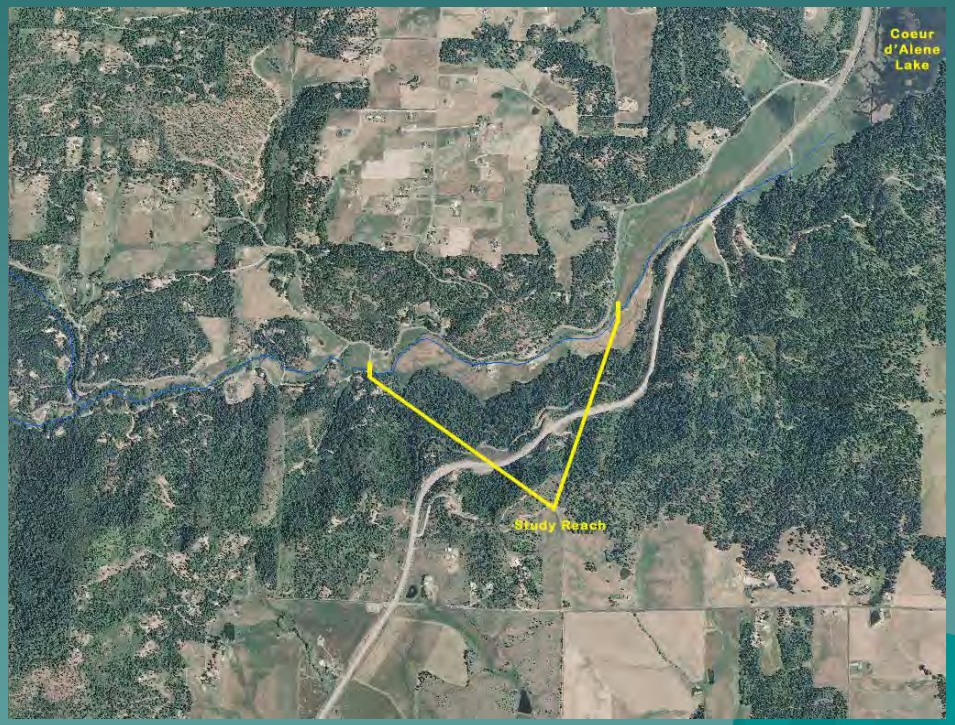
Cougar Creek Monitoring Data

- No BURP since TMDL was published
- 2002 KSSWCD stream erosion survey
- 2009 KSSWCD and IDEQ stream erosion survey
- 2009 IDL CWE scores
- Cutthroat data (May 2009)

