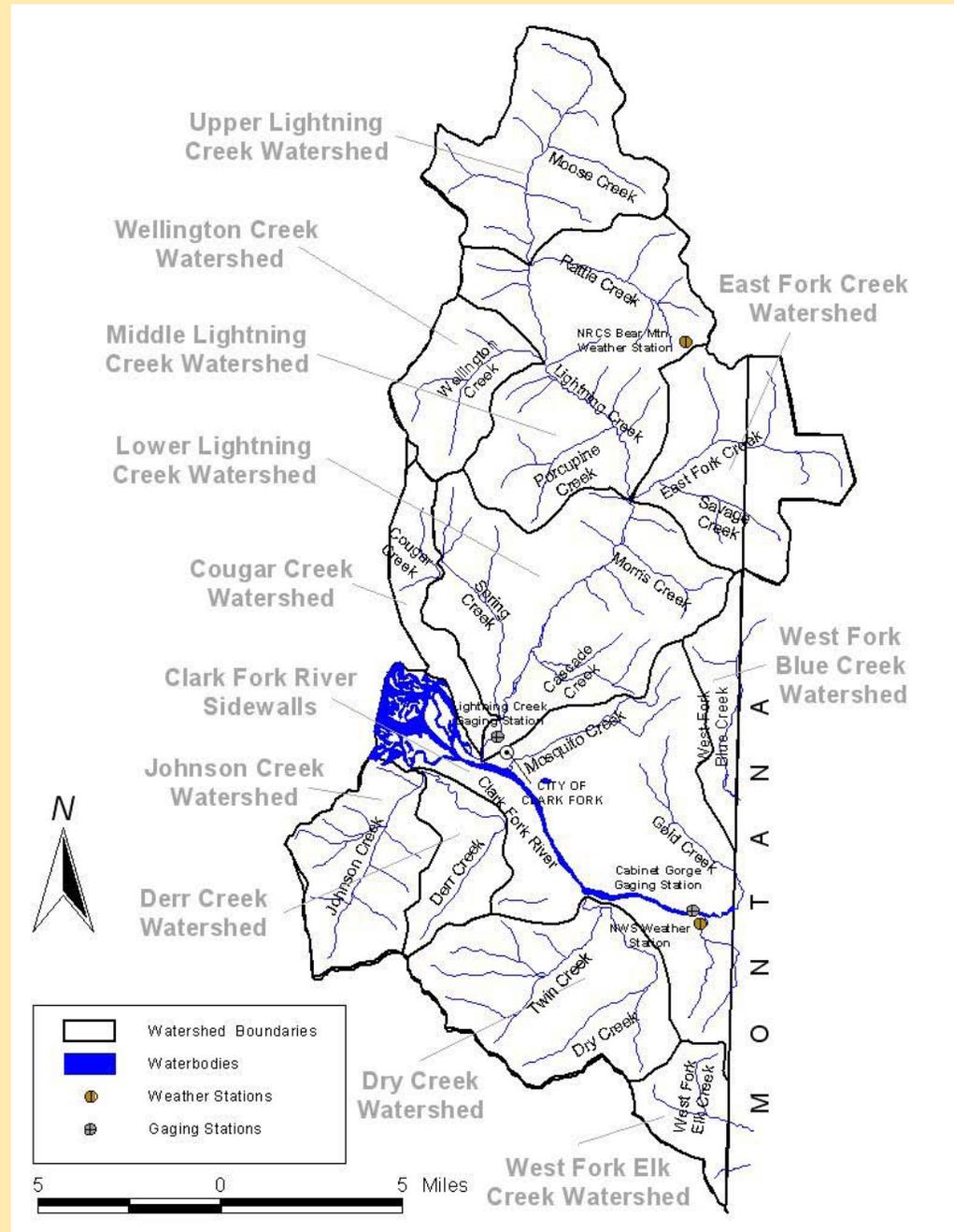


# Lower Clark Fork Watershed Advisory Group

October 27, 2005



# Lower Clark Fork River Subwatersheds



# Clean Water Act Beneficial Uses

- Designated Uses: “those uses specified in water quality standards for each water body or segment, whether or not they are being attained.”
- Existing Uses: “those uses actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards.”

## Beneficial Uses

Water Body	Uses <sup>a</sup>	Type of Use
Clark Fork River (Idaho/Montana Border to Lake Pend Oreille)	CWAL, SS, PCR, DWS, SRW	Designated
Lightning Creek (Source to Mouth)		
Johnson Creek (Source to Mouth)	CWAL, SS, PCR or SCR	Existing
Cascade Creek (Source to Mouth)	CWAL, SS, SCR	Existing
East Fork Creek (Idaho/Montana Border to Mouth)	CWAL, SS, SCR	Existing
Rattle Creek (Source to Mouth)	CWAL, SS, SCR	Existing
Twin Creek (Source to Mouth)	CWAL, SS, PCR	Presumed
Dry Creek (Source to Mouth)	CWAL, SS, SCR	Existing
Savage Creek (Idaho/Montana Border to Mouth)	CWAL, SS, SCR	Existing
Wellington Creek (Source to Mouth)	CWAL, SS, SCR	Existing

# Aquatic Life Uses

- Cold Water Aquatic Life: water quality appropriate for the protection and maintenance of a viable aquatic life community for cold water species.
- Salmonid Spawning: Waters which provide or could provide a habitat for active self-propagating populations of salmonid fisheries

# Primary and Secondary Contact Recreation (IDAPA 58.01.02)

- Primary Contact Recreation: water quality appropriate for prolonged and intimate contact by humans or for recreational activities when ingestion of small quantities of water is likely to occur. Such activities include, but are not restricted to, those uses for swimming, water skiing, or skin diving.
- Secondary Contact Recreation: water quality appropriate for recreational uses on or about the water and which are not included in the primary contact category. These activities may include fishing, boating, wading, infrequent swimming and other activities where ingestion of raw water is not likely to occur.

# Special Resource Waters

- Designated for outstanding high quality waters; unique ecological significance; outstanding recreational quality; intensive protection needed or other reasons.
- Those waters of the state determined to be special resource waters are listed in Water Quality Standards (Lightning Creek and the Lower Clark Fork River are included)
- Restrictions of Point Source Discharges to SRW and their tributaries. “No new point source can discharge pollutants, and no existing point source can increase its discharge of pollutants above the design capacity of its existing wastewater treatment facility, to any water designated as a special resource water or to a tributary of, or to the upstream segment of a special resource water: if pollutants significant to the designated beneficial uses can or will result in a reduction of the ambient water quality of the receiving special resource water as measured immediately below the applicable mixing zone.

# Water Supply

- Domestic: water quality appropriate for drinking water supplies
- Agricultural: water quality appropriate for the irrigation of crops or as drinking water for livestock. This use applies to all surface waters of the state.

