THOMPSON AREA TMDL PROJECT

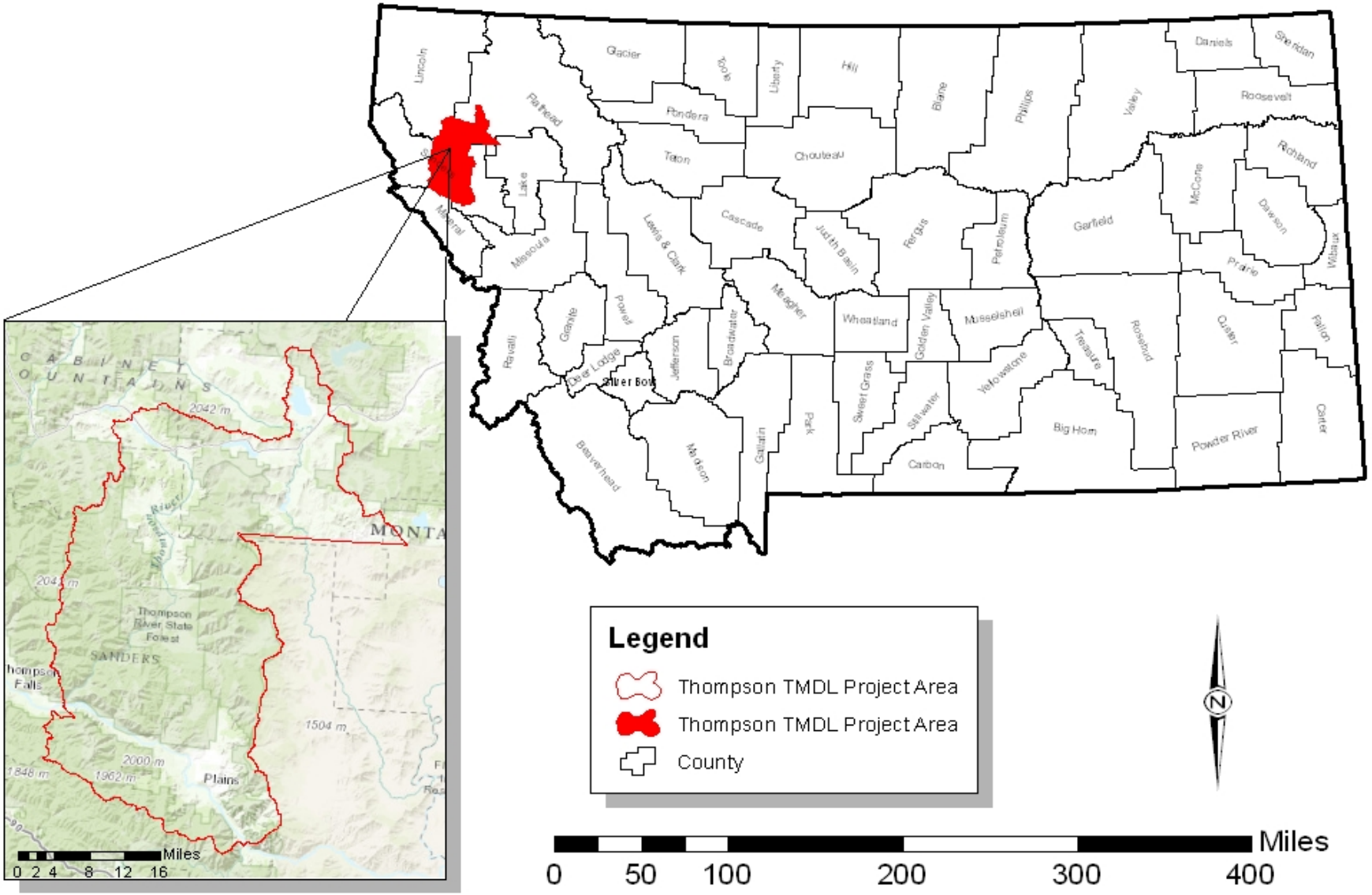
Public Meeting Presentation

June 24, 2014 – Plains, MT

Presentation Outline

- Thompson TMDL Project Overview *(Jordan Tollefson, DEQ)*
- Temperature TMDLs *(Jordan Tollefson, DEQ)*
- Metals TMDLs *(Lou Volpe, DEQ)*
- Nutrients TMDLs *(Lisa Kusnierz, EPA)*
- Sediment TMDLs *(Lisa Kusnierz, EPA)*
- TMDL Implementation *(Eric Trum, DEQ)*
- Project Schedule & Public Comment Information *(Jordan Tollefson, DEQ)*

Thompson TMDL Project Area

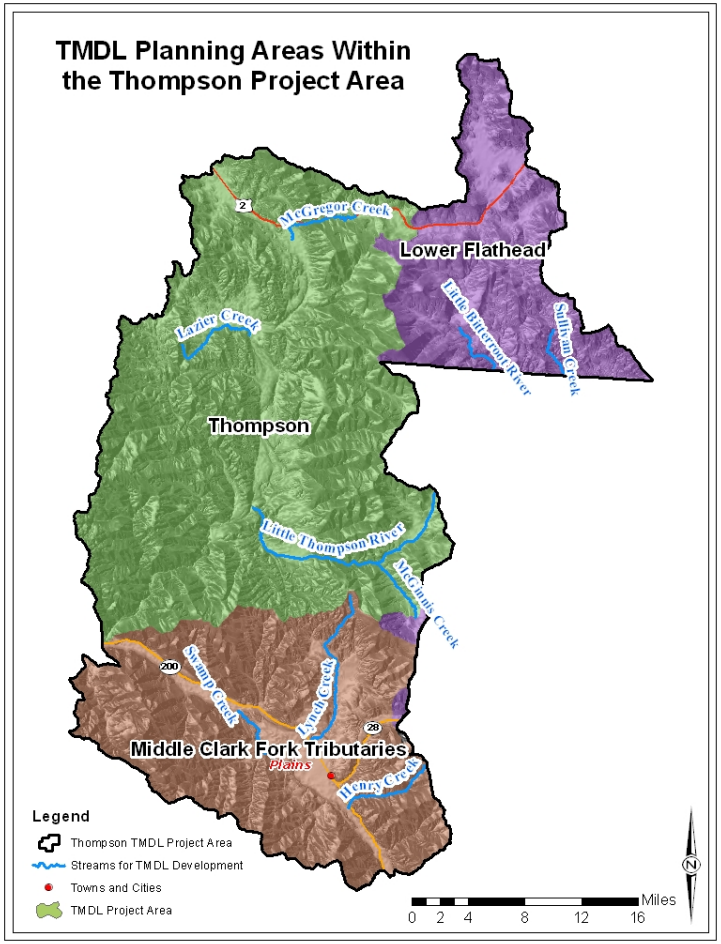


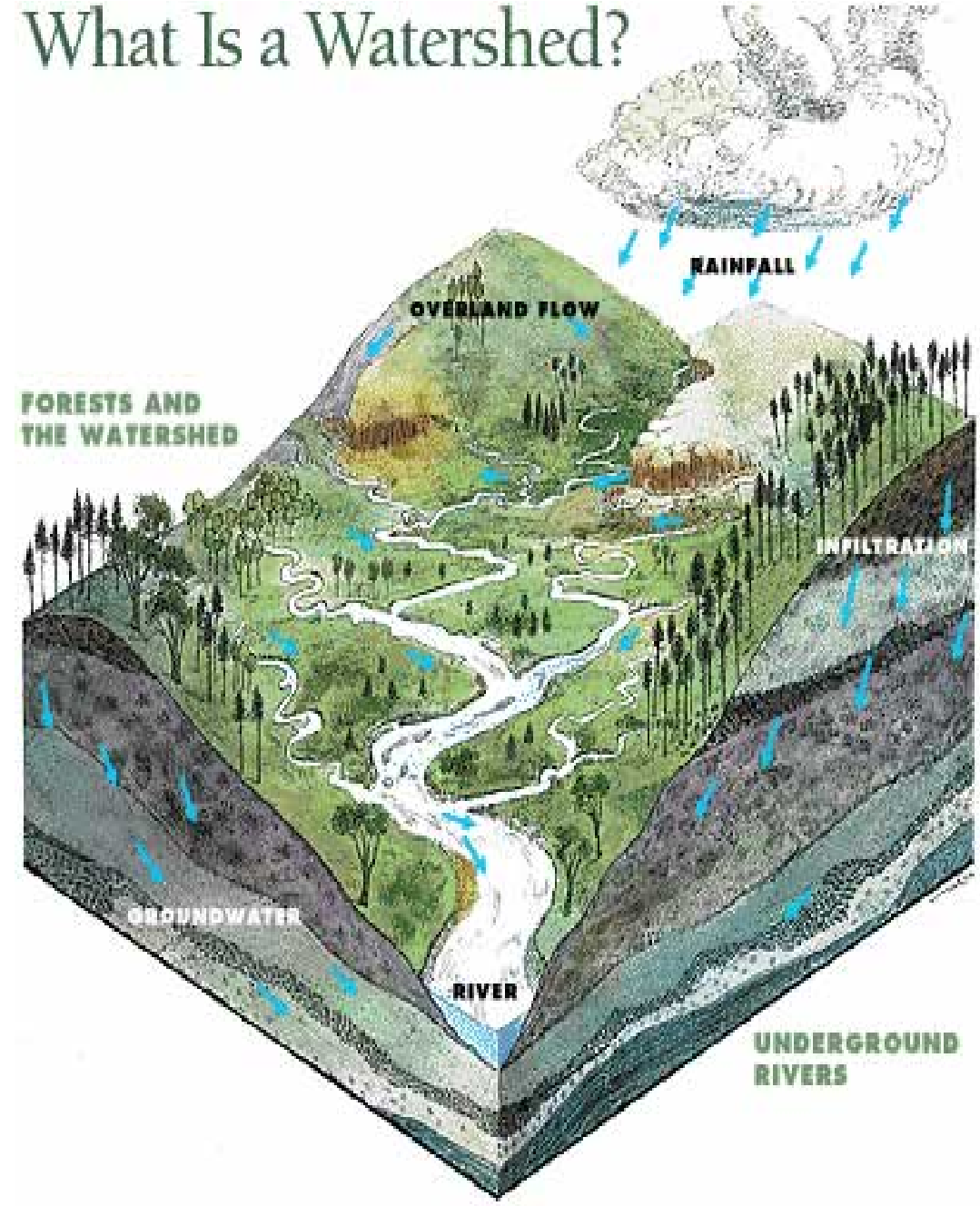
What is a TMDL?