Cougar Creek
2002 Stream Erosion Survey

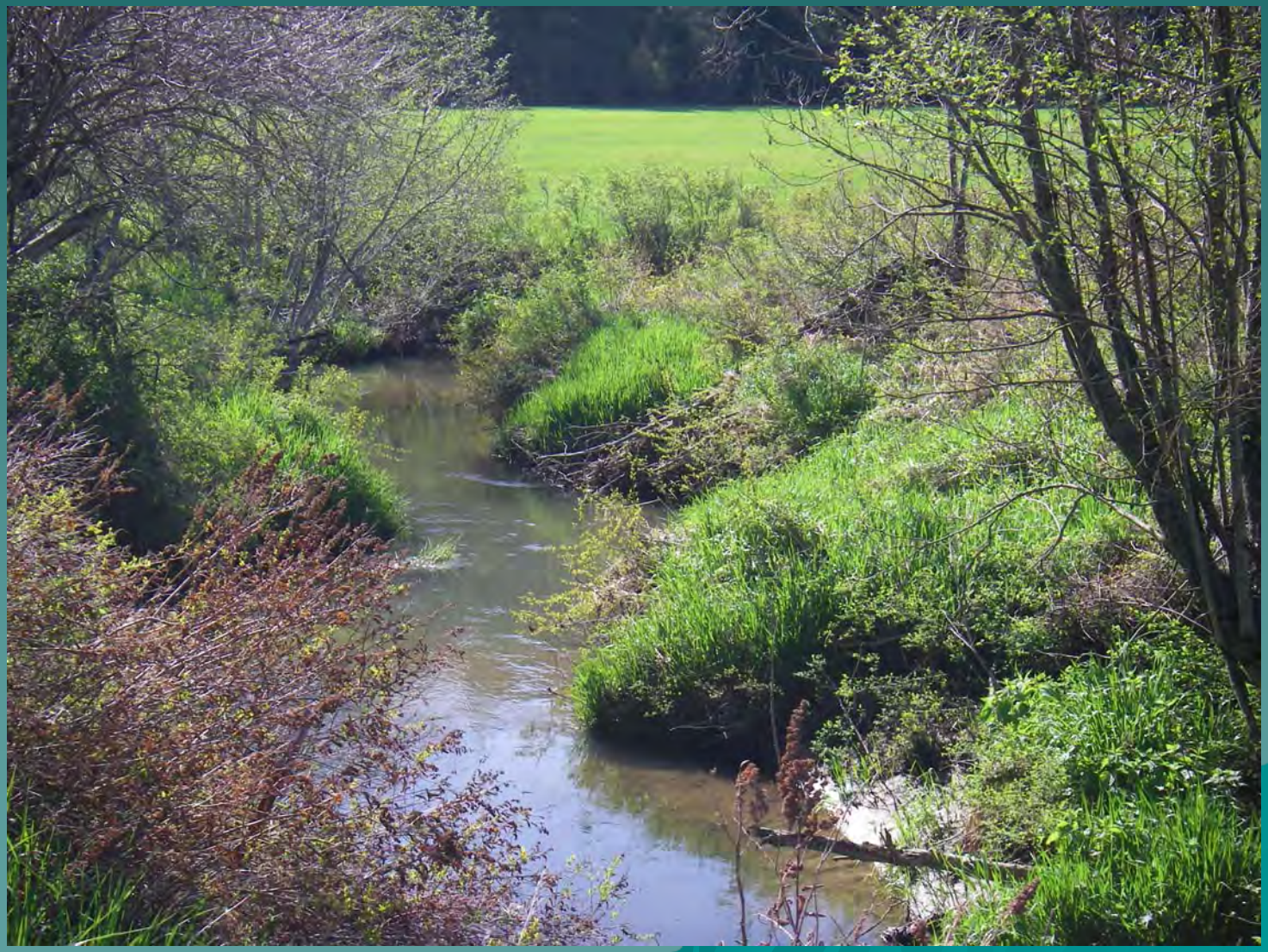
Kootenai-Shoshone Soil and Water Conservation District

- Results: densely foliated, but entrenched, significant bank erosion as evidenced by bare, vertical streambanks and/or sod-root overhangs. Frequent mass wasting.