# 303(d) Listed Streams - 2002

## Lower Clark Fork River:

*TDG, Metals, Temperature\*,  
Unknown\**

## Johnson Creek:

*Temperature, Sediment*

Dry & Twin Creek: *Temperature*

## Lightning Creek:

*Unknown\*, Temperature*

## Porcupine & Morris Creeks:

*Unknown\*, Temperature*

Cascade Creek\*: *Temperature*

## East Fork Creek:

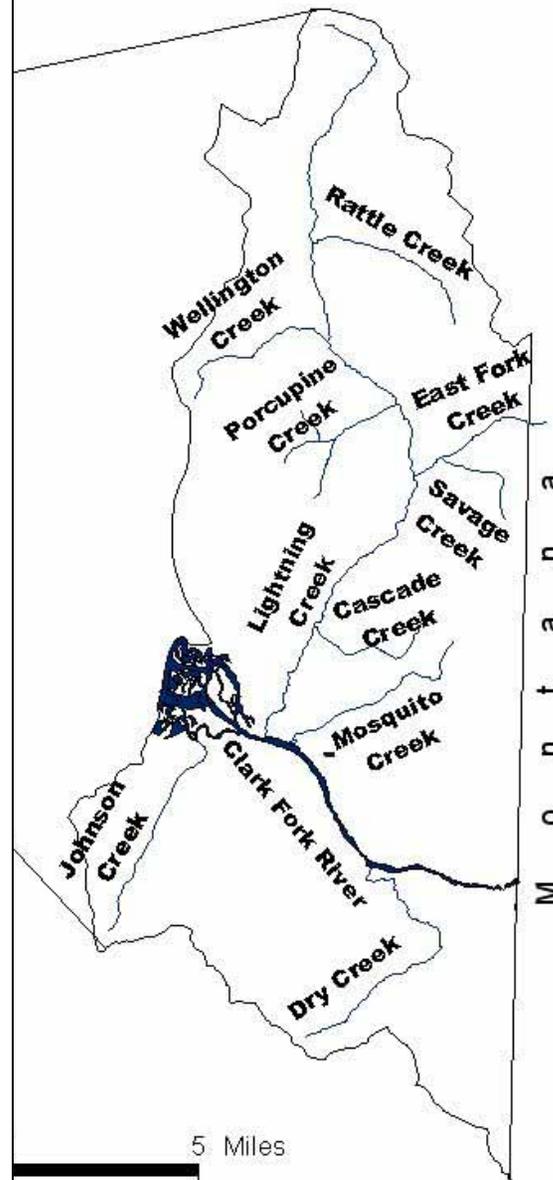
*Temperature, Sediment*

Savage Creek: *Temperature*

Rattle Creek: *Temperature*

Wellington Creek: *Sediment,*

*Temperature*



# Total Maximum Daily Load (TMDLs) Calculation

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

- LC= Loading Capacity (calculated for each pollutant and waterbody) = TMDL
- MOS = Margin of Safety
- NB = Natural Background
- LA = Load Allocation (assigned to each non-point source of pollution)
- WLA = Waste Load Allocation (for point sources)

# Metals TMDLs

- EPA/Federal Register sets allowable limits. Use calculator to determine metals standards based on hardness.
- Mercury and Cadmium exceedences in the Lower Clark Fork mainstem Assessment Units
- Calculate allowable load based upon flow values.
- Identify Sources: Are there sources of metals in Idaho, or is it assumed to be coming from Montana?

# Temperature TMDLs

## Potential Natural Vegetation

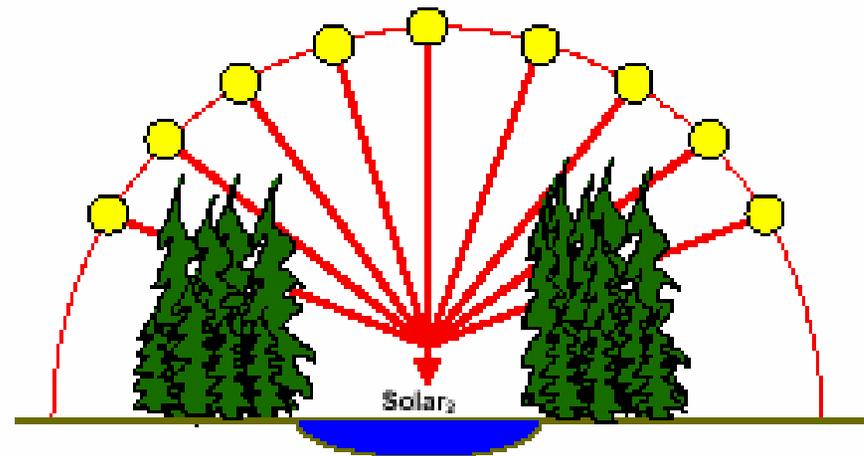
- Provides the most effective shade
- Produces natural stream temperatures (assuming no point sources)
- Equivalent to natural background conditions in Idaho WQS



# Effective Shade

## Effective Shade Defined

**Solar<sub>1</sub>** – Potential daily direct beam solar radiation load adjusted for julian day, solar altitude, solar azimuth and site elevation.



$$\text{Effective Shade} = \frac{(\text{Solar}_1 - \text{Solar}_2)}{\text{Solar}_1}$$

Where,

**Solar<sub>1</sub>**: Potential Daily Direct Beam Solar Radiation Load

**Solar<sub>2</sub>**: Daily Direct Beam Solar Radiation Load Received at the Stream Surface

# Natural Stream Temperature

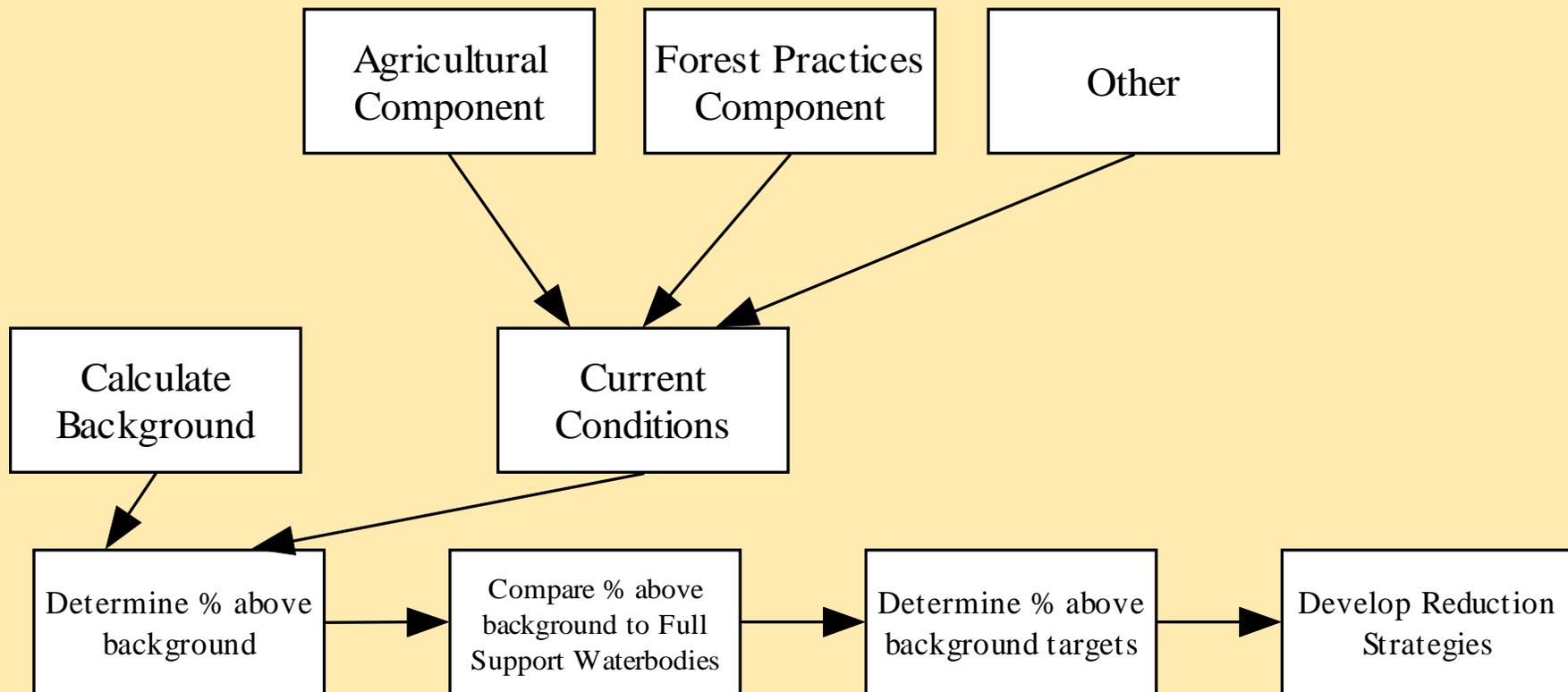
- Air Temperature
  - Direct Solar Radiation
- Ground Water Temperature
  - Hydrology
- Floodplain Connectivity