- A TMDL (or Total Maximum Daily Load) is a calculation of the maximum amount of a pollutant (nutrients, sediment, etc.) that a waterbody can receive from all sources and still meet water quality standards
- Montana State Law and the Federal Clean Water Act require that a TMDL be developed for all waterbodies impaired by a pollutant
- The goals of the DEQ are to develop TMDLs on all waterbodies impaired by a pollutant as an important step to address water quality issues

Thompson TMDL Project

- The Thompson Project Area is comprised of 3 TMDL planning areas (TPAs):
  - Thompson TPA
  - Portions of the Lower Flathead TPA
  - Portions of the Middle Clark Fork Tributaries TPA



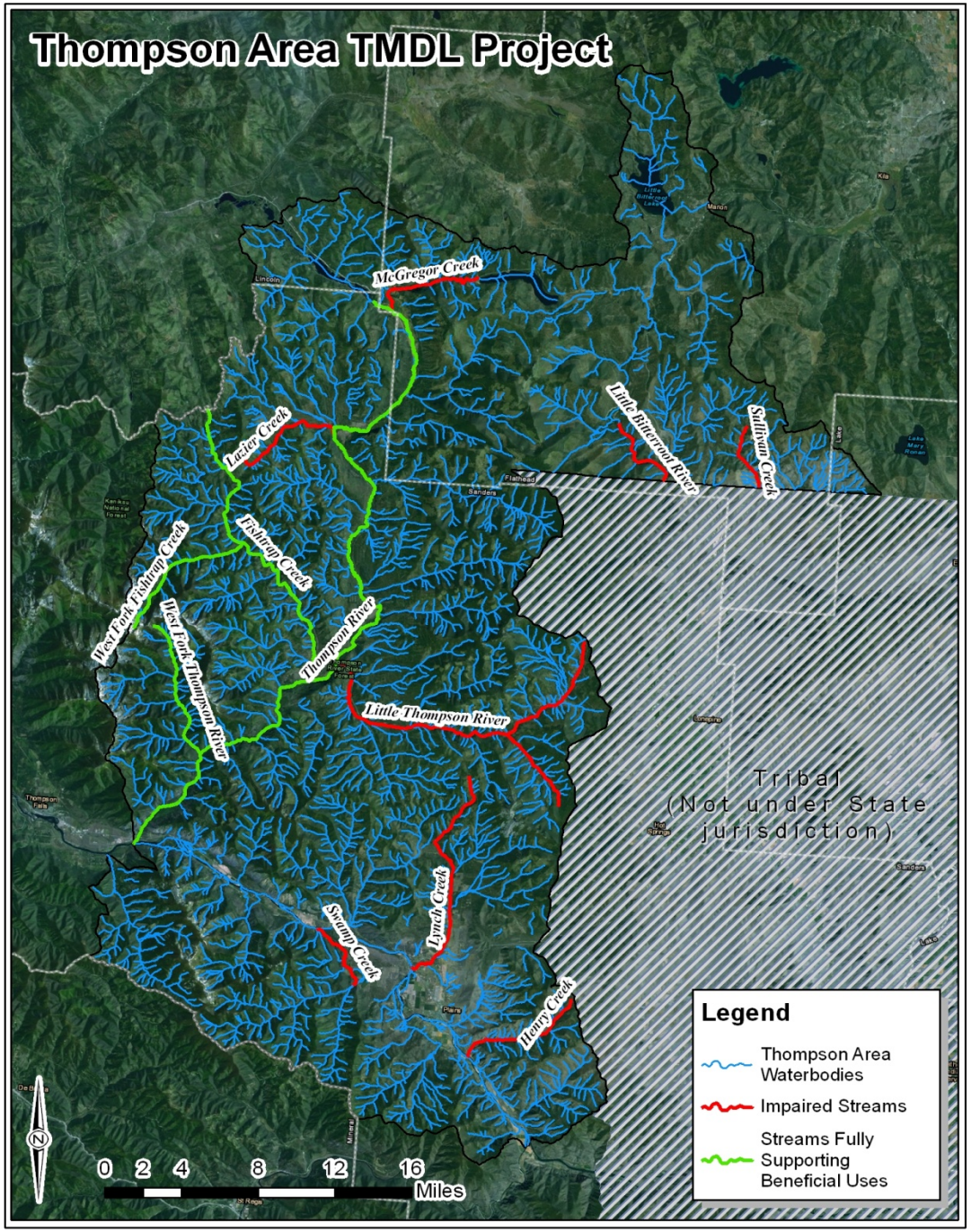


- A waterbody is a body of water such as rivers, streams, lakes, wetlands, coastal waters or ocean waters

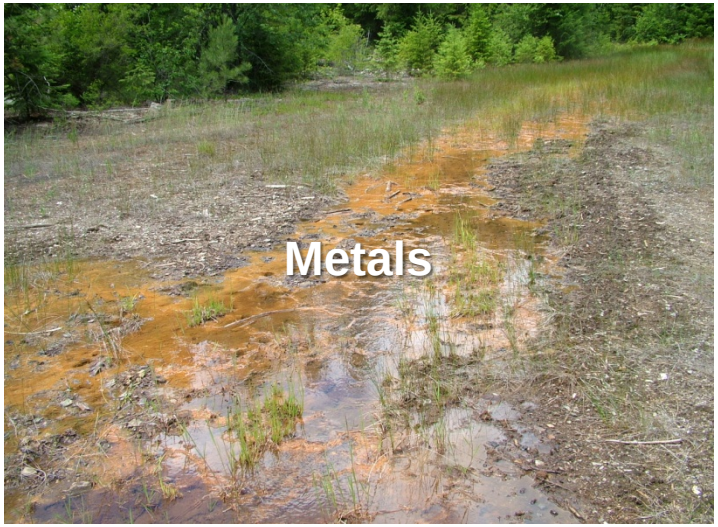
- A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place

Project Overview

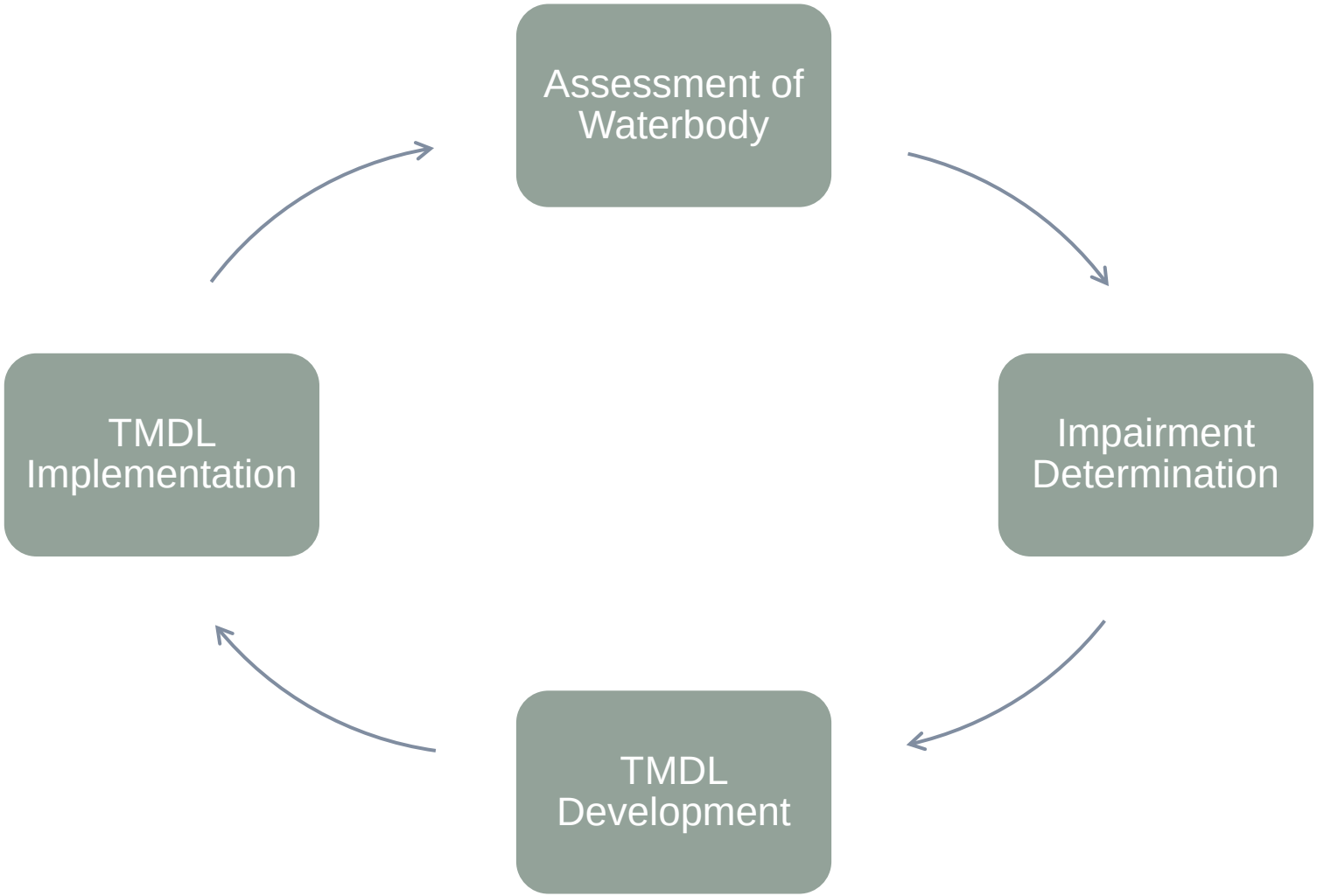
- 9 streams within the Thompson Project Area are slated for TMDL development:
  1. Sullivan Creek
  2. Little Bitterroot River
  3. Lazier Creek
  4. Little Thompson River
  5. McGinnis Creek
  6. McGregor Creek
  7. Henry Creek
  8. Lynch Creek
  9. Swamp Creek



