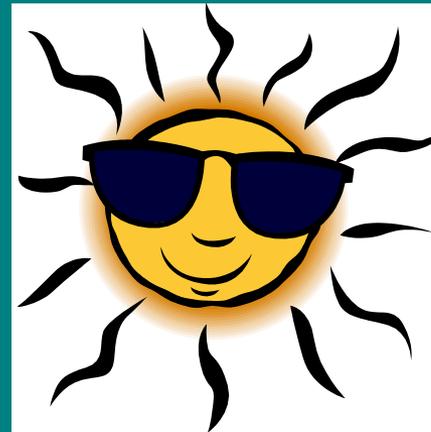


Temperature TMDLs of the Upper (North Fork) Coeur d'Alene River Subbasin

North Fork Coeur d'Alene WAG
March 28, 2013



Overview

- Temperature assessments and status
- Methods used to develop these TMDLs
- Load allocations and shade targets
- Implementation
- Review and comment process
- Next steps

Temperature assessments

- Based on Idaho water quality standards
- Water quality standards established by legislature for State of Idaho
- Generally developed by DEQ and follow public rulemaking process
- Must be approved by EPA for CWA purposes

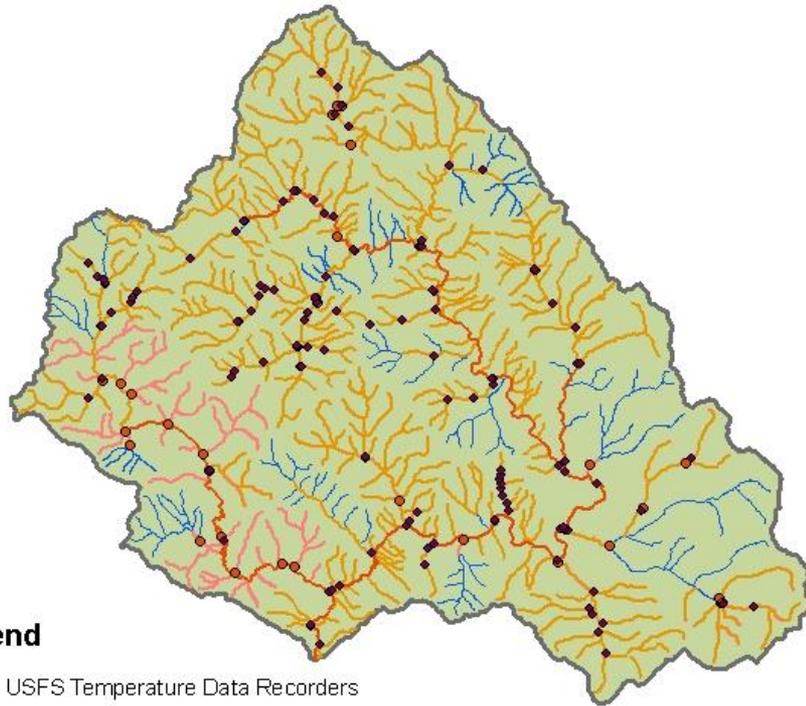
Table 1. Summary of applicable state and federal temperature criteria

Type	Location	Criteria ^a	Dates	
Cold Water Aquatic Life	Applies to entire subbasin	22 °C (71.6 °F) Maximum Instantaneous (MDMT)	Applies entire year	
		19 °C (66.2 °F) Maximum Daily Average (MDAT)		
Salmonid Spawning	Applies to North Fork Coeur d'Alene River (headwaters to mouth) and Prichard Creek (headwaters to mouth) and all other tributaries	13 °C (55.4 °F) Maximum Instantaneous (MDMT)	<u>Spring Spawning</u>	<u>Fall Spawning</u>
		9 °C (48.2 °F) Maximum Daily Average (MDAT)	>4,000 ft Jun 1 – July 31 3,000 – 4,000 ft May 15 – July 15	Aug 15 – Nov 15
			<3,000 ft May 1 – July 1	

Temperature assessments

- Reviewed all available temperature data from DEQ and USFS 1997-2008
- Overall, 54 stream assessment units exceeded WQS for temperature
 - 31 Confirmed from 2008 list
 - 3 No Data (proposed “delisting”)
 - 23 Additions

North Fork Coeur d'Alene River Subbasin Temperature Logger Locations and Criteria Exceedances Combined USFS and DEQ Data (1997-2008)



Legend

- USFS Temperature Data Recorders
- IDEQ Temperature Data Recorders
- Assessment Units Exceeding CWAL
- Assessment Units Exceeding SS
- AUs Exceeding SS Criteria (DEQ data)
- No Temperature Data

0 1.5 3 6 9 12
Miles



Map created February 2010 by K. Stromberg, IDEQ.

6 stream assessment units exceeded WQS for Cold Water Aquatic Life (CWAL)

54 stream assessment units exceeded WQS for Salmonid Spawning (SS)