# Temperature TMDL

- Loading Capacity = Solar Load under PNV
- Existing Load = Solar Load under existing effective shade
- Load Reduction = PNV Load – Existing Load

# Sediment TMDLs

## % over background concept



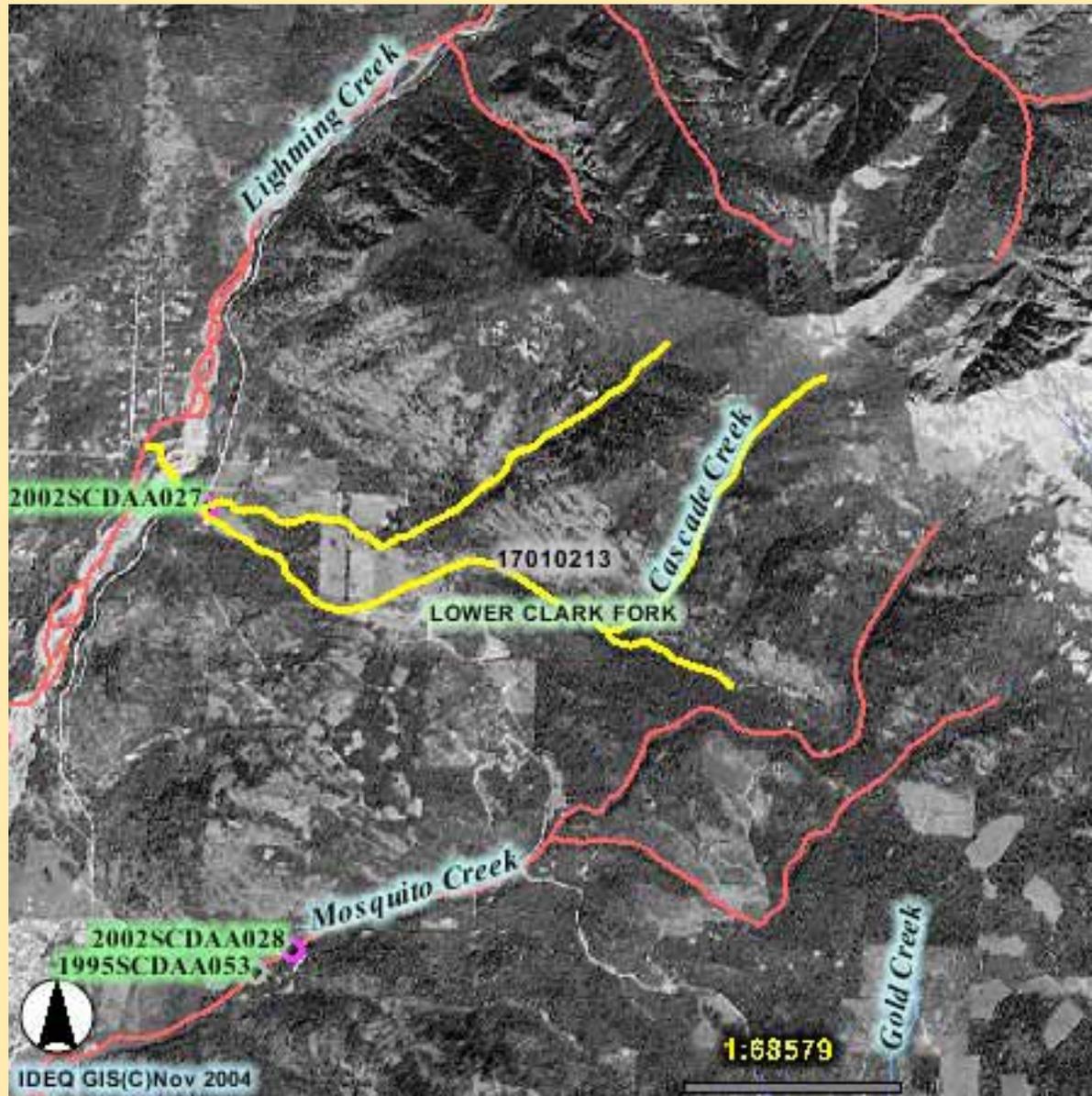
## Example of Coefficients Used in Kootenai/Moyie TMDL

Bench Agriculture	0.055 t/a/y
Valley Agriculture	0.026 t/a/y
Forest	0.03 t/a/y
Forest Road	0.5 t/a/y
Railroad	0.5 t/a/y
Pipeline	25 t/a/y
High Density Rural	0.08 t/a/y
Low Density Rural	0.04 t/a/y
Stream Bank Erosion	38 t/a/y
Burn/Shrub	0.06 t/a/y

# Assessment Units and BURP Scores

- Transition from 1998 to 2002. Went from general “source to mouth” description to assessment units
- Listings from 1998 carried over to 2002. However, now only the assessment unit where BURP data collected is de-listed/listed.
- BURP scores based on indices:
  - 3 = Confident supporting uses
  - 2 = Still fully supporting, index confidence not as strong
  - 1 = Confident there are issues with full support status (or data collection)

# Cascade Creek



# Cascade Creek

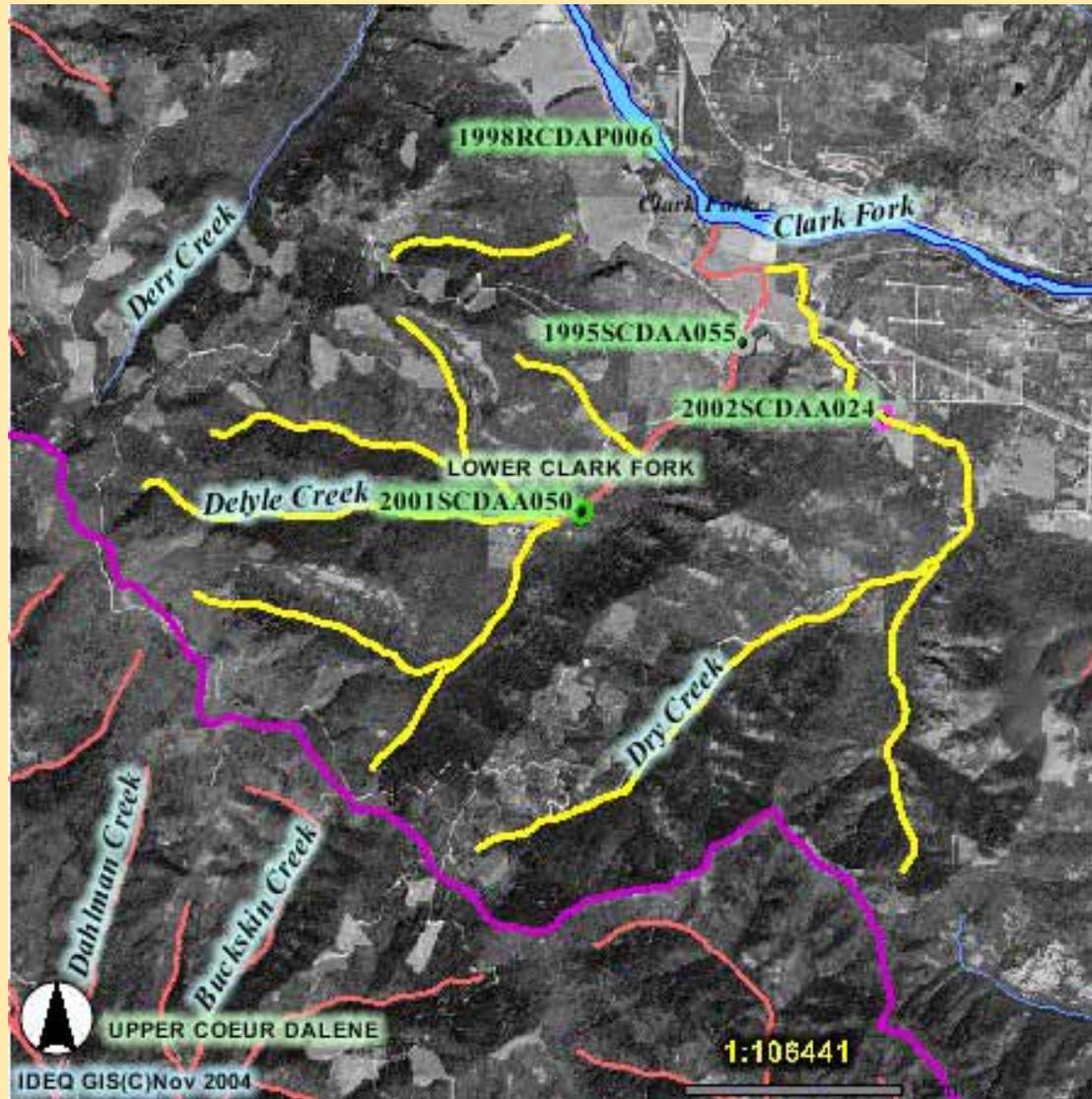
- Description: Mainstem of Cascade Creek to Lightning Creek, including first and second order portions
- Listing Basis: EPA added in 1998 for temperature
- BURP sites: 2002 about 820 ft (250 m) upstream from Road 419 crossing
  - Low Macroinvertebrate Score (1)
  - Low Fish Score (1)
  - Mid-range Habitat Score (2)
- Land Uses/Ownership: Forest Service (Headwaters), Private forest
  - CWE: Forestry practiced on 92% of acreage
- Pollutant Sources: Roads, bank erosion
- Recommended TMDLs
  - Temperature: potential natural vegetation method
  - Other Pollutants potentially causing low fish, macro invertebrate scores?
    - Fish barrier at culvert, high density of brook trout limit bull trout production (Bull Trout Problem Assessment, 1998)
    - ??? Other issues. Will go through stressor identification and present to WAG