Types of Pollutants



Steps Involved in Water Quality Planning and Implementation



Water Quality Standards

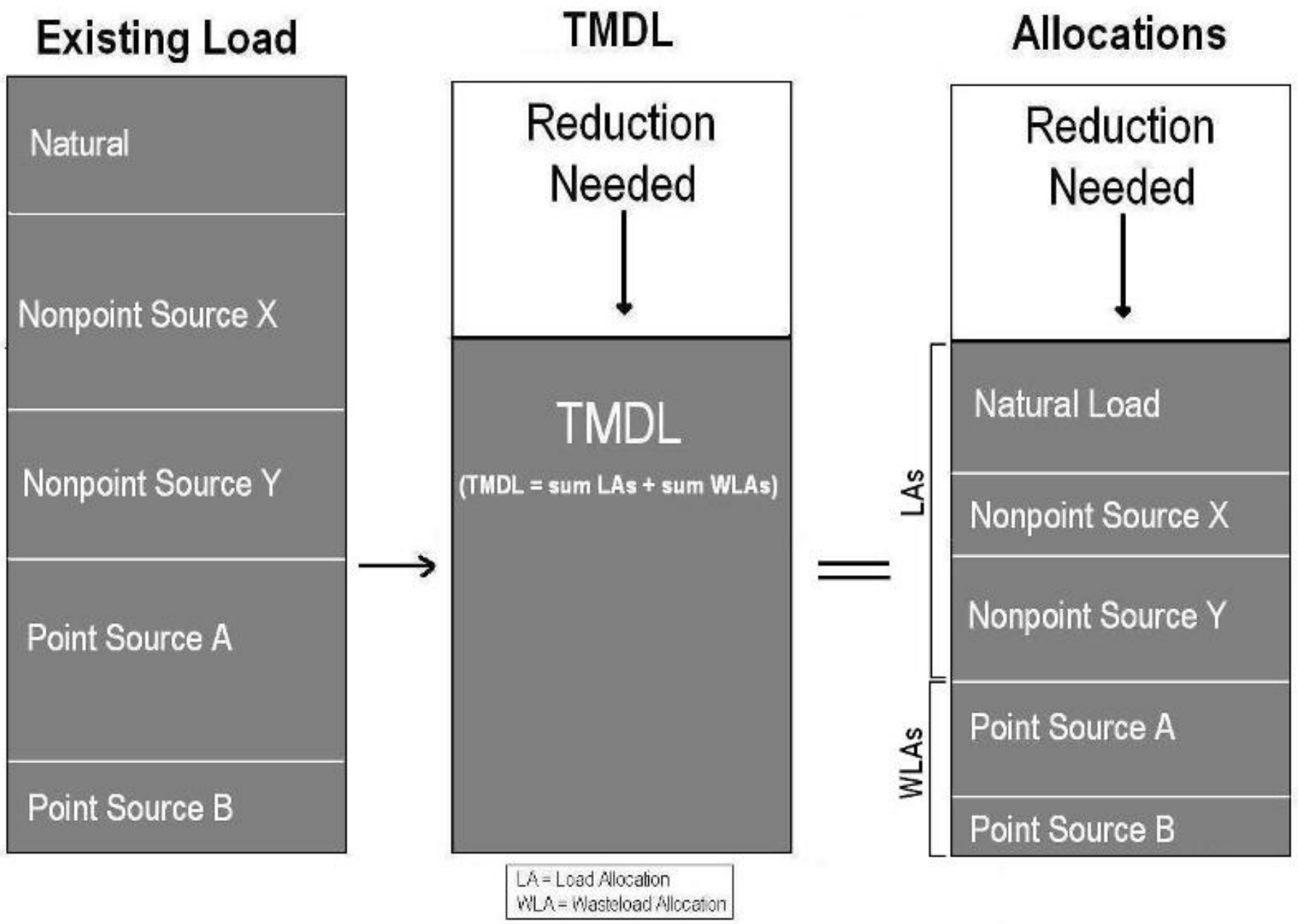
- Can be numeric or narrative and are designed to protect beneficial uses of a waterbody
- Some examples of beneficial uses are: aquatic life, primary and secondary contact recreation, drinking water supply, agricultural water supply, etc.
- Beneficial uses are based on specific waterbody classifications (A-1, B-1, etc.)

Monitoring and Assessment

- DEQ uses monitoring data to assess water quality and compare to applicable water quality standards
- If the data show a water quality problem, the waterbody is put on a list of impaired waters, also known as the 303(d) list
- Waterbodies impaired by a pollutant will require a TMDL to be developed for that particular waterbody-pollutant combination

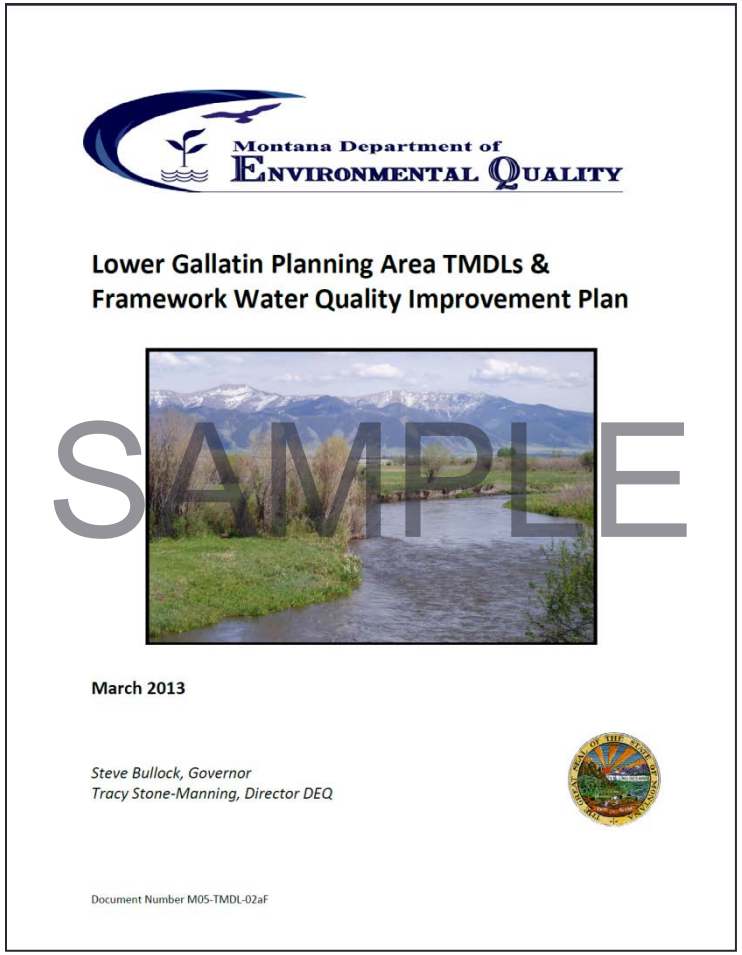
Steps for Developing a TMDL

- Characterize the impaired waterbody's existing water quality conditions and compare those conditions to Montana's water quality standards.
- Quantify the magnitude of the pollutant contribution from each significant source
- Determine the total allowable load of the pollutant to the waterbody
- Allocate the total allowable pollutant load into individual loads for each significant source (referred to as load allocations for nonpoint sources and wasteload allocations for point sources)


Existing Load
Natural
Nonpoint Source X
Nonpoint Source Y
Point Source A
Point Source B
TMDL
Reduction Needed
TMDL
(TMDL = sum LAs + sum WLAs)
LA = Load Allocation
WLA = Wasteload Allocation
Allocations
Reduction Needed
Natural Load
Nonpoint Source X
Nonpoint Source Y
Point Source A
Point Source B
LAs
WLAs

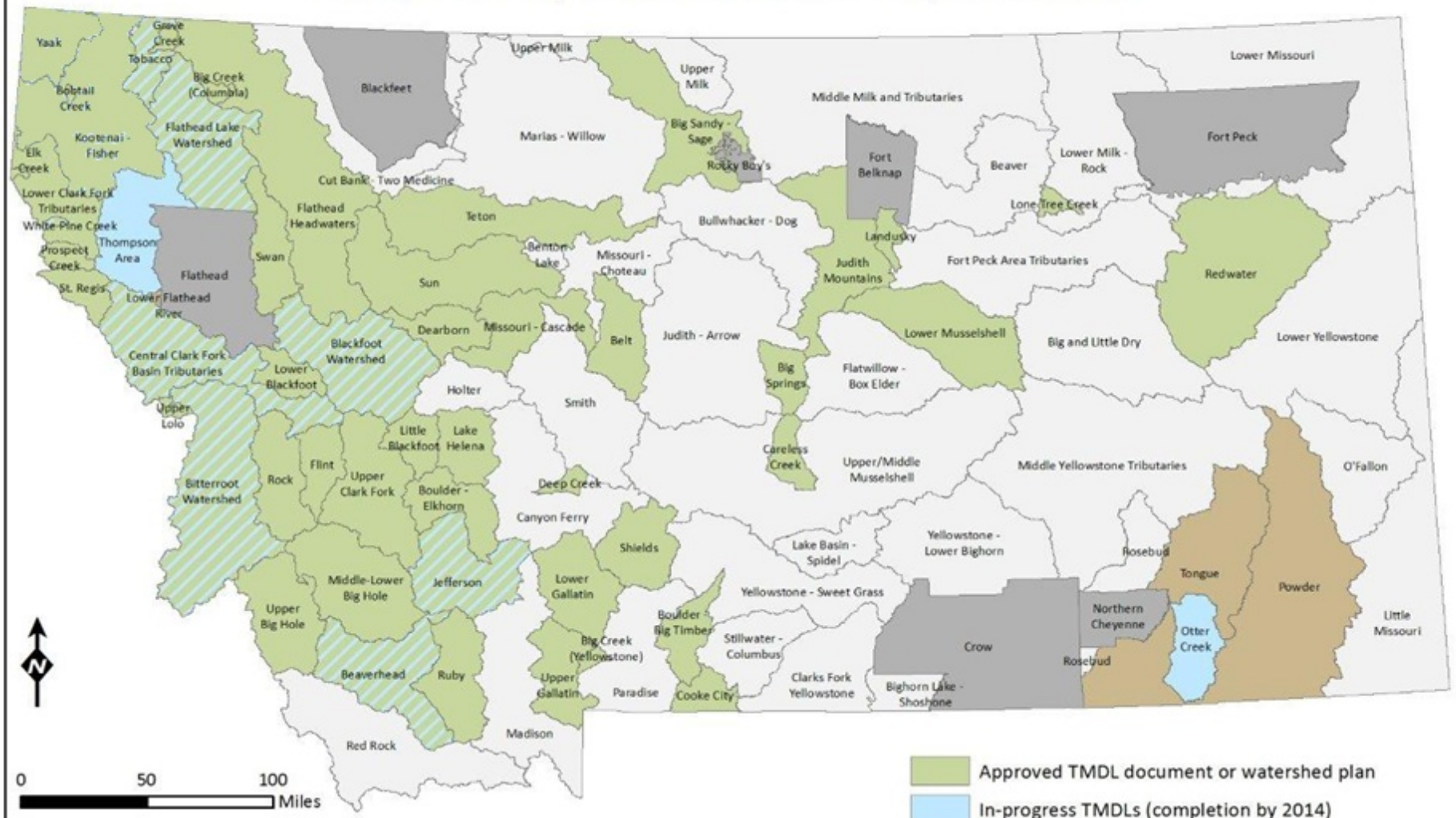
Montana TMDL History

- More than 1,000 approved TMDLs (1998 – present)
- About 60 TMDL documents completed as of June 2014
- Completed documents can be found at:



http://deq.mt.gov/wqinfo/TMDL/finalReports.mcpx

Montana TMDL Project Areas & 2014 TMDL Completion Schedule



TMDLs are specific to a waterbody segment - pollutant combination. Some planning areas with completed TMDLs may still require TMDL development for additional waterbody - pollutant combinations. Contact the DEQ at 406-444-5317 or refer to the final TMDL documents at http://deq.mt.gov/wqinfo/TMDL/finalReports.mcpx for additional details.

In addition to the watersheds shown on this map, some large rivers and their associated reservoir systems represent separate TMDL project areas. These include the Clark Fork River, the Missouri River, and the Yellowstone River. Pre-TMDL development support work is underway in the Yellowstone River and Missouri River, while the Clark Fork River has a combination of approved and in-progress TMDLs.