Cougar Creek
2009 Stream Erosion Surveys

Kootenai-Shoshone Soil and Water Conservation District and IDEQ



Cougar Creek
2009 Stream Erosion Surveys

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2009 Stream Erosion Surveys

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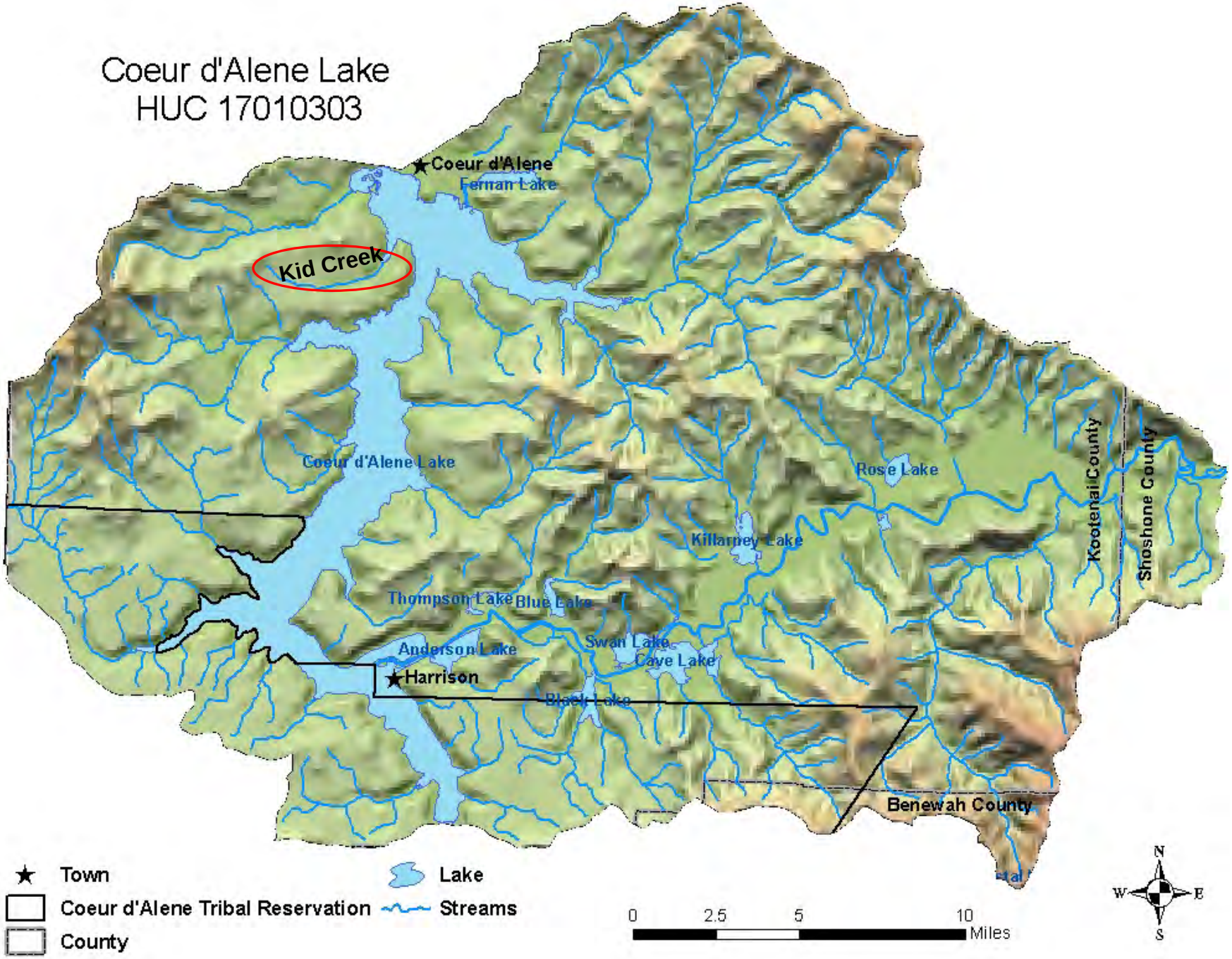
Cougar Creek
2009 Stream Erosion Surveys

Kootenai-Shoshone Soil and Water Conservation District and IDEQ

Cougar Creek SBA Conclusion

- Positive Trend in the lower watershed
- It is reasonable to assume Cougar Creek is still functioning at a sediment transport/deposition rate above its sediment load capacity.
- Excess sedimentation is contributing to the impairment cold water aquatic life and salmonid spawning beneficial uses.
- It is recommended Cougar Creek be subject to load reductions defined in the *Coeur d'Alene Lake and River TMDL*.
- High priority for BURP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Kid Creek

- The Kid Creek assessment unit (ID17010303PN03_02) is included in Idaho's draft 2010 Integrated Report as *not supporting* the cold water aquatic life beneficial use.
- The causes of the beneficial use impairment are habitat alteration and sediment.
- The *Coeur d'Alene Lake and River TMDL* identified the sediment interfering with the beneficial use within Kid Creek is most likely large bedload particles that is mobilized during large discharge events (return period of 10-15 years).

Kid Creek
TMDL Implementation

Kootenai-Shoshone Soil and Water Conservation District

- Riparian buffers, upland sediment ponds, and grade control structures within the creek.

Kid Creek Monitoring Data

- No BURP since TMDL was published
- No CWE Evaluation
- 2002 KSSWCD Stream Erosion Survey
- 2009 KSSWCD and IDEQ Stream Erosion Survey
- No cutthroat are present (May 2009)