# Cascade Creek



\*Photos taken 100 m above Cascade Creek Road crossing

# Dry and Delyle Creek AU 004\_02

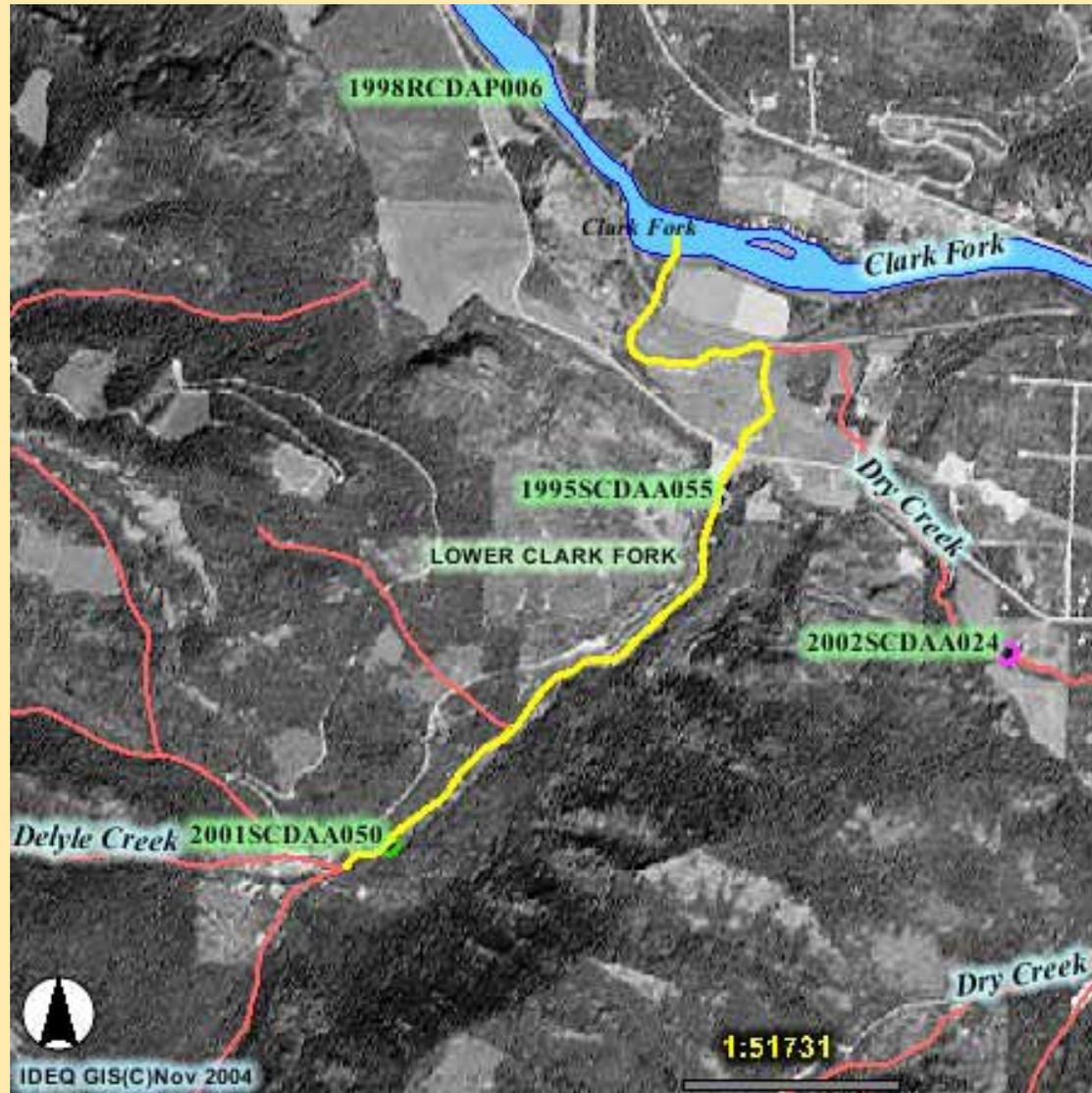


# Dry and Deyle Creek

## AU 004\_02

- Description: Dry Creek, Delyle Creek and tributaries to Twin Creek upstream of Delyle Creek
- Listing Basis: 1998 EPA addition for temperature.
  - No DEQ Temperature logger information available.
  - Forest Service data available?
- BURP sites:
  - 2002 site on mainstem Dry Creek = Dry. Landowner reports Dry majority of year.
  - 2001 site at top of lower assessment unit reach (Twin Creek): Full Support
    - Macro – 3; Fish -2; Habitat – 3
- Land Uses/Ownership: Primarily Forestry and Forest Service ownership; lower reaches private, rural residential
- Pollutant Sources: Roads, bedload
- Recommended TMDLs
  - Temperature: potential natural vegetation method