- Approved TMDL document or watershed plan
- In-progress TMDLs (completion by 2014)
- Combination approved & in-progress TMDLs
- Additional TMDL priority areas (completion after 2014)
- Not included in 2014 schedule
- Tribal (not under state jurisdiction)

Map updated 5/9/2014

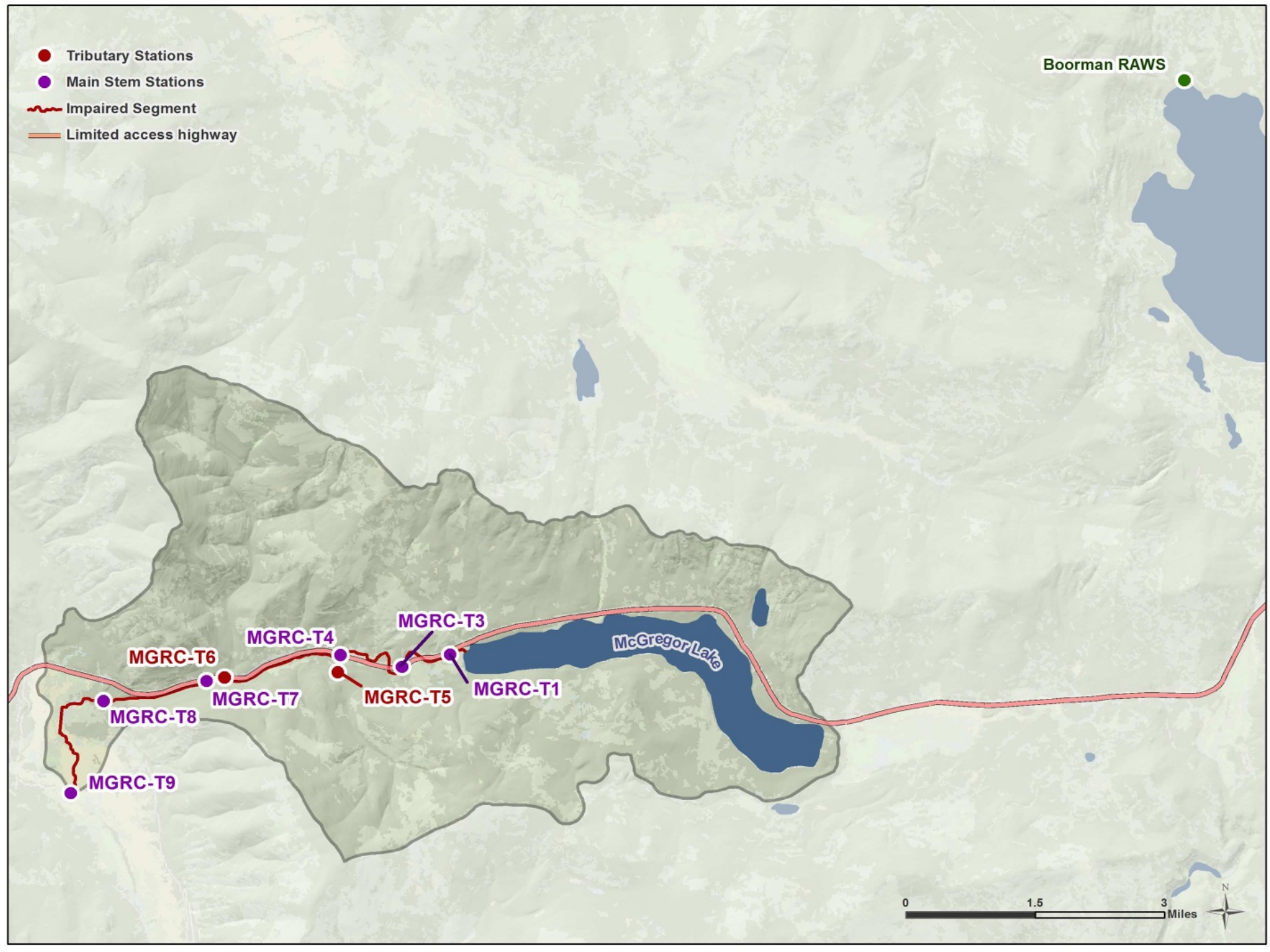
Temperature TMDLs

Montana's Temperature Standard

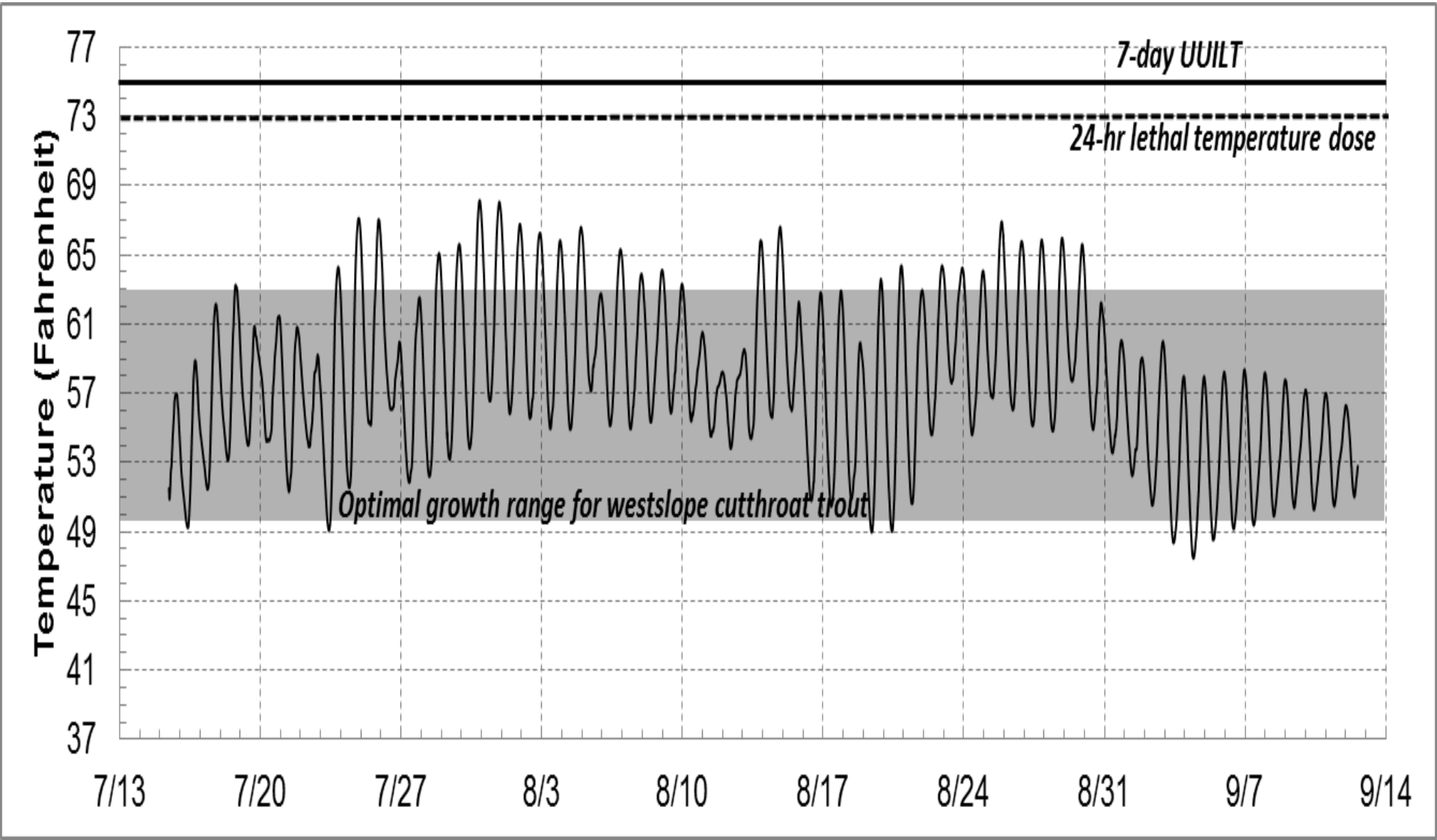
- The maximum allowable increase over the naturally occurring temperature is 1^{o}F, when the naturally occurring temperature is less than 66^{o}F.
- Within the naturally occurring temperature range of 66–66.5^{o}F, the allowable increase cannot exceed 67^{o}F.
- If the naturally occurring temperature is greater than 66.5^{o}F, the maximum allowable increase is 0.5^{o}F.