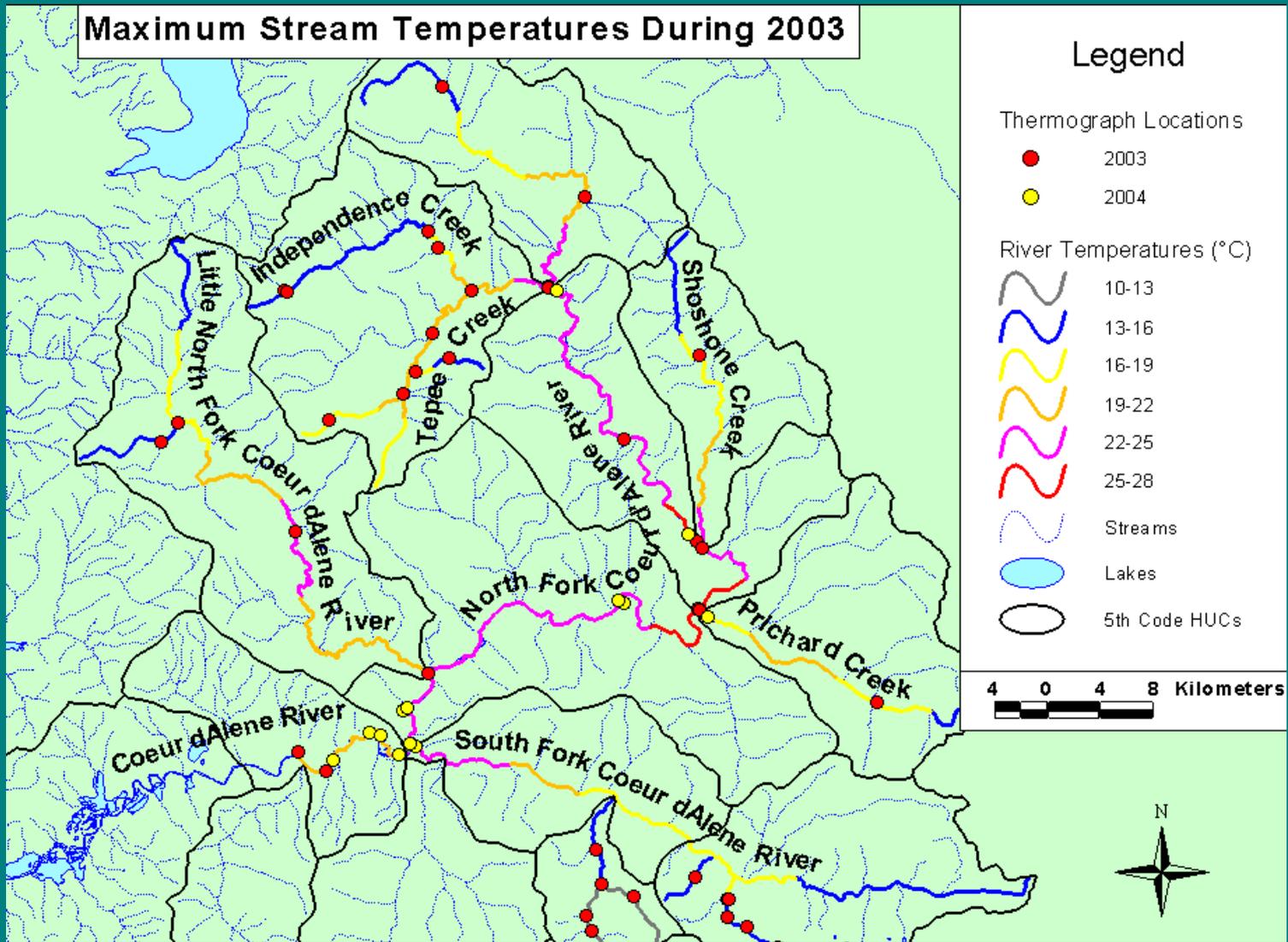


Figure: USFS and IDFG

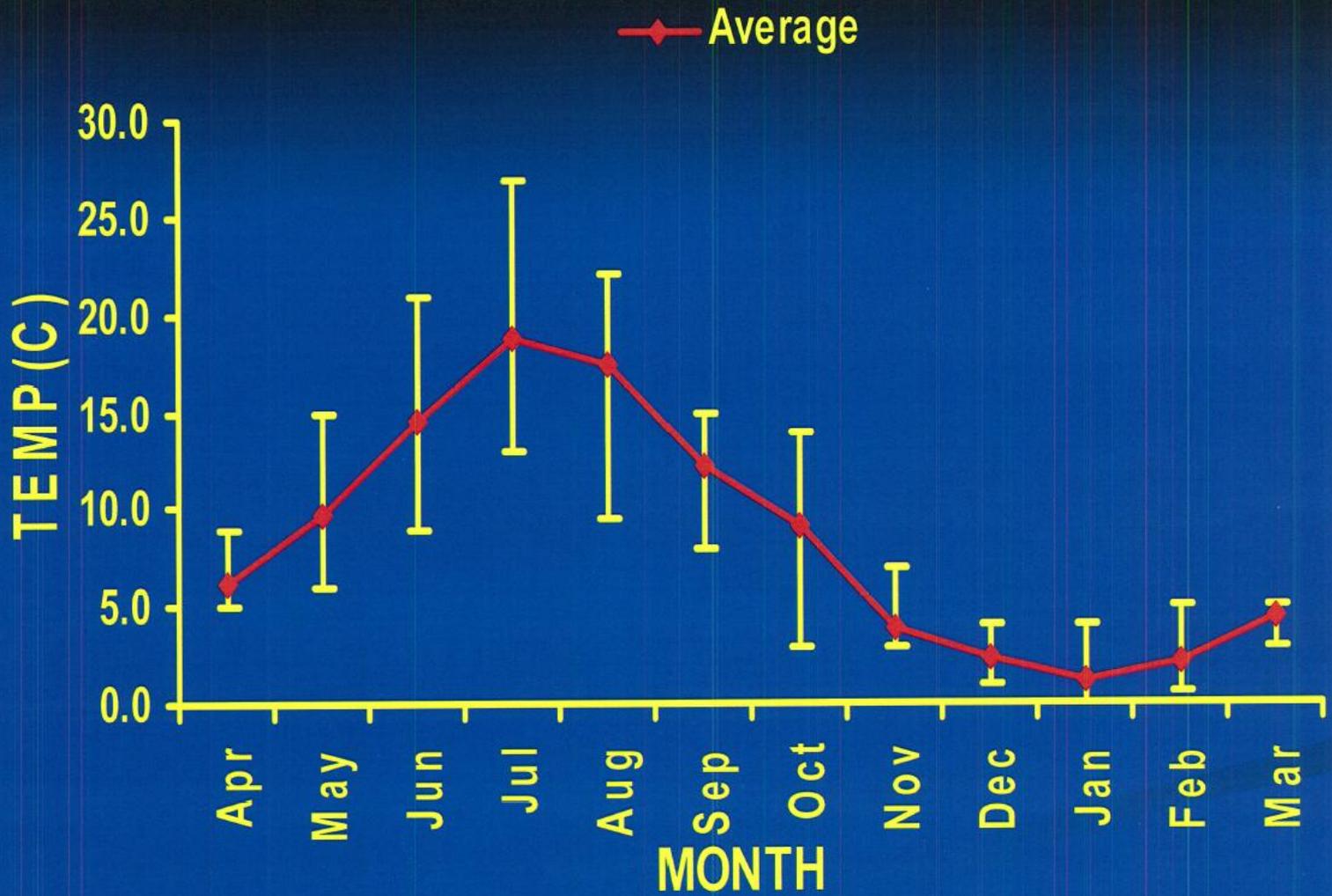
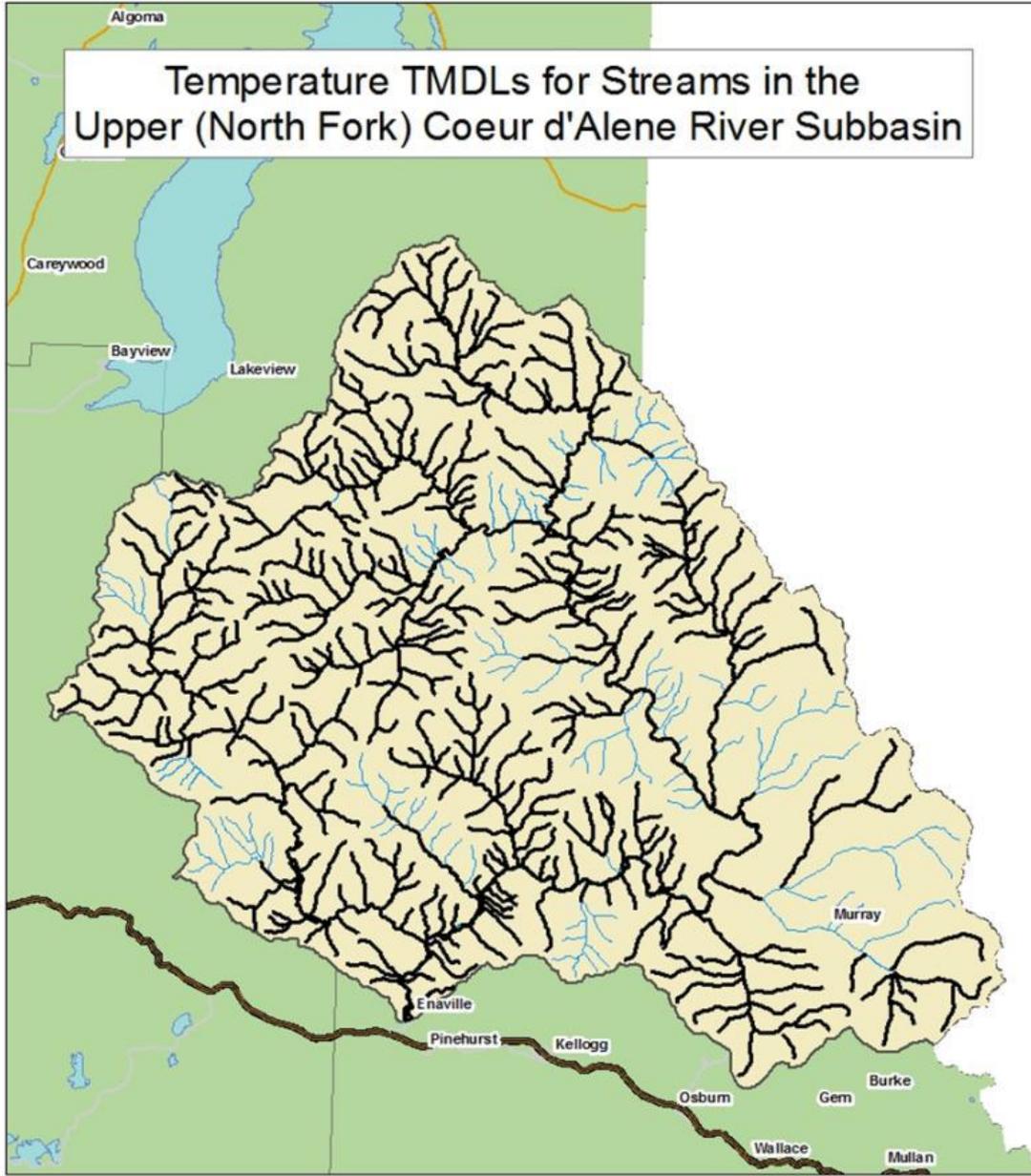
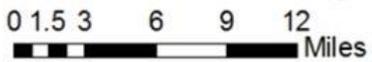


Figure: USFS and IDFG

Temperature TMDLs for Streams in the Upper (North Fork) Coeur d'Alene River Subbasin