# Twin Creek

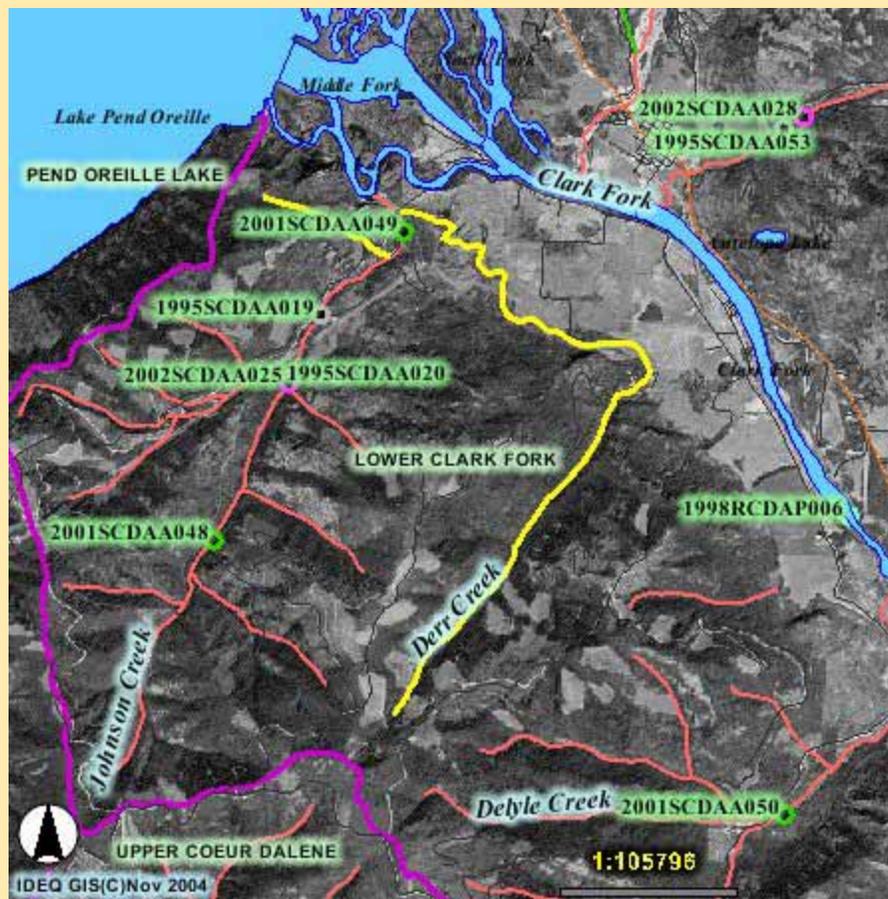


# Twin Creek

## AU 004\_04

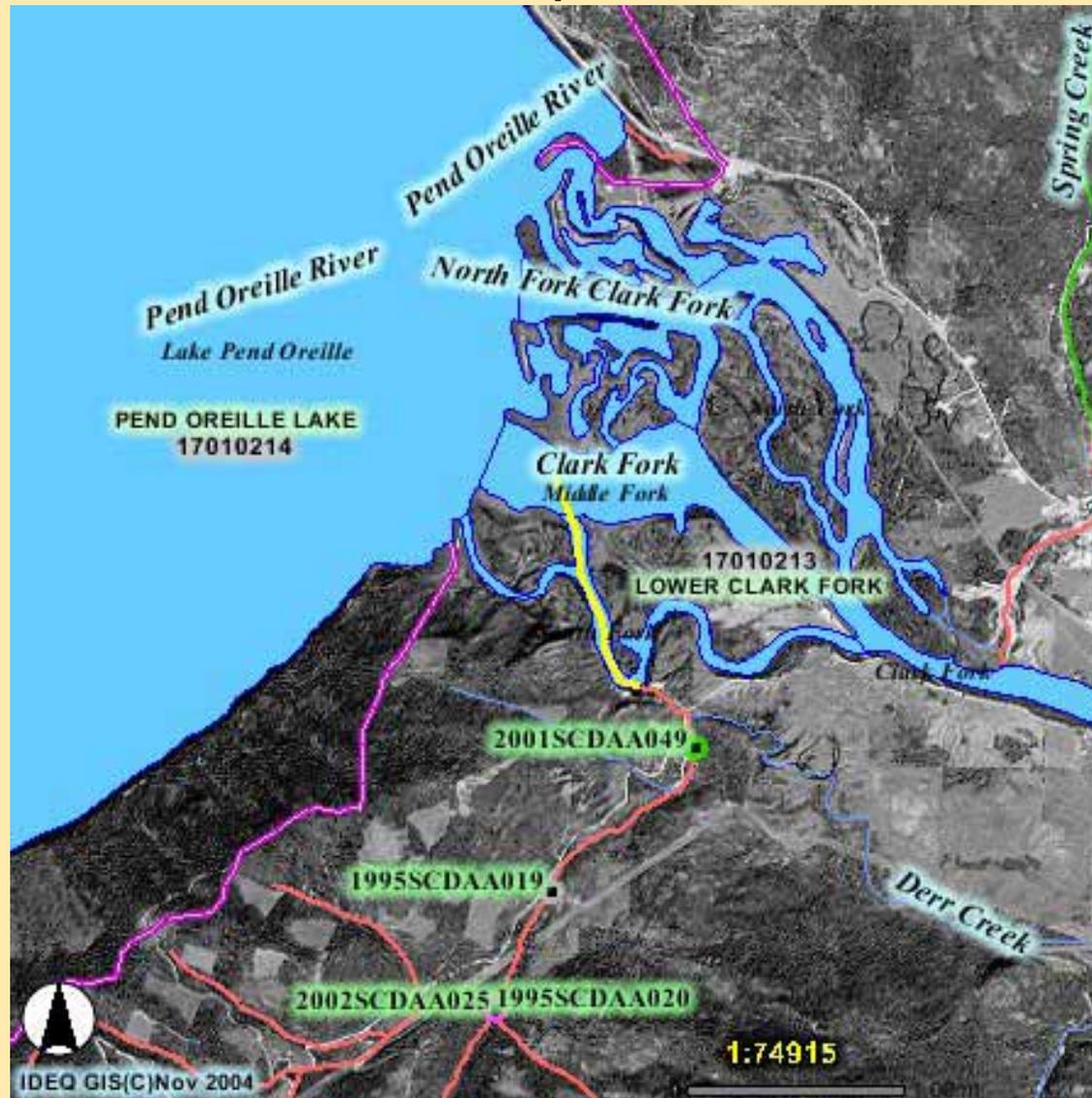
- Description: mainstem Twin Creek downstream of Delyle Creek
- Listing Basis: 1998 EPA addition for temperature.
  - IDFG temperature logger information shows temperature exceedence.
  - Forest Service data available?
- BURP sites:
  - 2001 site at top of assessment unit reach: Full Support
    - Macro – 3; Fish - 2; Habitat – 3
  - 1995 site at lower end of assessment unit: Not Full Support
    - Macro -1; Fish – 2; Habitat - 1
- Land Uses/Ownership: Private, agriculture/livestock grazing
- Pollutant Sources: Channel modification (note restoration project to re-meander Twin Creek completed in 1999); agriculture/livestock grazing; roads; bedload movement deposit in 1997 (other years)
- Recommended TMDLs
  - Temperature: potential natural vegetation method