Kid Creek
2002 Stream Erosion Surveys

Kootenai-Shoshone Soil and Water Conservation District

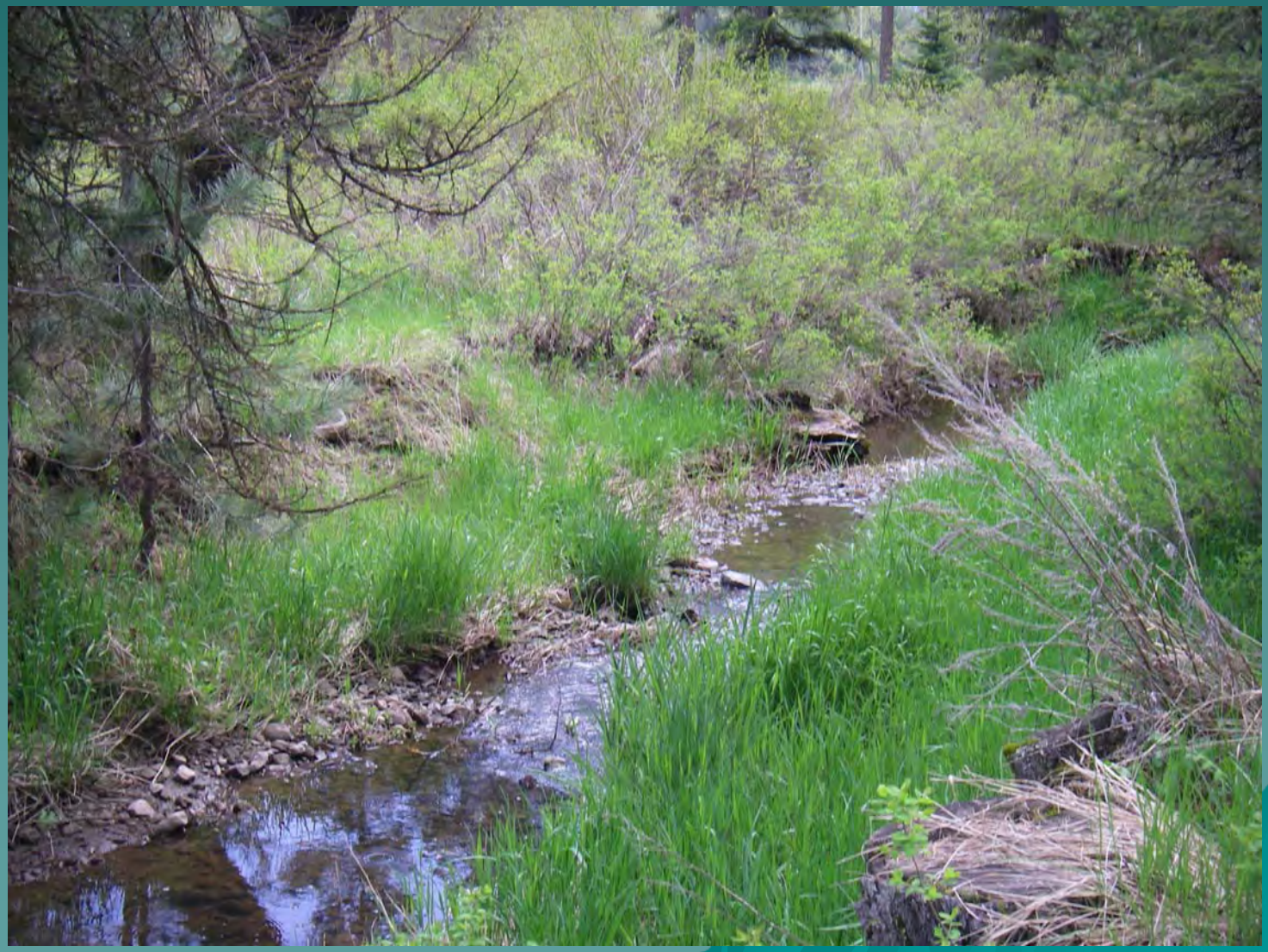
- From the Worley Highway District office and ended at the mouth.
- The headwaters of Kid Creek were characterized as a slightly entrenched with moderate undercut banks and no canopy cover.
- Much of the creek downstream was in fairly good condition with abundant vegetation. However, there were localized areas of concern and some culverts that were a source of excessive sediment.
- At the mouth of Kid Creek, significant entrenchment and headcutting were present.