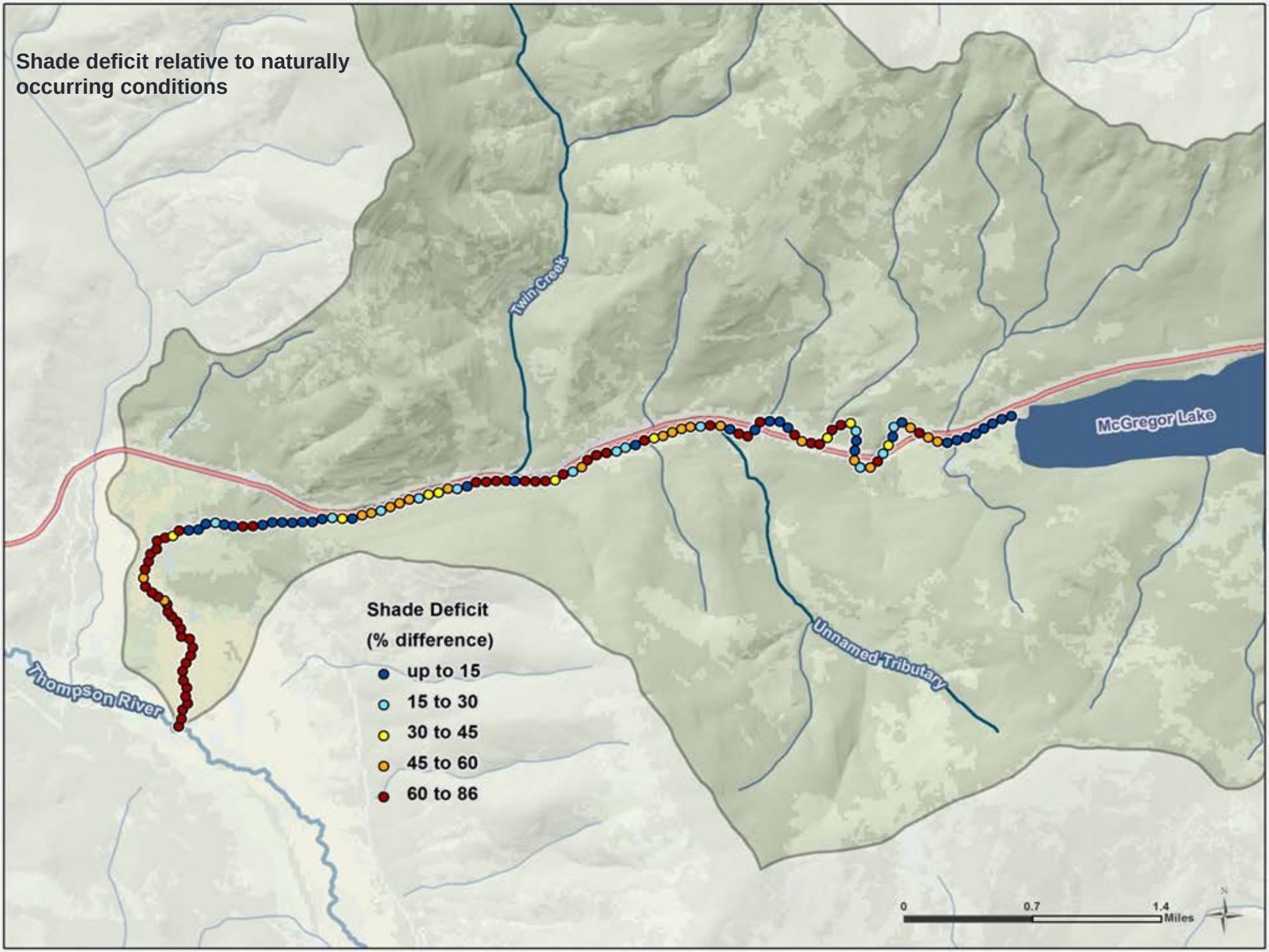
McGregor Creek Temperature TMDL

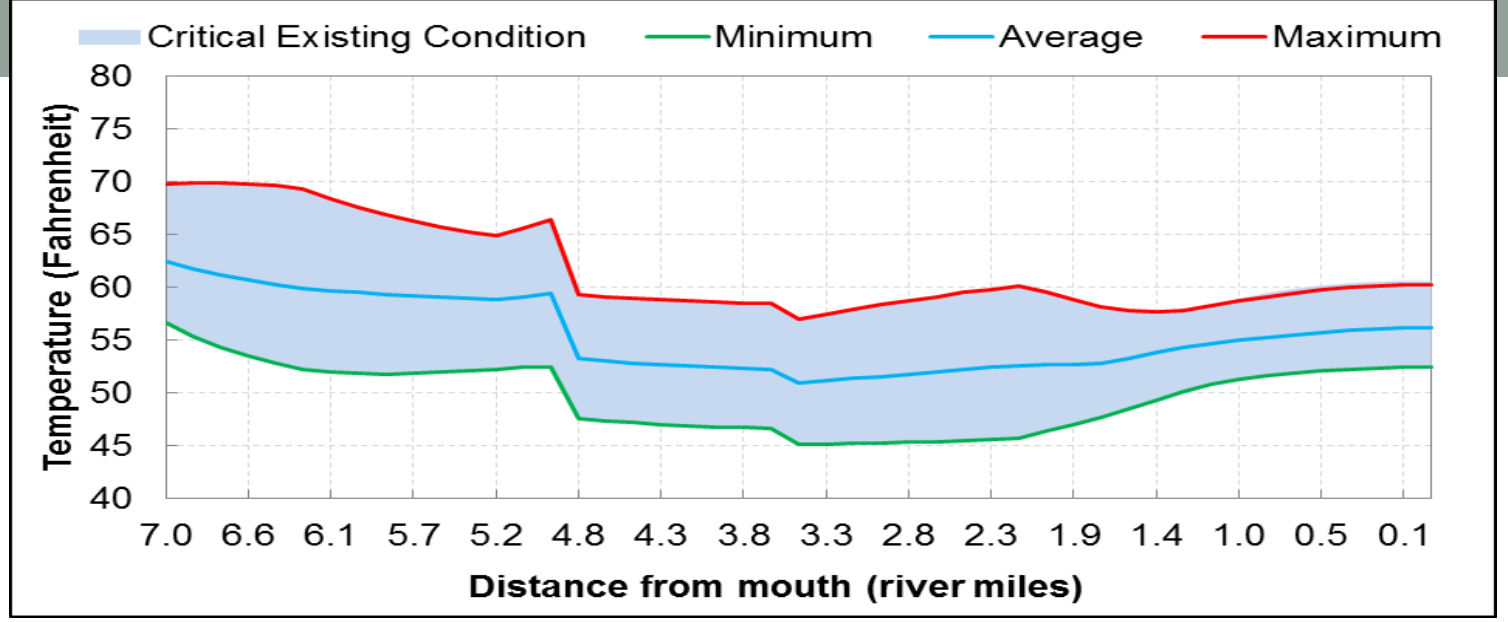
- McGregor Creek was originally listed as impaired for temperature on the 2006, 303(d) list.
- Temperature and flow data were collected during the 2011 field season.
- 6 thermographs were deployed in McGregor Creek from July to September
  - Additional thermographs were placed two tributary streams to McGregor Creek
- 6 sites on McGregor Creek were evaluated for riparian shade and channel morphology
  - Shade was determined using riparian vegetation measurements and data collected from the Solar Pathfinder
  - These variables were used to develop a Qual2K temperature model for McGregor Creek


Tributary Stations
Main Stem Stations
Impaired Segment
Limited access highway
Boorman RAWS
MGRC-T1
MGRC-T3
MGRC-T4
MGRC-T5
MGRC-T6
MGRC-T7
MGRC-T8
MGRC-T9
McGregor Lake
0
1.5
3
Miles
N

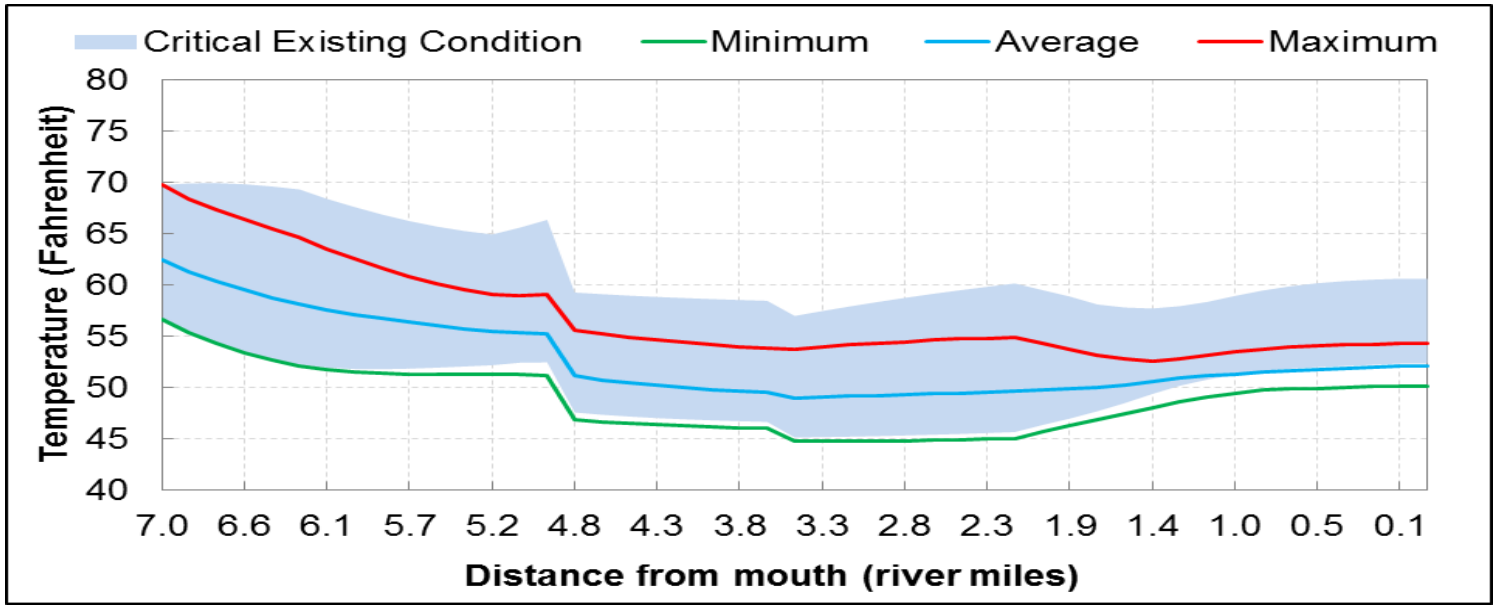
MGRC-T9


7-day UUILT
24-hr lethal temperature dose
Optimal growth range for westslope cutthroat trout
Temperature (Fahrenheit)
77
73
69
65
61
57
53
49
45
41
37
7/13
7/20
7/27
8/3
8/10
8/17
8/24
8/31
9/7
9/14


Shade deficit relative to naturally occurring conditions
Twin Creek
McGregor Lake
Unnamed Tributary
Thompson River
Shade Deficit
(% difference)
up to 15
15 to 30
30 to 45
45 to 60
60 to 86
0
0.7
1.4
Miles
N



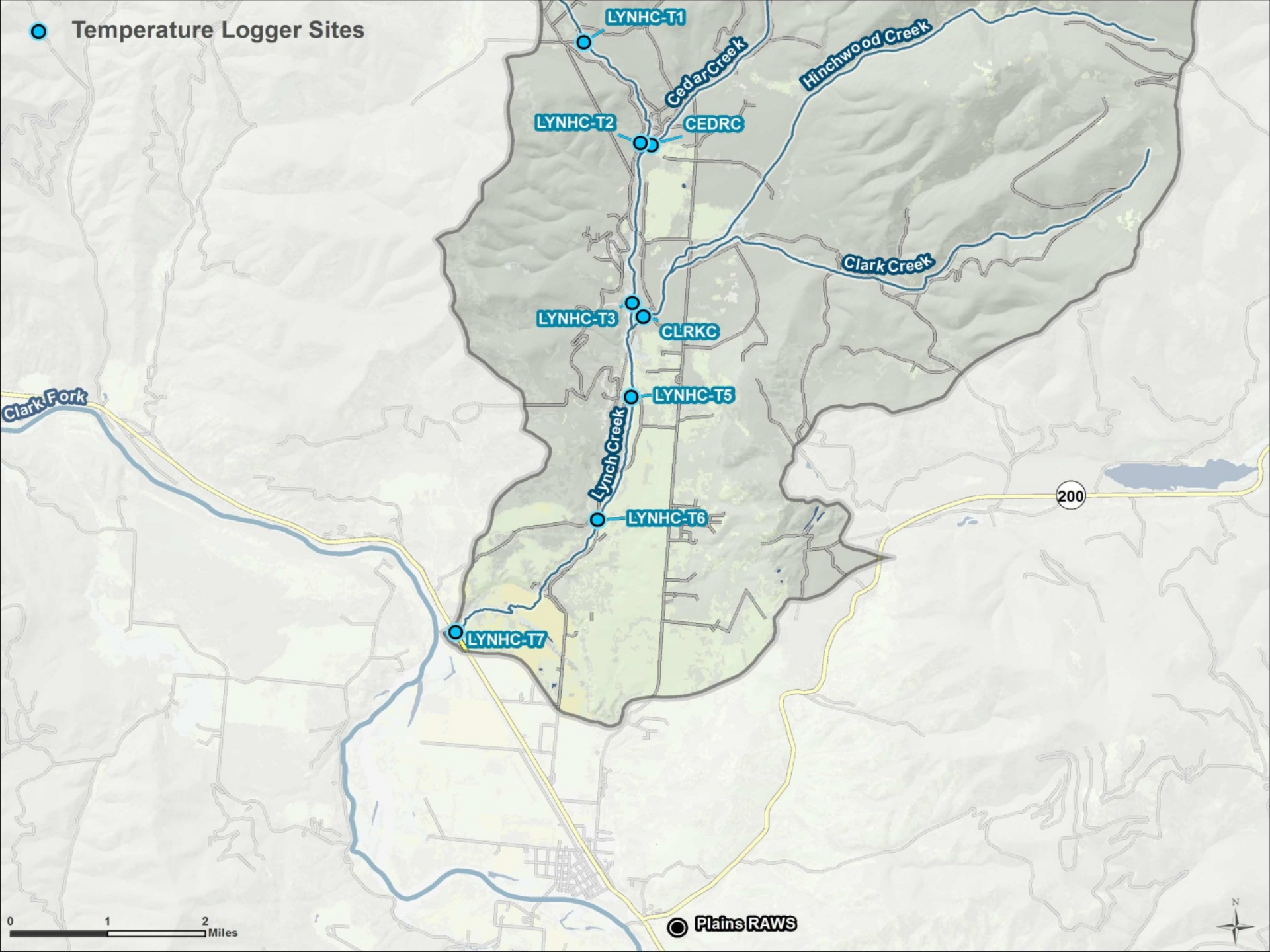
Comparison of modeled temperatures in McGregor Creek between the water use and baseline scenarios.