# Derr Creek (unassessed\*) AU 17010213PN001\_02

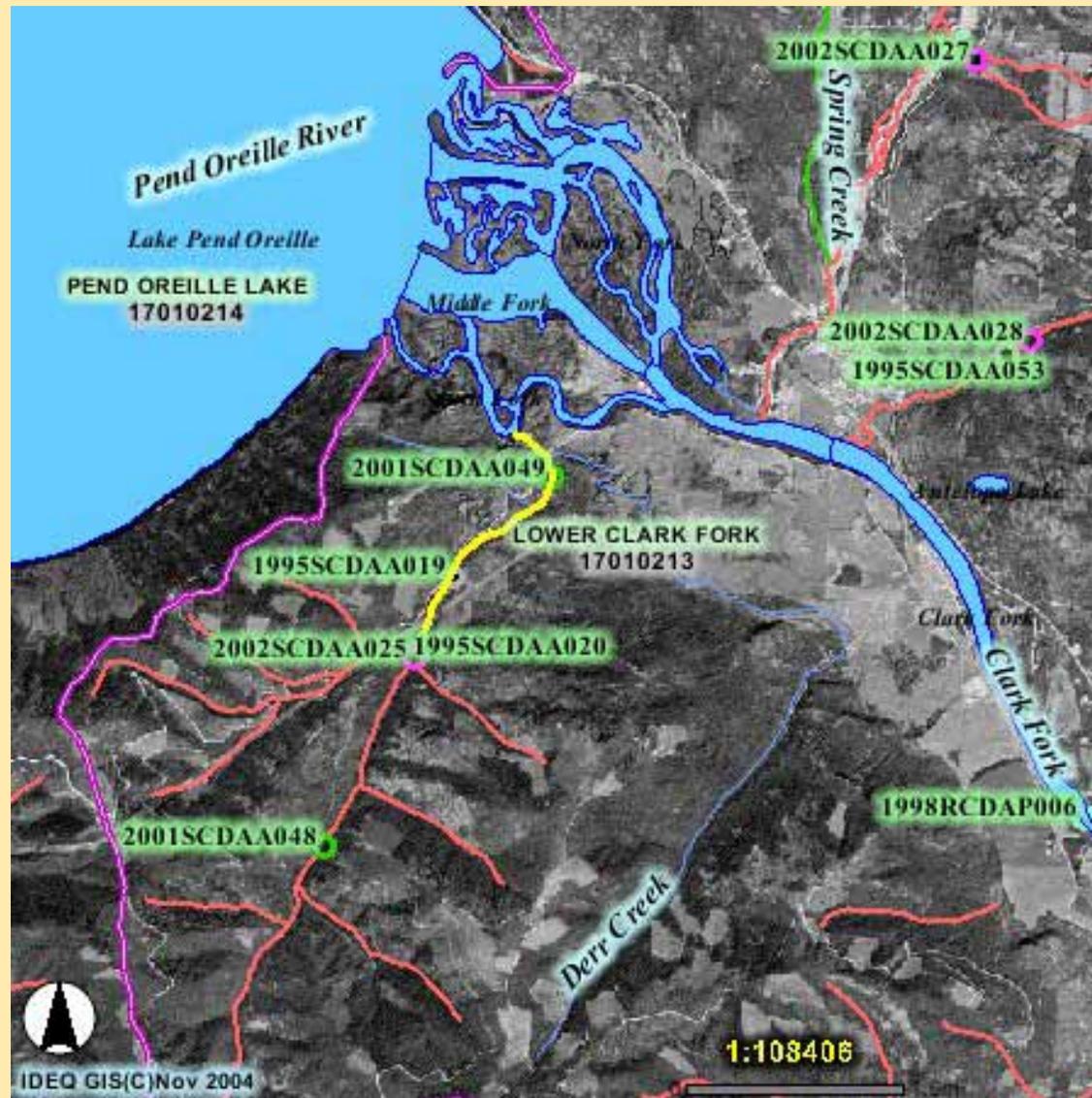


\*The Subbasin Assessment should address known impacts, i.e., dam/diversion.

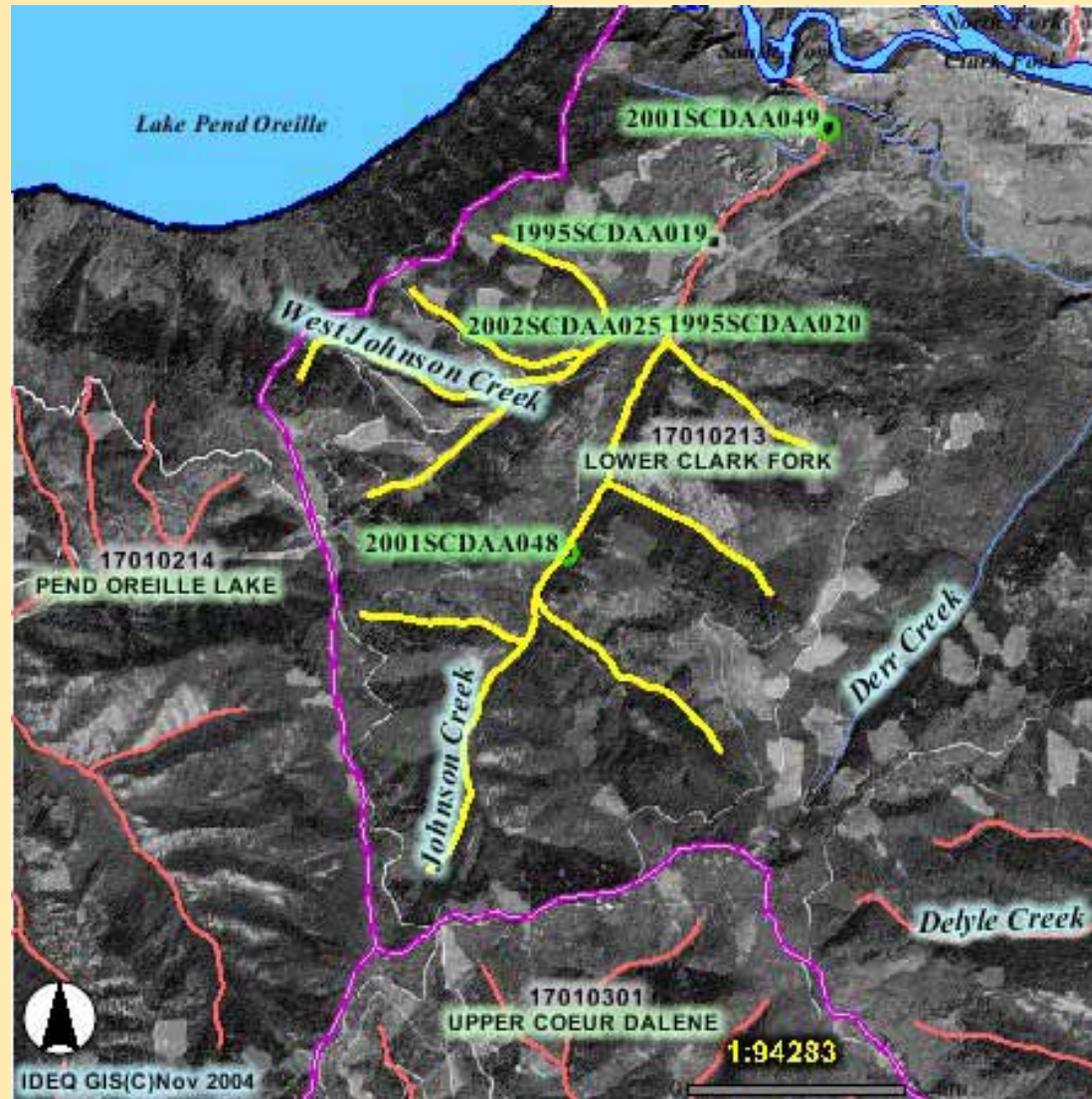
# Johnson Creek - 3<sup>rd</sup> order AU001\_03 (unassessed)