Kid Creek
2009 Stream Erosion Surveys

Kootenai-Shoshone Soil and Water Conservation District and IDEQ

Kid Creek
2009 Stream Erosion Surveys

Kootenai-Shoshone Soil and Water Conservation District and IDEQ



Kid Creek
2009 Stream Erosion Surveys

Kootenai-Shoshone Soil and Water Conservation District and IDEQ

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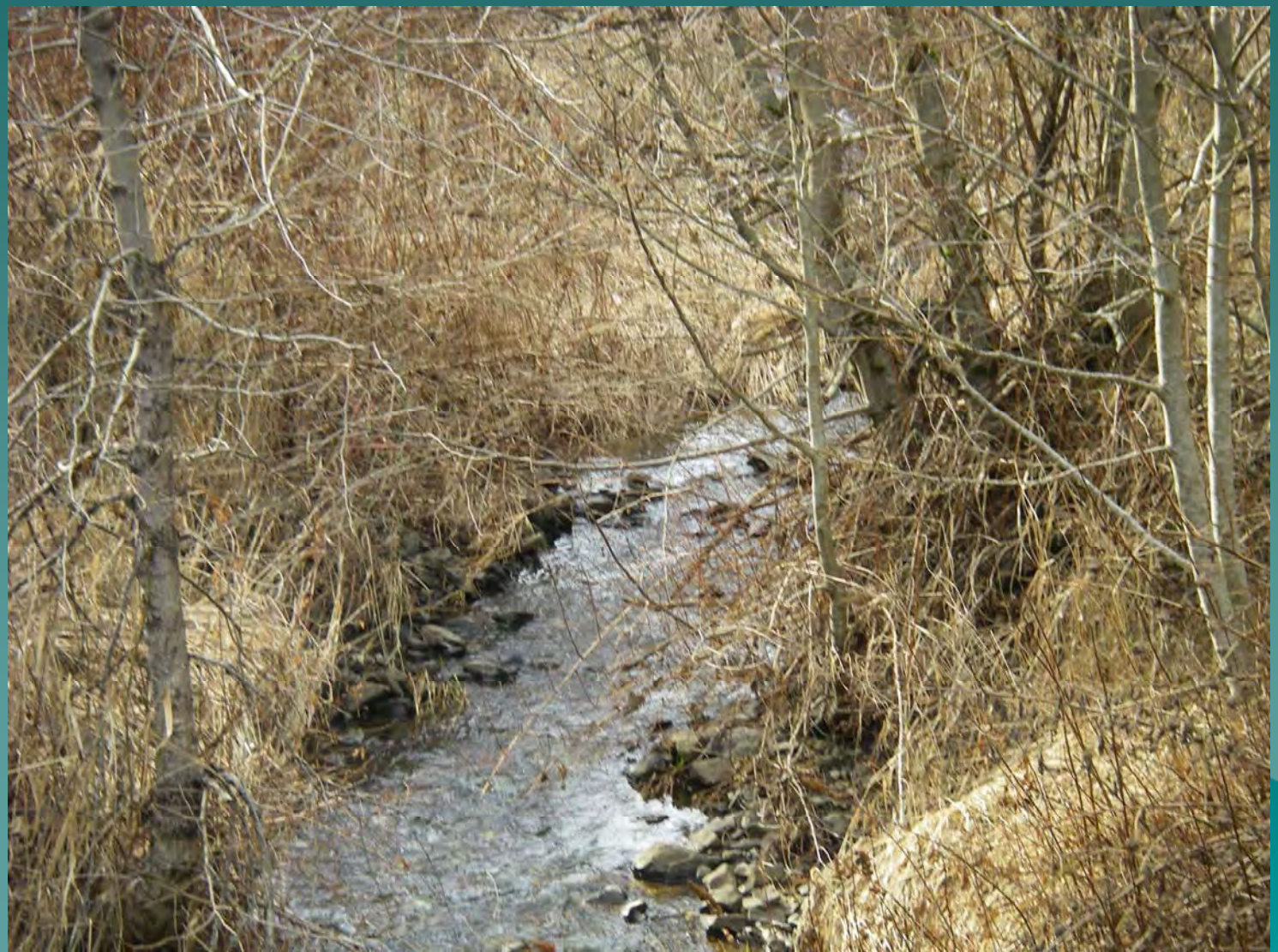
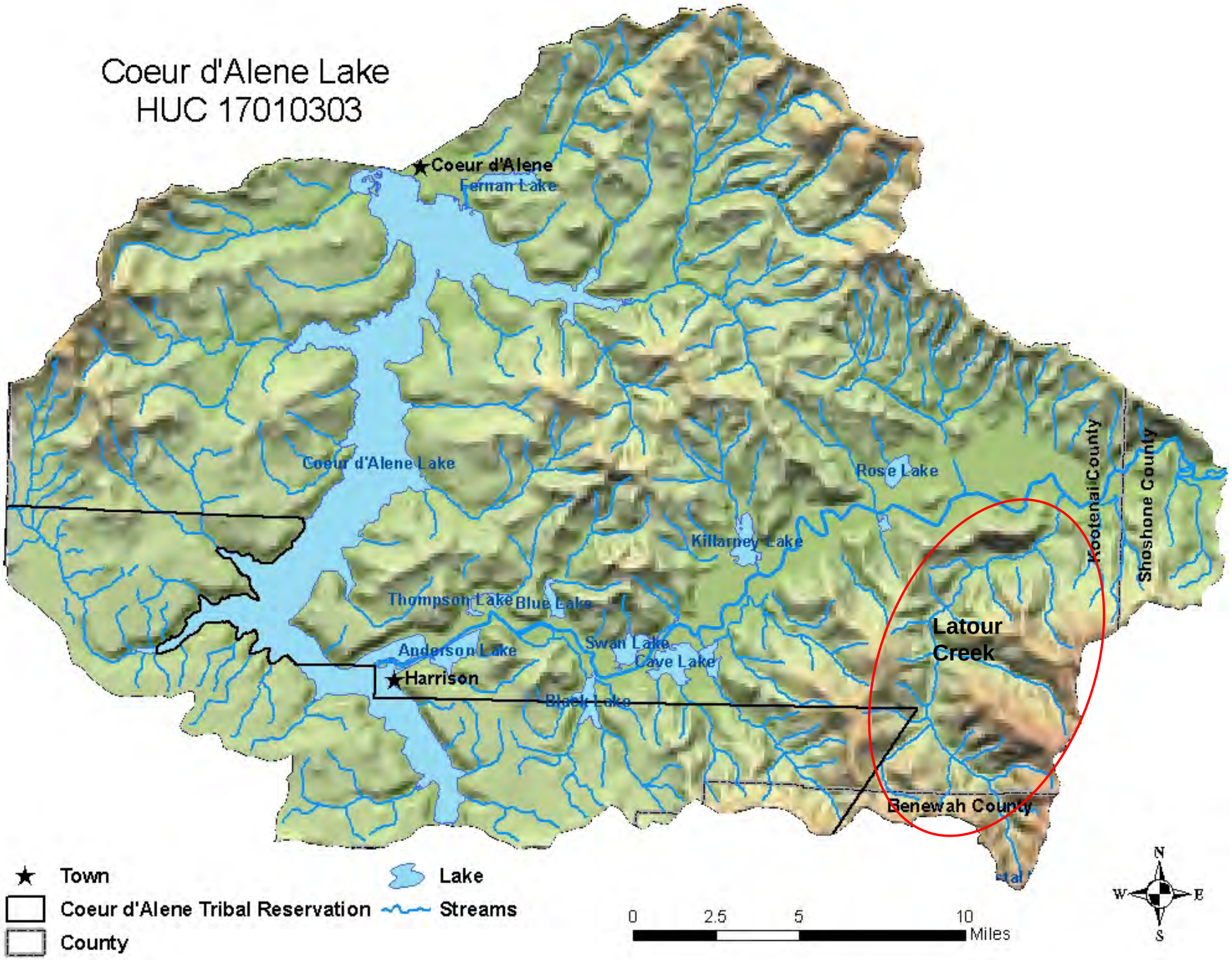