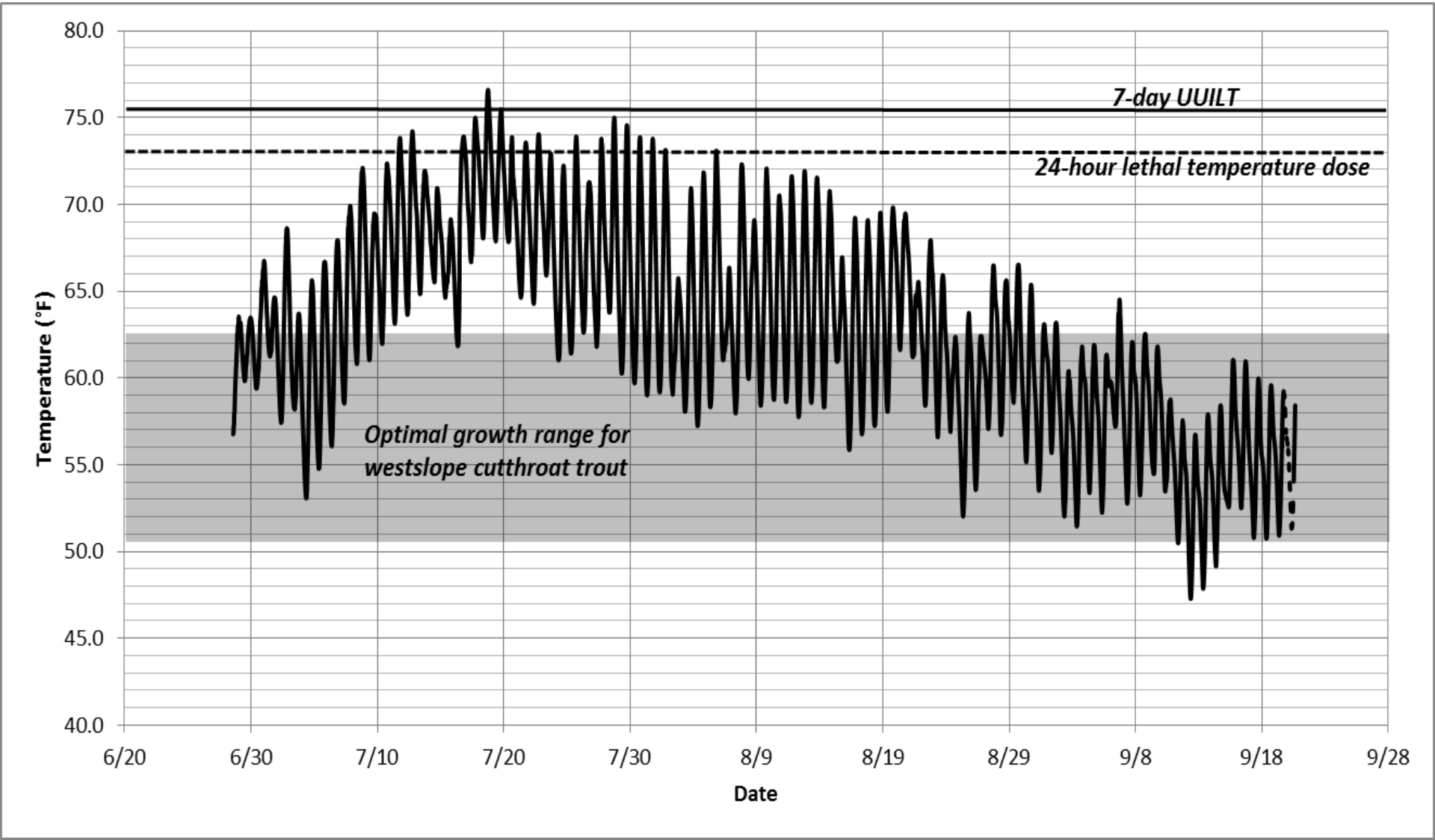
Comparison of modeled temperatures in McGregor Creek between the shade and baseline scenarios.

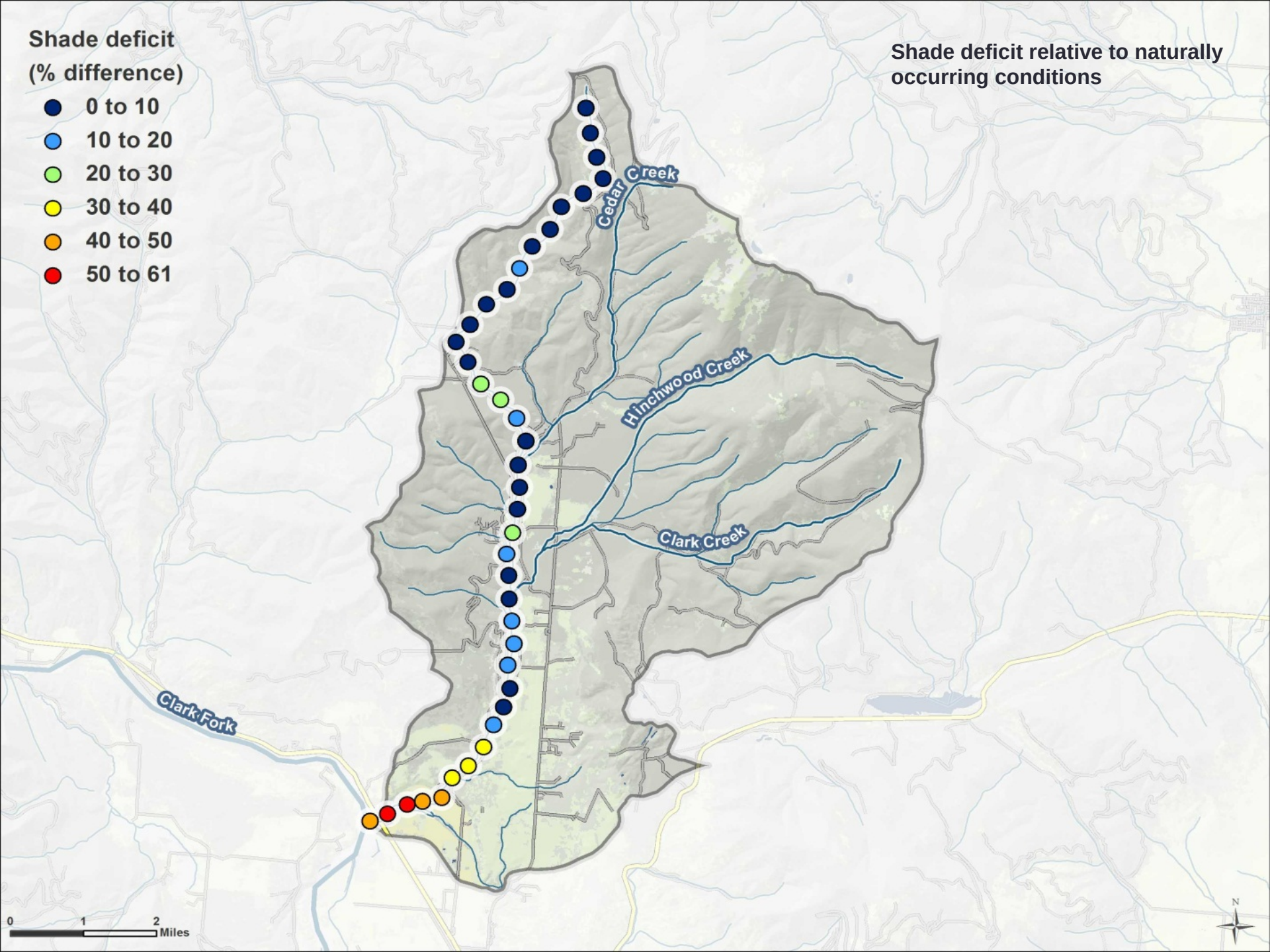
Lynch Creek Temperature TMDL

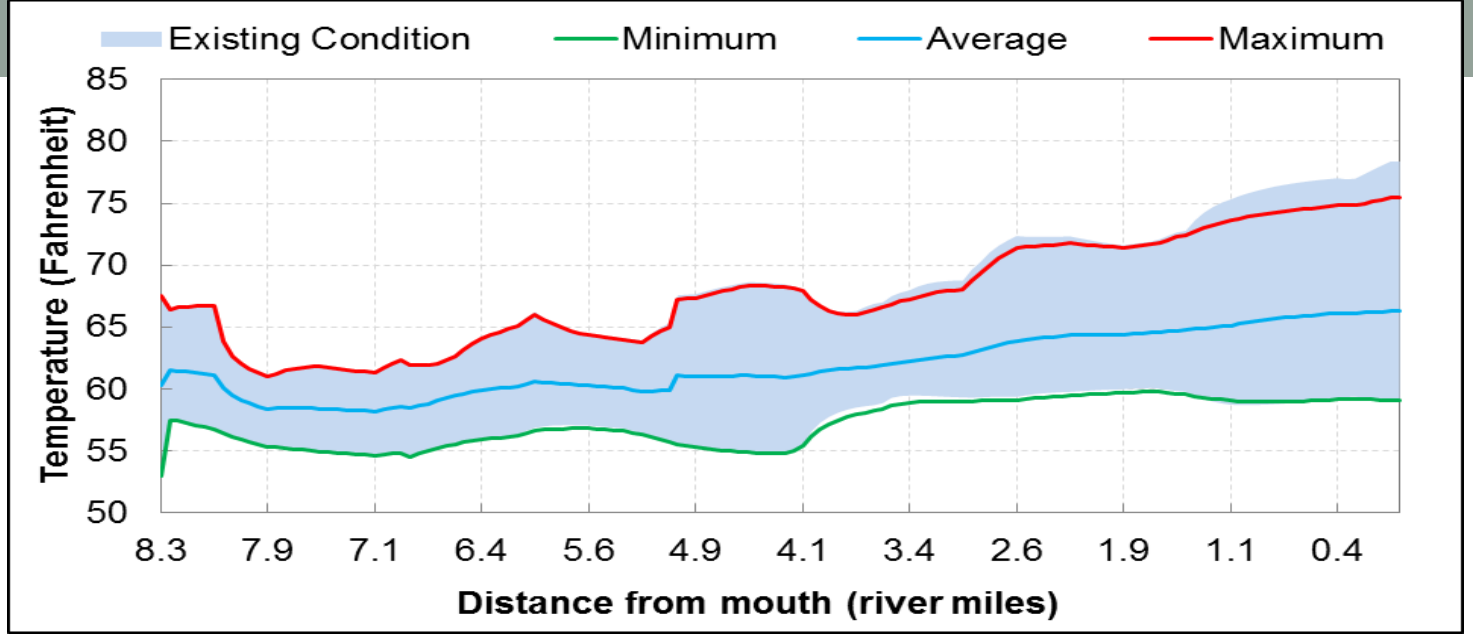
- Lynch Creek was originally listed as impaired for temperature on the 2006, 303(d) list.
- Temperature and flow data were collected during the 2012 field season.
- 6 thermographs were deployed in Lynch Creek from June to September
  - Additional thermographs were placed on two tributary streams to Lynch Creek
- 6 sites on Lynch Creek were evaluated for riparian shade and channel morphology
  - Shade was determined using riparian vegetation measurements and data collected from the Solar Pathfinder
  - These variables were used to develop a Qual2K temperature model for Lynch Creek