— Waters Receiving Temperature TMDLs



Methods

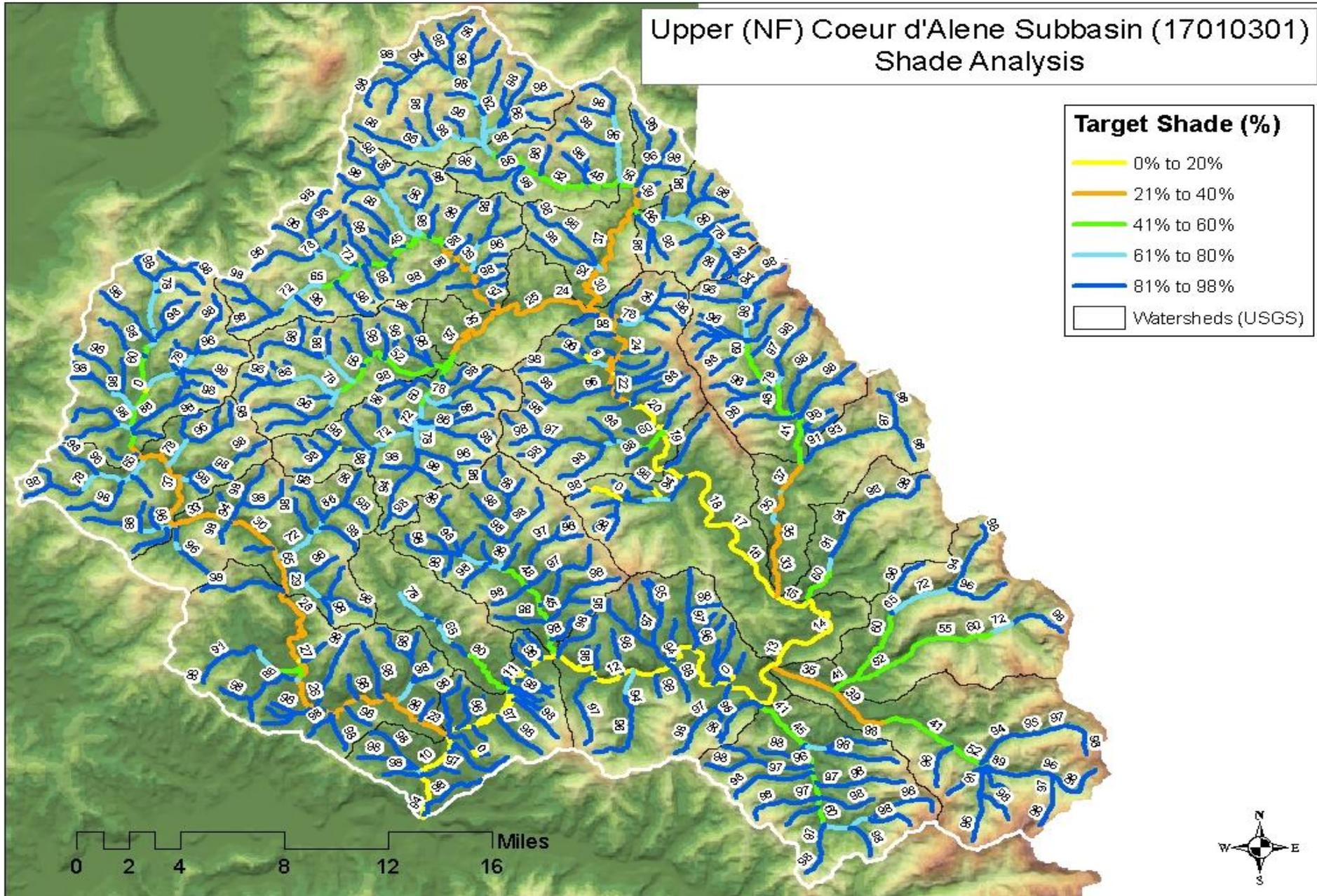
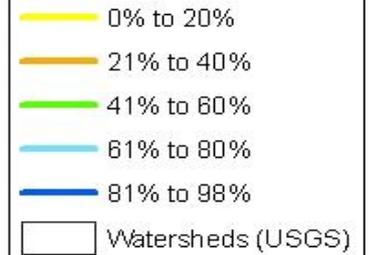
Potential Natural Vegetation

- Estimate solar loading under potential natural vegetation (PNV)
- $PNV = \text{natural background} = \text{load allocation} = \text{target}$
- Estimate solar loading under existing conditions
- $\text{Target} - \text{existing} = \text{load reductions necessary and increases in shade needed}$

Shade under Potential Natural Vegetation (TMDL Targets)