Kid Creek
2009 Stream Erosion Surveys

Kootenai-Shoshone Soil and Water Conservation District and IDEQ

Kid Creek
SBA Conclusion

- Kid Creek may be functioning at or near its sediment load capacity.
- Due to the numerous culverts and few localized areas of concern, more analysis is needed before any assessment decisions are made for the Integrated Report.
- High priority for BURP.
- Until these assessments are made, it is recommended be subject to load reductions defined in the *Coeur d'Alene Lake and River TMDL*.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Latour Creek

- The Latour Creek assessment unit (ID17010303PN015_02) is listed in Idaho's draft 2010 Integrated Report as *not supporting* cold water aquatic life and salmonid spawning beneficial uses.
- The causes of impairment are sediment and temperature.
- The *CDA Lake and River Subbasin Assessment* identified the sediment interfering with the beneficial use within the Latour Creek watersheds is most likely large bedload particles that is mobilized during large discharge events (return period of 10-15 years)

Latour Creek Implementation

- The Idaho Department of Lands improved 5.7 miles of road :
  - Bridge replacement over Lost Girl Creek and Butler Creek.
  - Work was also done on the support structures and decking on the Latour Creek Bridge.
  - Reconstruction of the 5.7 mile road.
  - 4 relief culverts, replaced 5 undersized stream crossing culverts, pulled ditches and outside shoulders, rocked ditch lines, aligned, crowned, and installed rolling dips.