# Johnson Creek AU 002\_03



# WF Johnson and Upper Johnson Creek AU002\_02

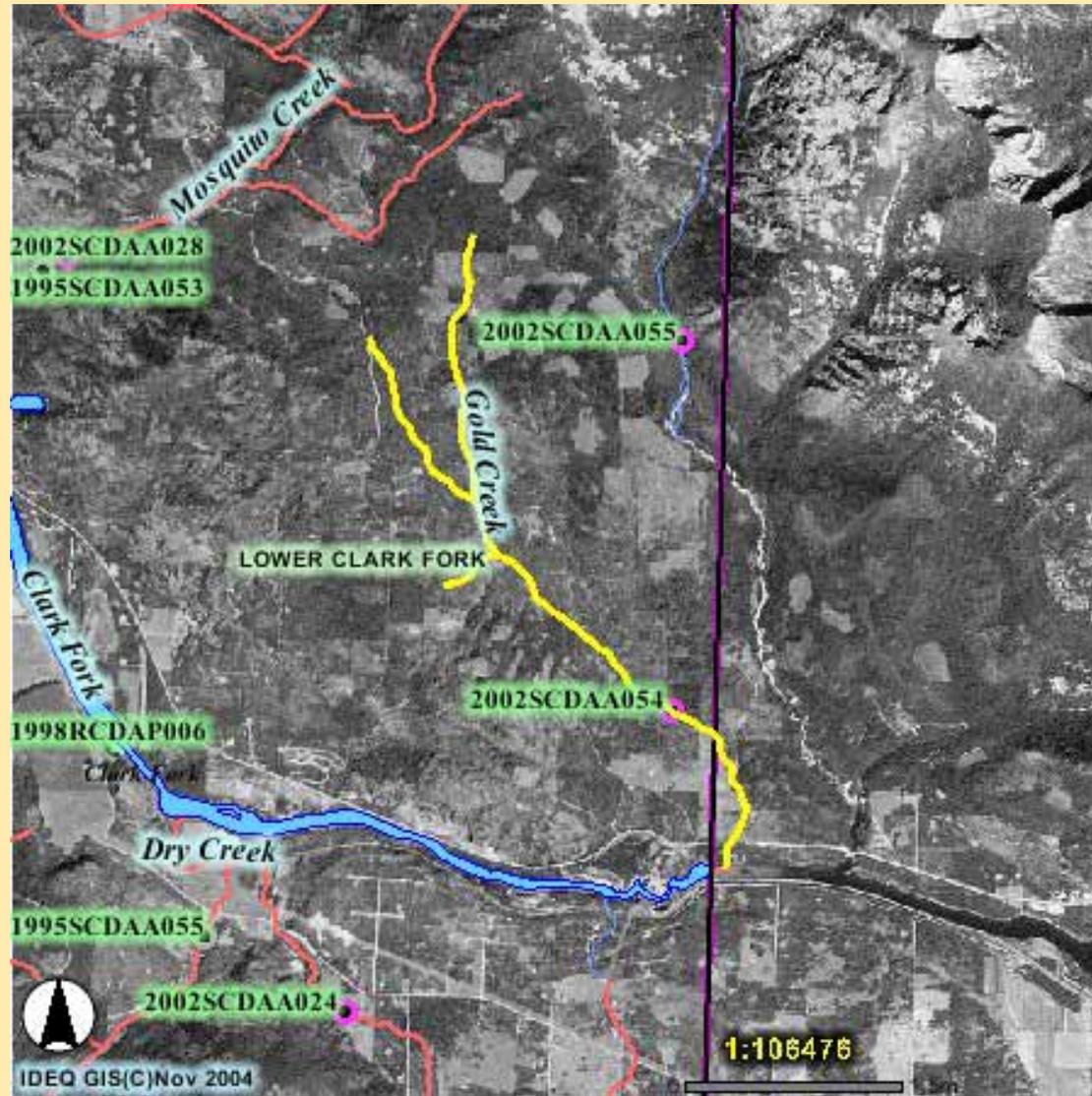


# Johnson Creek

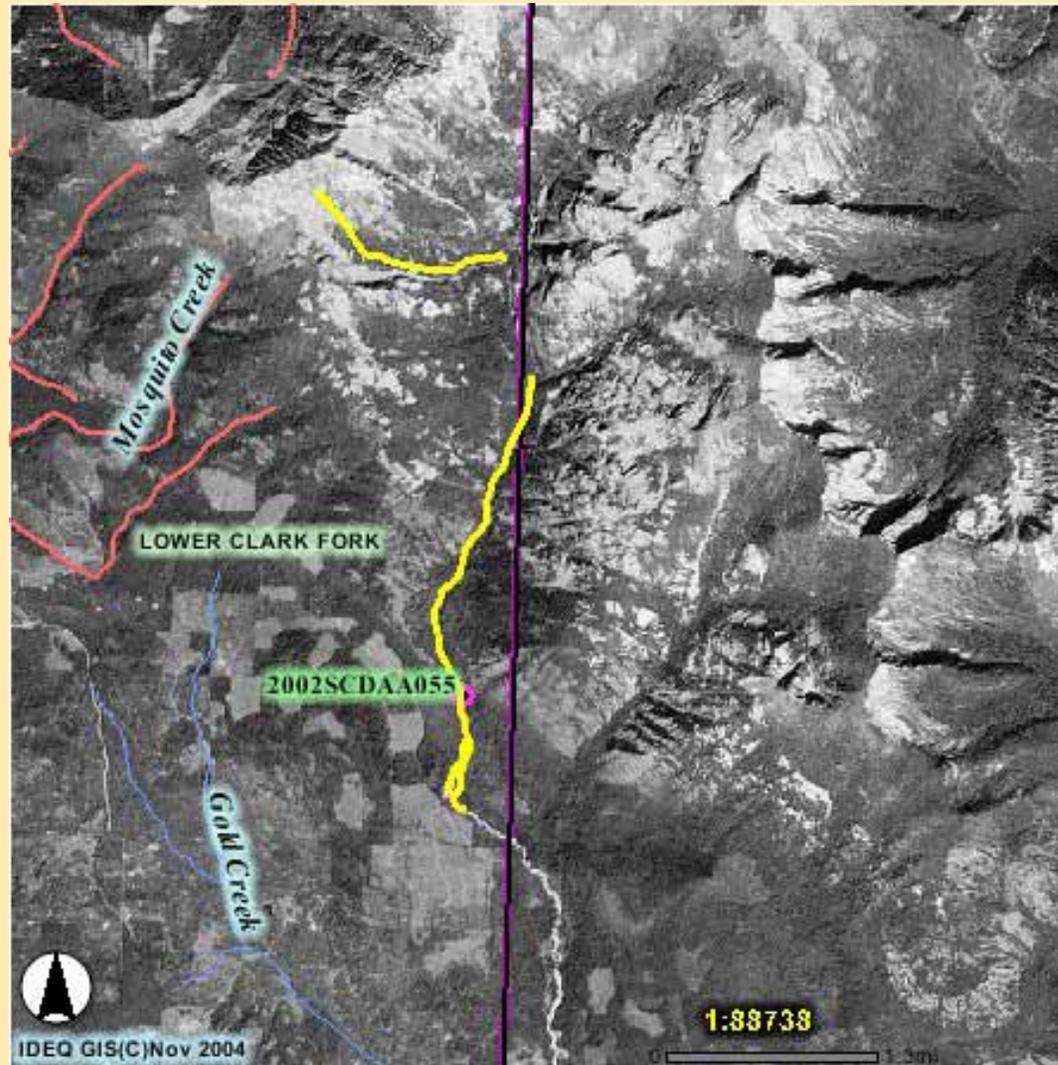
## AU002\_02 (upper) and AU002\_03 (lower)

- Description: West Fork Johnson Creek, tributaries and mainstem Johnson Creek to the delta
- Listing Basis: source to mouth of Johnson Creek listed in 1994 and 1998 for sediment. 1998 EPA addition for temperature.
  - DEQ Temperature logger information shows exceedences of Salmonid Spawning Criteria
  - Forest Service data available?
  - Also flow and habitat alteration impaired. (Assume flow impacts from influence of Lake Pend Oreille)
- BURP sites: 1995 (lower and upper) and 2002 (lower and upper dry)
  - 1995 lower: 0 macro, 3 fish, 2 habitat: Not Full Support
  - 1995 upper: 0 macro, n/a fish, 2 habitat: Not Full Support
    - Same site in 2002 dry when visited, recommend reassessment with another method that can capture massive bedload movement
  - 2001 lower: 2 macro, 2 fish, 3 habitat: Full Support?
- Land Uses/Ownership: Forest Service, private on lower end. Forestry on the majority of land in watershed.
- Pollutant Sources: Roads (and road failure), massive bedload movement
  - CWE analysis ranks sediment delivery from roads as low
- Recommended TMDLs
  - Temperature: potential natural vegetation method
  - Sediment: fine sediment or bedload issue?