Temperature Logger Sites
LYNHC-T1
Cedar Creek
Hinchwood Creek
LYNHC-T2
CEDRC
Clark Creek
LYNHC-T3
CLRKC
LYNHC-T5
Clark Fork
Lynch Creek
200
LYNHC-T6
LYNHC-T7
Plains RAWS
0
1
2
Miles
N

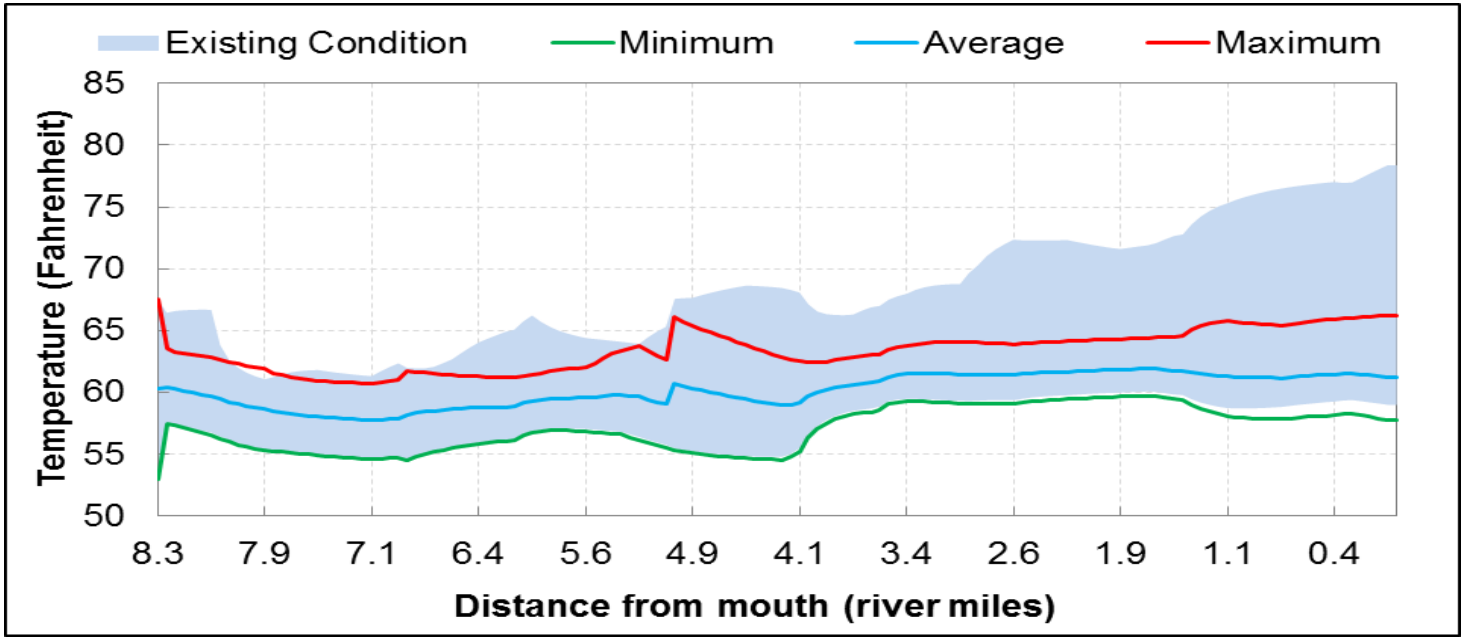
LYNHC-T7


80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
Temperature (°F)
7-day UUILT
24-hour lethal temperature dose
Optimal growth range for
westslope cutthroat trout
6/20
6/30
7/10
7/20
7/30
8/9
8/19
8/29
9/8
9/18
9/28
Date


Shade deficit
(% difference)
0 to 10
10 to 20
20 to 30
30 to 40
40 to 50
50 to 61
Shade deficit relative to naturally occurring conditions
Cedar Creek
Hinchwood Creek
Clark Creek
Clark Fork
0
1
2
Miles
N



Comparison of modeled temperatures in Lynch Creek between the water use and baseline scenarios.



Comparison of modeled temperatures in Lynch Creek between the shade and baseline scenarios.

Temperature TMDLs

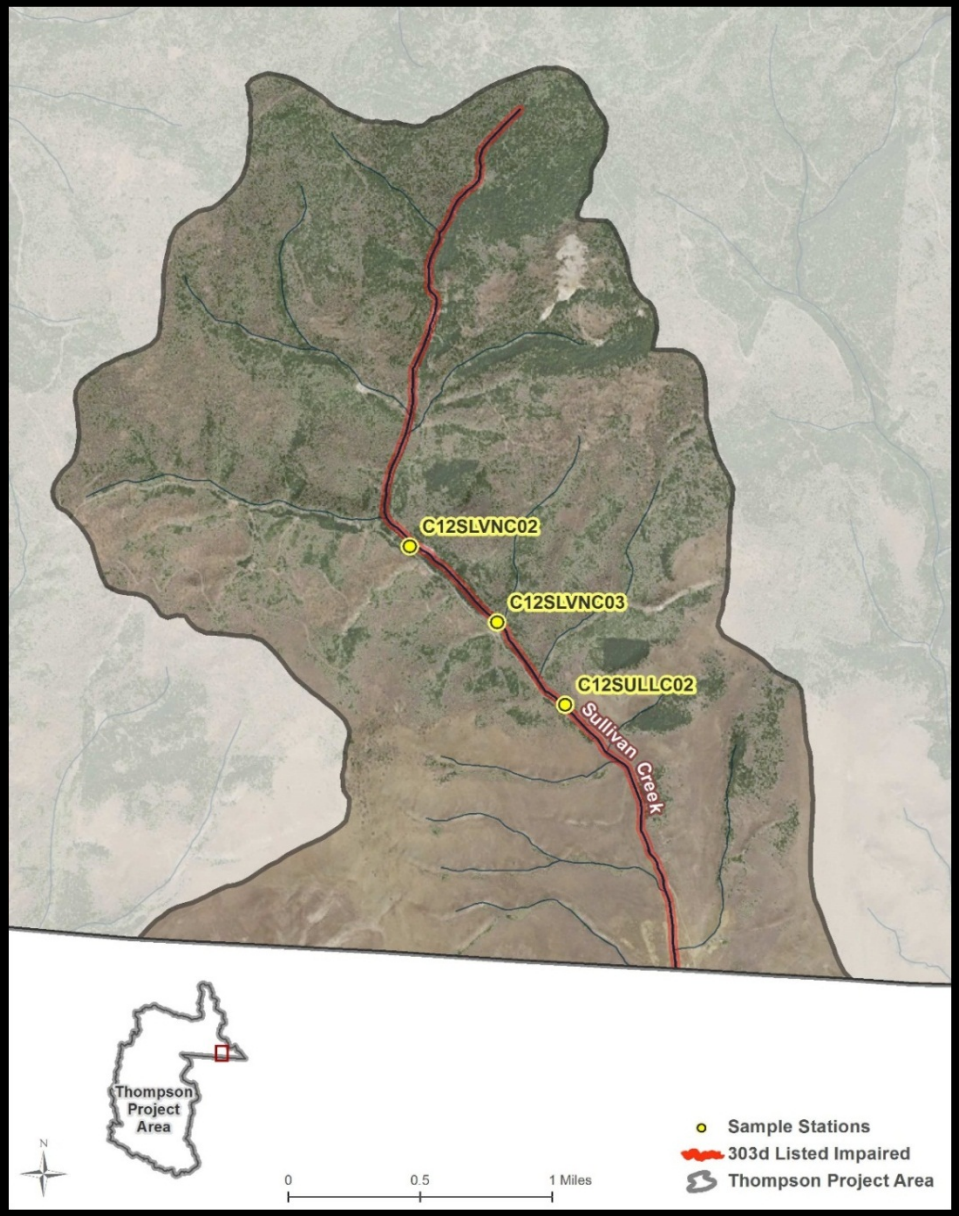
Example Instantaneous Temperature TMDL and Allocation for Lynch and McGregor Creeks (at the mouth).			
Waterbody	Modeled Existing Load (kcal/sec)	TMDL/Load Allocation (kcal/sec)	Percent Reduction Needed
Lynch Creek	554.3	405.5	27%
McGregor Creek	4,822	3,890	19%

Surrogate Temperature TMDL and Allocations for Lynch and McGregor Creeks	
Source Type	Surrogate Allocation
Land uses and practices that reduce riparian health and shade provided by near-stream vegetation along Lynch Creek and McGregor Creek.	• Improve to and maintain a 50 foot buffer with medium density trees or appropriate native vegetation providing equivalent effective shade
Land uses and practices that result in the overwidening of the stream channel such that widths are increased, depths are decreased, and thermal loading is accelerated	• No increase in average width or width/depth ratios due to human-caused sources • Where bankfull width < 30ft, a width/depth ratio < 21
Inefficient consumptive water use	• Application of all reasonable water conservation practices
Surrogate TMDL	• Application of all reasonable land, soil, and water conservation practices for human sources that could influence stream temperatures. This primarily includes those affecting riparian shade, channel width, and instream flow.