Latour Creek Monitoring Data

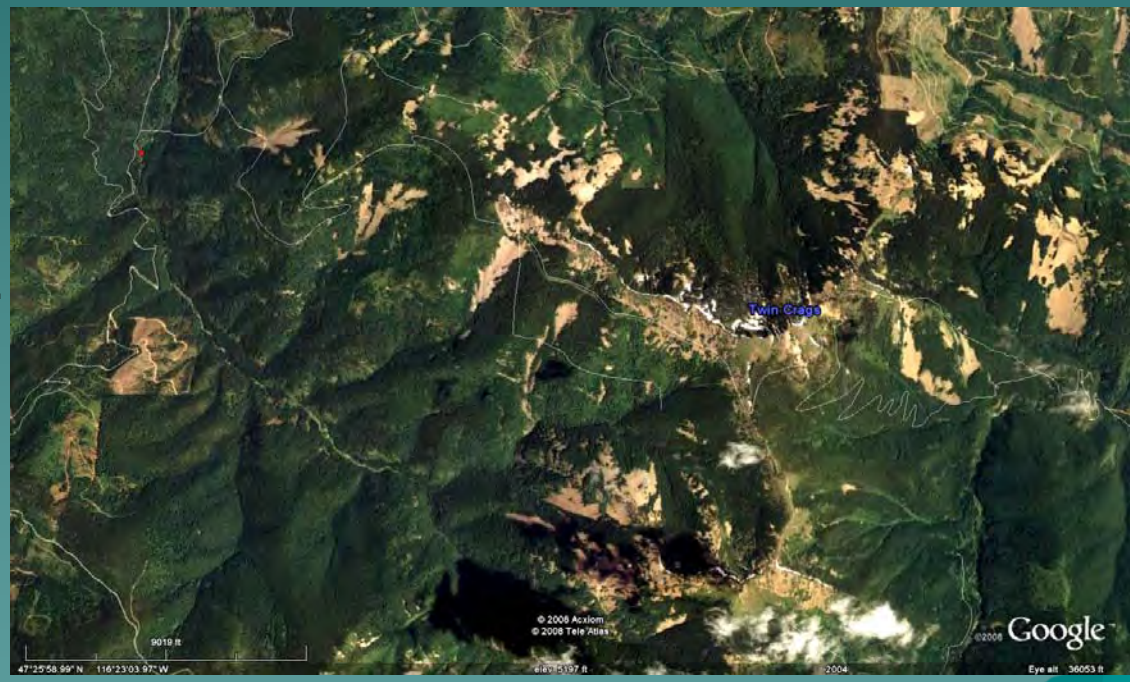
- No BURP data since TMDL was published.
- 2009 IDL CWE Scores (Headwaters)
- 2009 IDL CWE Scores (Mouth)
- 2009 IDEQ stream erosion survey
- Cutthroat data (May 2009)

Latour Creek
Quantitative Stream Erosion Survey
IDEQ (2008)

- Three separate reaches, with intermediate erosive conditions of streambanks along Latour Creek, to conduct a stream stability survey as described in *Rosgen (2006).*
  - 18 percent of banks unstable
  - The estimated erosion rate for the 785 ft of study reach was 0.4-0.6 ft/yr or 217 ft3/yr (10 tons/year).

Latour Creek 2008 Qualitative Stream Erosion Survey

- Mass wasting evident at the headwaters
- From the confluence with Butler Creek to the Mouth. Observations:
  - Road encroachment
  - Excessively high bedload.
  - Going downstream to the mouth, it became more and more evident that Latour Creek did not have enough stream energy to competently move this excessive bedload material downstream.