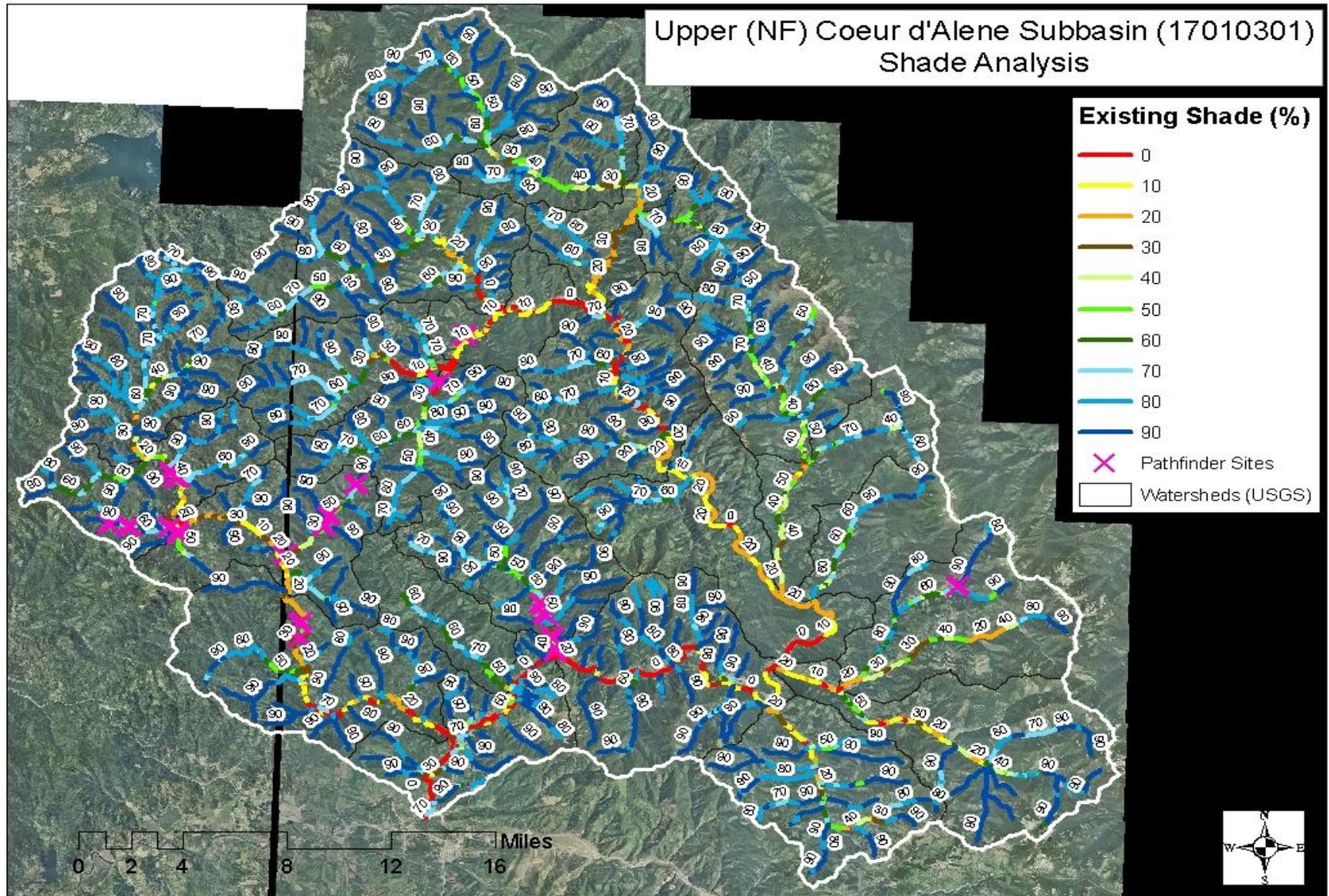
Upper (NF) Coeur d'Alene Subbasin (17010301) Shade Analysis

Target Shade (%)



Estimates of Existing Shade – Aerial Photo Interpretation w/ Solar Pathfinder

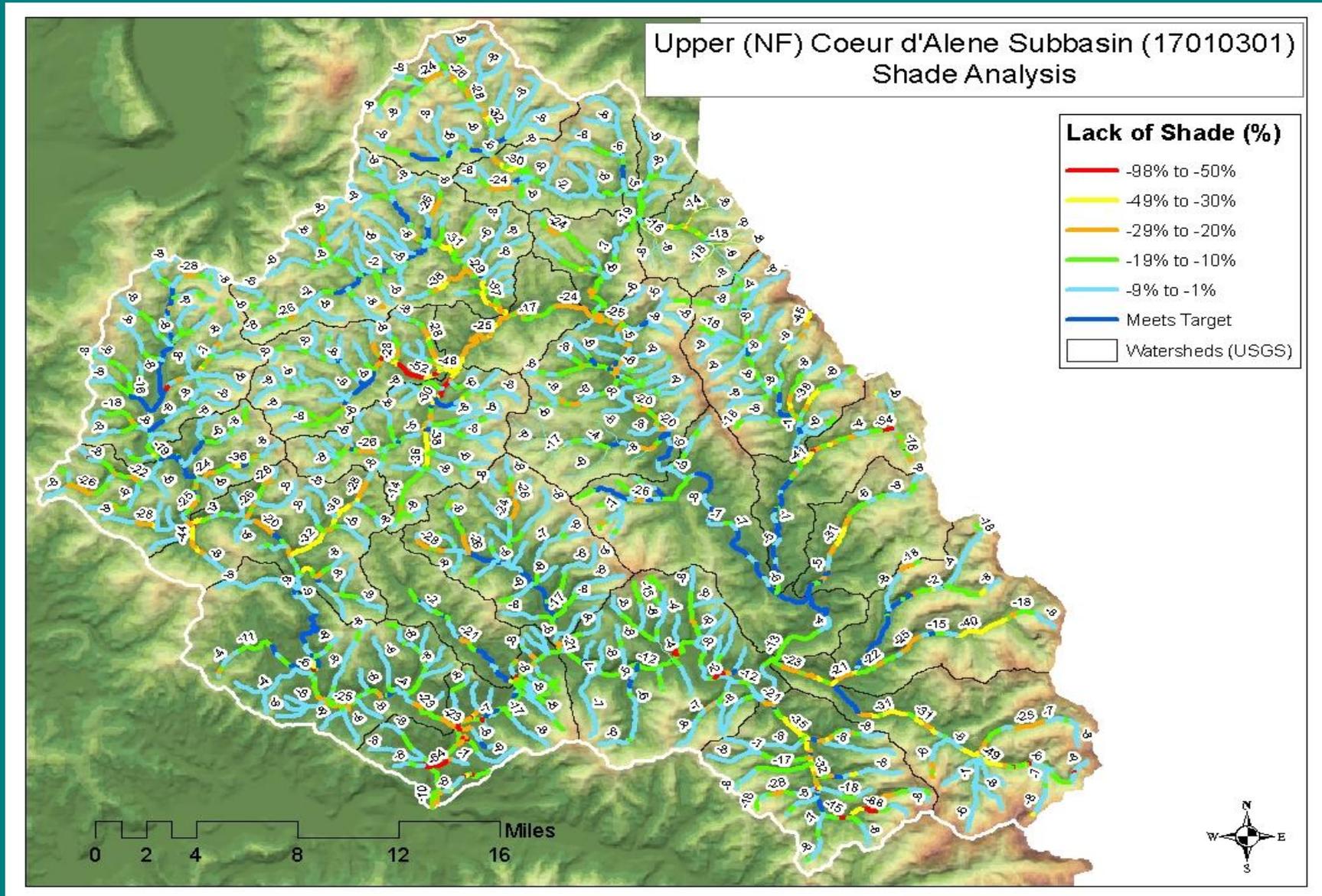
Upper (NF) Coeur d'Alene Subbasin (17010301)
Shade Analysis