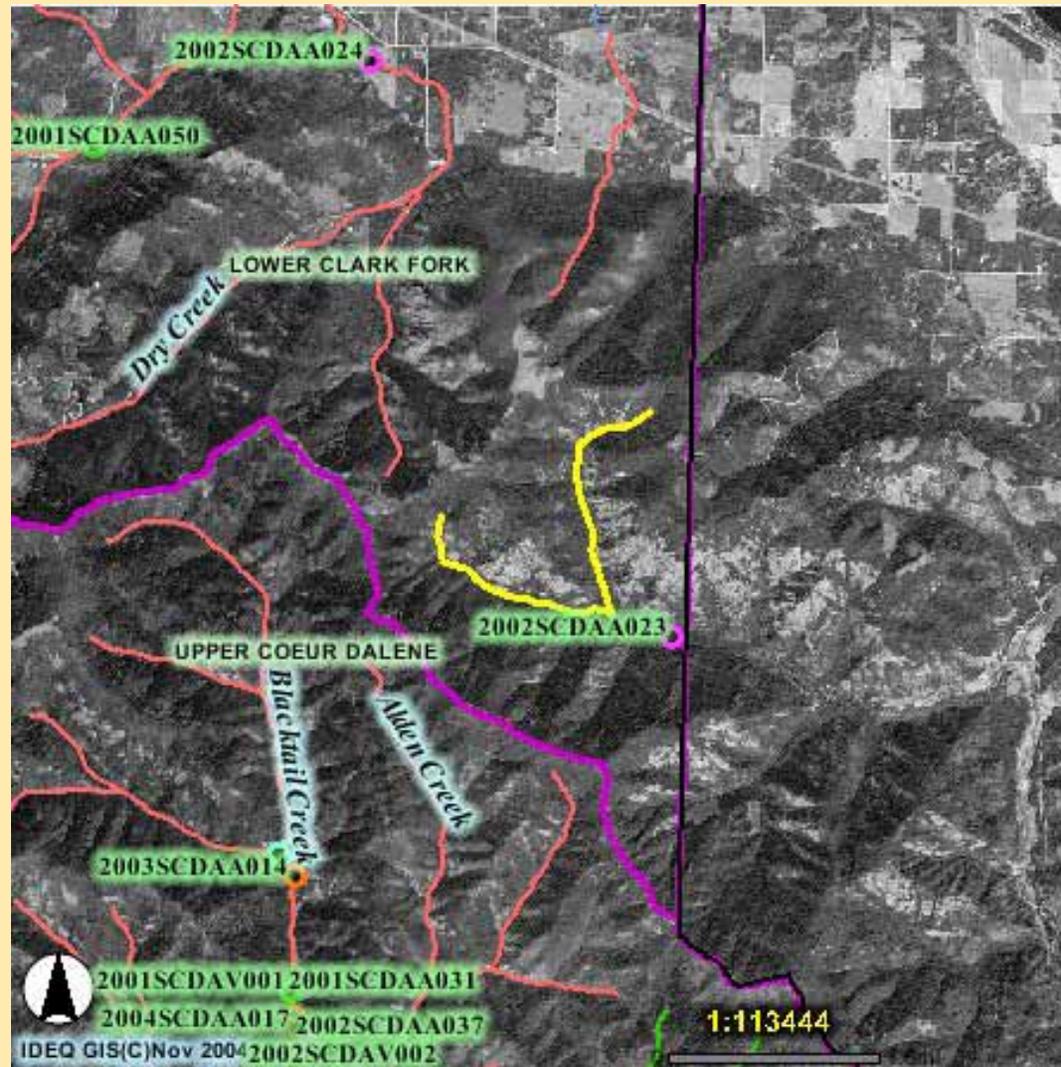
# Gold Creek (AU 008\_02)



# West Fork Blue Creek (AU 007\_02)

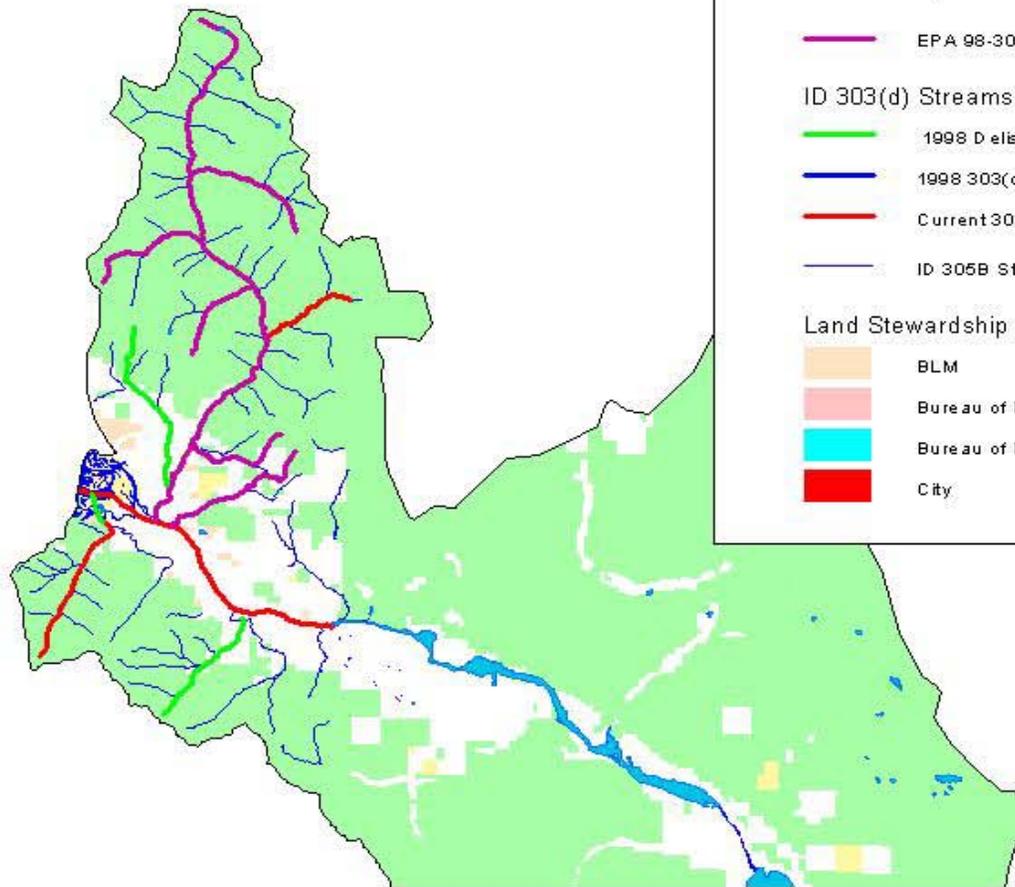


# West Fork Elk Creek (AU 006\_02)



# 17010213, Lower Clark Fork, Panhandle Basin

17010213, Lower Clark Fork, Panhandle Basin



- |  |   |
|--|---|
|  EPA 98-303(d) Additions  |  Corps of Engineers    |
|  ID 303(d) Streams        |  County                |
|  1998 Delisted 303(d)     |  Department of Defense |
|  1998 303(d) Additions    |  Department of Energy  |
|  Current 303(d)           |  National Park Service |
|  ID 305B Streams          |  Nature Conservancy    |
| <b>Land Stewardship</b>  |   |
|  BLM                      |  State Lands           |
|  Bureau of Indian Affairs |  US Fish and Wildlife  |
|  Bureau of Reclamation    |  US Forest Service     |
|  City                     |  Water                 |
|  |  Private               |