Latour Creek SBA Conclusion

- Latour Creek is functioning at a sediment transport/deposition rate well above its load capacity;
- There are still significant sources of excess sediment to the system; and
- Significant land management changes need to occur before Latour Creek before it is functioning at its sediment load capacity.
- Too soon for IDL implementation reductions to have affected the stream
- It is recommended Latour Creek be subject to load reductions defined in the *Coeur d'Alene Lake and River TMDL*.

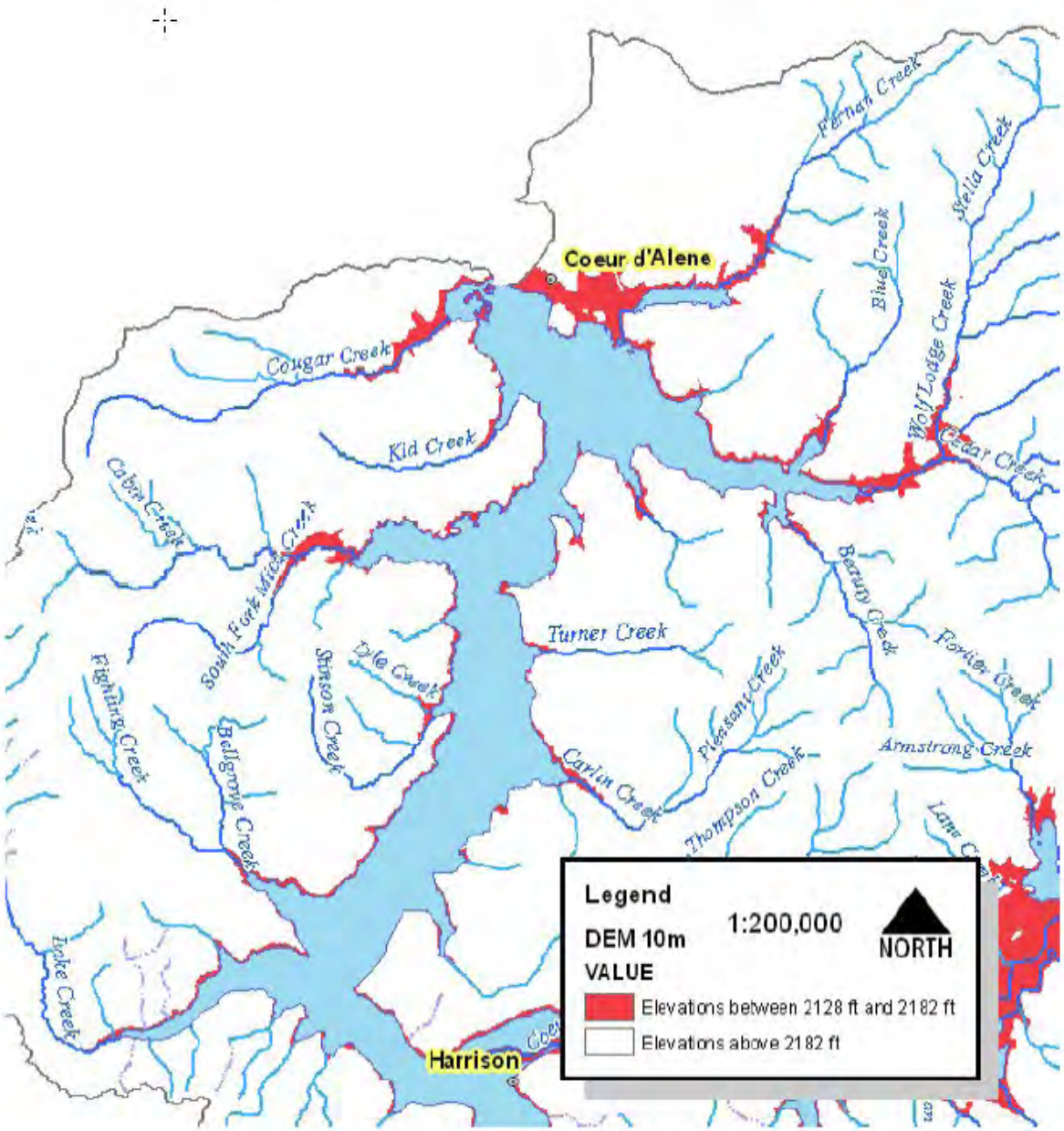



Figure 29: Map of deltaic sediments between 2128 and 2182 on tributaries to Coeur d'Alene Lake.