Solar Pathfinder Field Measurements of Shade



Difference between PNV Shade Targets and Existing Shade



Load Allocations

Assessment Unit Totals

Assessment Unit Number	Assessment Unit Name	Existing Load (kWh/day)	Load Allocation (kWh/day)	Load Reduction Needed (kWh/Day)
ID17010301PN013_04	North Fork Coeur d'Alene River between Jordan and Tepee creeks	913,699	753,106	160,593
ID17010301PN013_05	North Fork Coeur d'Alene River between Tepee and Yellowdog creeks	2,672,334	2,130,373	541,961
ID17010301PN014_03	Jordan Creek and Lower Lost Fork	93,545	64,147	29,398
ID17010301PN015_02	North Fork Coeur d'Alene River, upper, headwaters and tributaries	213,488	100,419	113,069

Reach-Specific Targets

Segment Length (meters)	Existing Shade (fraction)	Existing Summer Load (kWh/m ² /day)	Potential Shade (fraction)	Potential Summer Load (kWh/m ² /day)	Potential Load minus Existing load (kWh/m ² /day)	Existing Stream Width (m)	Natural Stream Width (m)	Existing Segment Area (m ²)	Existing Summer Load (kWh/day)	Natural Segment Area (m ²)	Potential Summer Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	Lack of Shade (%)	Tepee Creek	
Assessment Unit # ID17010301PN017_05															
320	0	5.5	0.29	3.905	-1.60	19	17	6080	33440	5440	21243.2	-12196.8	-29	Nonforest Group 2	
290	0.1	4.95	0.29	3.905	-1.05	19	17	5510	27274.5	4930	19251.65	-8022.85	-19		
500	0	5.5	0.29	3.905	-1.60	19	17	9500	52250	8500	33192.5	-19057.5	-29		
480	0.1	4.95	0.28	3.96	-0.99	20	18	9600	47520	8640	34214.4	-13305.6	-18		
240	0	5.5	0.28	3.96	-1.54	20	18	4800	26400	4320	17107.2	-9292.8	-28		
1030	0.1	4.95	0.27	4.015	-0.94	21	19	21630	107068.5	19570	78573.55	-28494.95	-17		
180	0	5.5	0.25	4.125	-1.38	22	20	3960	21780	3600	14850	-6930	-25		
1060	0.1	4.95	0.25	4.125	-0.83	22	20	23320	115434	21200	87450	-27984	-15		
3330	0	5.5	0.24			25	23	83250	457875	76590	0	-457875	-24		
								Total	167,650	889,042	152,790	305,883	-583,160		-23

Implementation

- Maintain existing shade and increase riparian shade by planting trees.
- Protect springs, headwaters, and other sources of cold water, and protect cold water refugia in side-channel habitats. Ensure access to cooler waters by removing barriers.
- Retain and restore large wood and boulders in stream channels.
- Minimize other sources of pollution and stressors to cold water aquatic life.

Next steps

- Public comment period (April 10)
- Respond to comments (April 30)
- Send final version to state office for submittal to EPA (May)
- Implementation
- Monitoring and evaluation

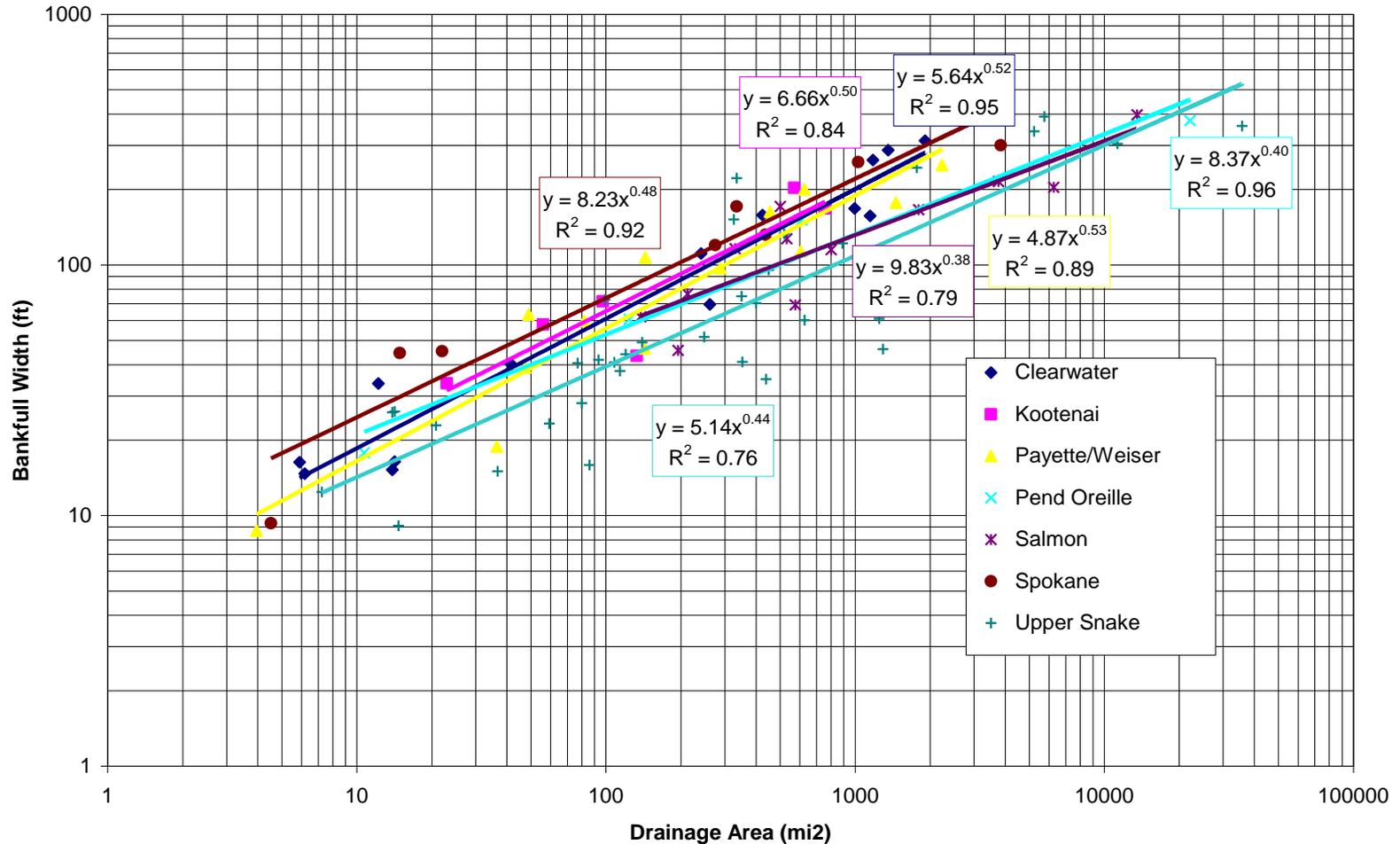
The Way Ahead

- Provide suggestions for waters likely to attain standards and provide data and documentation to support assessment
 - Graham Creek?
 - Cataract and West Elk Creeks?
 - Deer Creek and tribs to Upper NFCDA?
- Develop TMDL/implementation monitoring plan to demonstrate progress and attainment

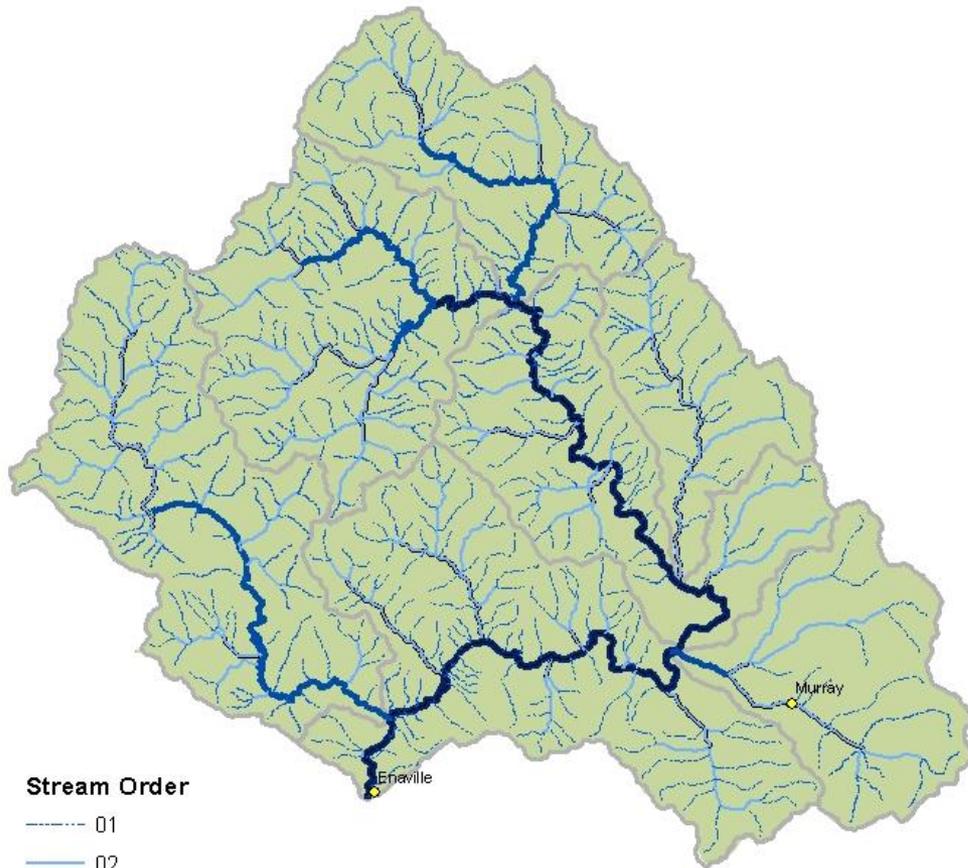


Estimate Bankfull Width

Idaho Regional Curves - Bankfull Width



Stream Order in the Upper (North Fork) Coeur d'Alene River Subbasin 1:100,000 NHD



Stream Order

- 01
- 02
- 03
- 04
- 05

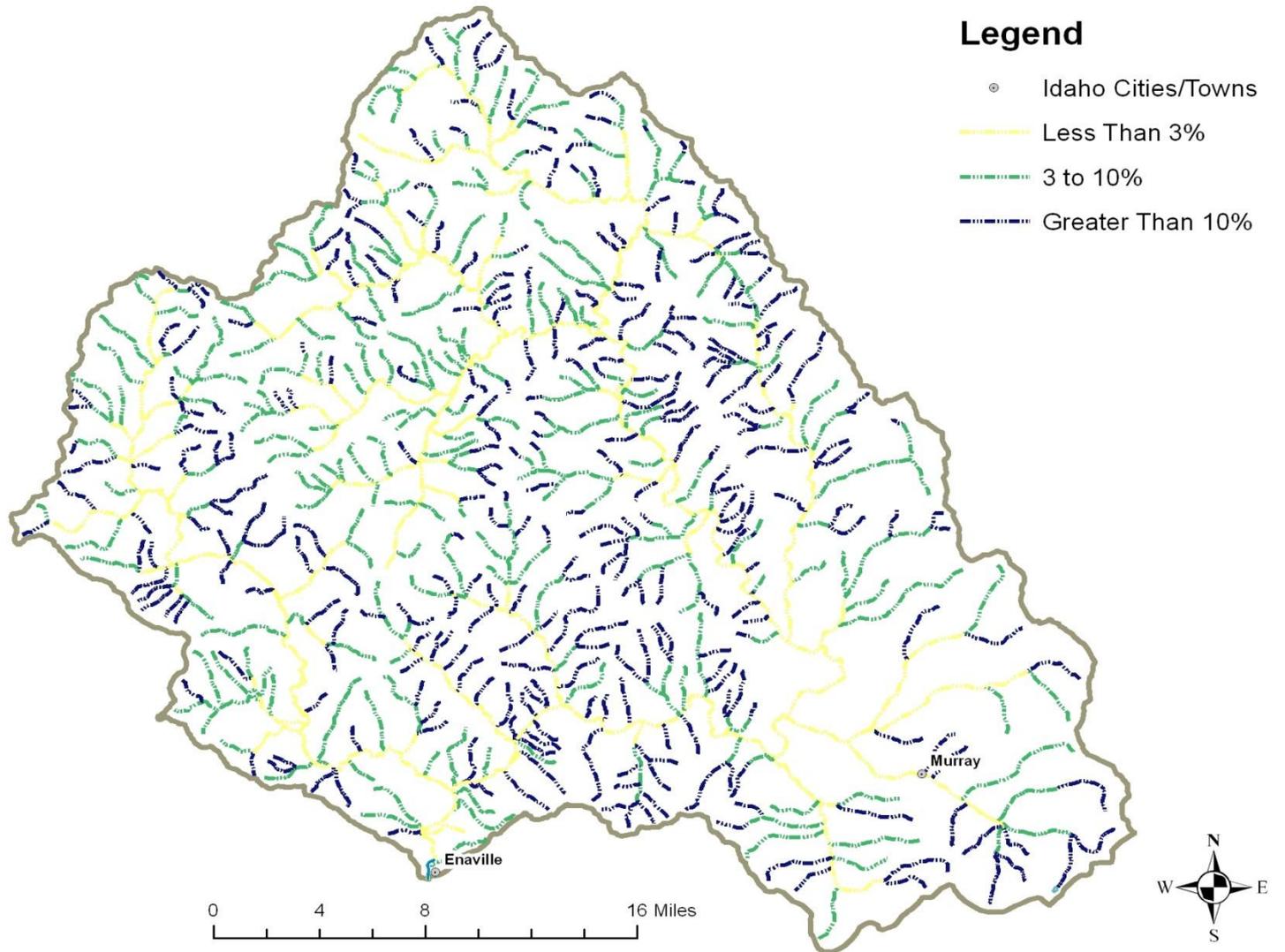
0 3 6 12 Miles



Stream Order

Stream Gradient

NF Coeur d'Alene Subbasin - Stream Slope



Classify Vegetation Groups

⊕ **Table 5. Summary descriptions of PNV vegetation groups**

PNV Group	Streams Included	Description
Forest Group A	< 5 th order Gradient ≥ 3% VRUs 1, 2, and 3	<u>Warm/Dry:</u> This setting includes the warmest and driest forest sites that support forest vegetation, usually at low elevations or mid-elevations on southerly aspects.
Forest Group B	< 5 th order Gradient ≥ 3% VRUs 4, 5, and 6	<u>Moist:</u> This setting includes moist forest sites, usually low to mid-elevation, and includes stream bottoms and adjacent benches and toe slopes. This setting is the most productive, with favorable soil moisture and temperature regimes that favor abundant plant growth.
Forest Group C	< 5 th order Gradient ≥ 3% VRUs 7 and 8	<u>Subalpine:</u> These settings includes the moist, lower subalpine forest to the cool or cold dry sites between forest and alpine tundra. The moist end of this setting is common on northwest to east-facing slopes, riparian and poorly drained subalpine sites. The cool to cold dry sites occur at higher elevations and typically have a short growing season.
Forest Group D	< 5 th order Gradient ≥ 3% VRUs 9, 10, and 11	
Non-Forest Group 1	< 5 th order Gradient < 3%	Diverse plant communities including late successional cedar-hemlock, black cottonwood, mixed conifer and shrubs.
Non-Forest Group 2	≥ 5 th order	Black cottonwoods common, shrubs and grasses common, and conifers rare.

Shade Curves