Metals TMDLs

2014 TMDL Development

- Sullivan Creek (MT76L002_070)
- Headwater to the Flathead Indian Reservation



Metals TMDLs

- 2012 Listed Metals impairments
  - Sullivan Creek
    - Aluminum
    - Cadmium
    - Zinc
    - pH
- 2014 TMDLs Developed
  - Sullivan Creek
    - Aluminum
    - Cadmium
    - Copper
    - Zinc
    - pH

Data Collection & Impairment Determination

- Sampling conducted in 2004, 2011, 2012
- Sampled and assessed for: Aluminum (Al) Arsenic(As), Cadmium (Cd), Copper (Cu), Iron (Fe), Lead (Pb), Selenium (Se), Silver (Ag) and Zinc (Zn)
- 3 sampling locations, at high and low flow conditions
- Updated DEQ assessment:
  - Even with limited data:
    - Still indicating impairment for originally listed metals
    - Addition of Cu to impairment list
  - Beneficial uses impaired:
    - Aquatic Life Support
    - Drinking Water

Numeric Water Quality Standards

- **Copper Example**
  - Fixed Numeric:
    - Human Health: 1,300 µg/l
  - Variable Numeric:

    Acute and Chronic Aquatic Life: (varies with hardness)

    At 200 mg/L hardness-
    - Acute: 26.90 µg/l (1 hour mean)
    - Chronic: 16.87 µg/l (96 hour mean)

    At 300 mg/L hardness-
    - Acute: 39.41 µg/l (1 hour mean)
    - Chronic: 23.85 µg/l (96 hour mean)

Example Metals Standards

Metals numeric water chemistry targets applicable to the Thompson TMDL Project Area

Metal of Concern	Aquatic Life Criteria (µg/L) at 200 mg/L Hardness		Aquatic Life Criteria (µg/L) at 300 mg/L Hardness		Human Health Criteria (µg/L)
	Acute	Chronic	Acute	Chronic	
Aluminum, D*	750	87	750	87	N/A
Cadmium, TR**	4.32	0.45	6.52	0.61	5
Copper, TR	26.90	16.87	39.41	23.85	1,300
Zinc, TR	215.57	215.57	303.94	303.94	2,000

*D = dissolved
**TR = total recoverable

Metals TMDL Development Triggers

- Greater than 10 % of recent analytical results exceed Chronic Aquatic Life (CAL) targets.
- At least one analytical result in a recent dataset is greater than twice the Acute Aquatic Life (AAL) target.
- At least one analytical result in a recent dataset exceeds the Human Health (HH) target.

AU ID:	MT76L002_070	AU Name	Sullivan Creek

Aquatic Life/ Fishes BU

2012 Aquatic Life/Fishes Metals Listings:	Aluminum, Cadmium, Zinc, pH

Metals:	Dissolved Al	As	Cd	Cu	Fe	Pb
Sample Date Range	2004-2012	2004-2012	2004-2012	2004-2012	2004-2012	2004-2012
Number of Samples	5	5	5	5	5	5
Number of High Flow Samples	2	2	2	2	2	2
Percent of High Flow Samples	40	40	40	40	40	40
Number of samples that are ≥2x the Acute Standard	3	0	2	0		0
Number of Acute Exceedances	5	0	4	1		0
Number of Chronic Exceedances	5	0	0	2	0	0
Acute Exceedance Rate (%)	100.00	0.00	80.00	20.00		0.00
Chronic Exceedance Rate (%)	100.00	0.00	0.00	40.00	0.00	0.00
Listing Decision (List/Keep Listed, Delist/ Do not List)	Keep Listed	Insufficient Information	Keep Listed	List	Insufficient Information	Insufficient Information
Listing Decision Rational	exceeds 2x acute, acute & chronic exceedance rate	Minimum sample size not met	exceeds 2x acute, acute exceedance rate	Minimum sample size not met but one acute/chronic exceedance	Minimum sample size not met	Minimum sample size not met

Metals:	Se	Ag	Zn
Sample Date Range		2004-2012	2004-2012
Number of Samples		5	5
Number of High Flow Samples		2	2
Percent of High Flow Samples		40	40
Number of samples that are ≥2x the Acute Standard		0	5
Number of Acute Exceedances		0	5
Number of Chronic Exceedances			5
Acute Exceedance Rate (%)		0.00	100.00
Chronic Exceedance Rate (%)		0.00	100.00
Listing Decision (List/Keep Listed, Delist/ Do not List)		Insufficient Information	Keep Listed
Listing Decision Rational		Minimum sample size not met	exceeds 2x acute, acute & chronic exceedance rate

Metals Sources

- Number of large inactive mines:
  - Hog Heaven (formerly the Flathead Mine)
    - (current operating permit, not actively being mined
    - Flathead Mine Complex (Montana priority abandoned mine)
  - Battle Butte
  - West Flathead
  - Ole
- Smaller inactive mining operations
  - Mary Ann Mine
  - Grant
  - Martin
  - Resser

Allocations

TMDL =

∑ Load Allocations (background) + ∑ Wasteload Allocation (mining load)

- Background load allocation (naturally occurring conditions in the watershed)
  - Calculated from data from a reference (least impacted) data set for Sullivan Creek

- Mining wasteload allocation will be composite, to account for all mines, mining activity and associated disturbances (mine tailings, open adits, roads etc).

Example TMDLs and Reductions

Example TMDLs in the Thompson TMDL Project Area

Metal	Measured Conc. (µg/L)	Target Conc. (µg/L)	TMDL (lbs/day)	% Required Load Reduction To Meet TMDL
Aluminum	10,600	87.00	0.0141	99%
Cadmium	26.5	0.56	0.0000907	98%
Copper	40	16.36	0.0079	59%
Zinc	16,800	302.22	0.2774	98%

***Cadmium will act as a surrogate TMDL for pH.
Cadmium was chosen as the surrogate because it has the lowest acute and chronic standards, making cadmium the most conservative choice as a surrogate.

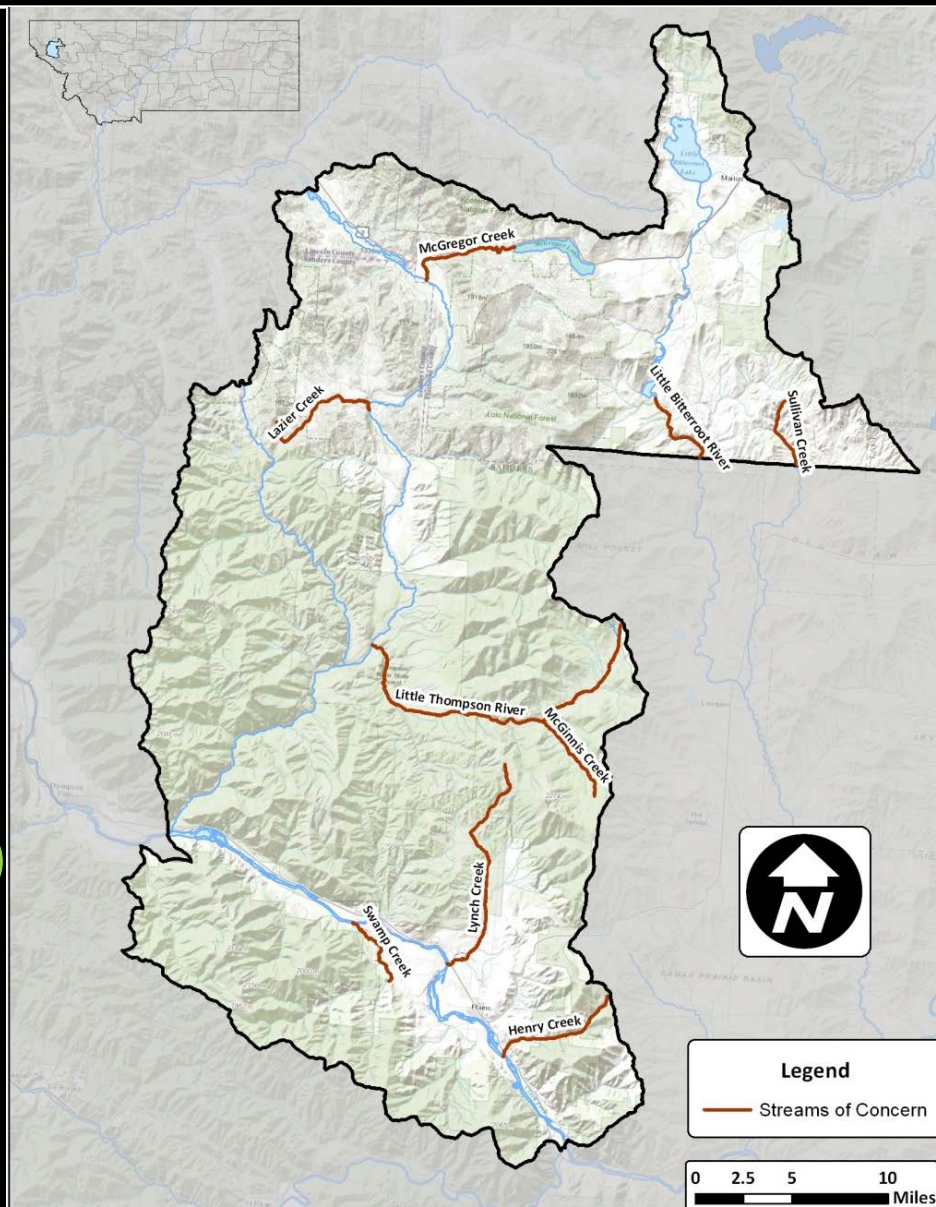
Nutrient Monitoring & TMDL Scope

Monitoring

- Growing season sampling in 2009, 2011 and 2012
- Biological data was also collected
- DEQ assessments verified impairments

TMDLs

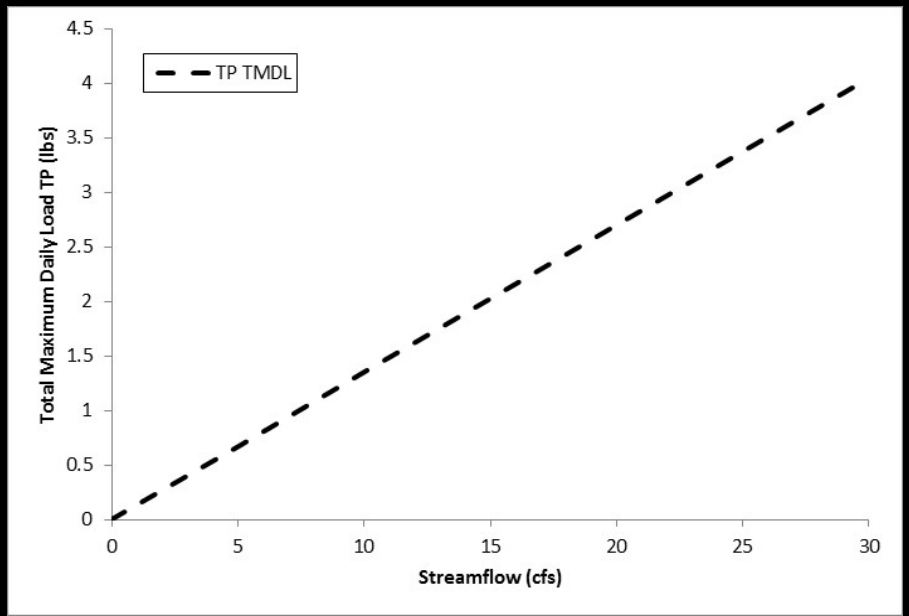
- Six waterbodies
  - Lazier Creek (TN, TP, $NO_{3/2}$)
  - Little Bitterroot River (TN, TP, $NO_{3/2}$, chl *a*)
  - Little Thompson River (TN, TP)
  - Lynch Creek (TN, TP)
  - Sullivan Creek (TP, TN)
  - Swamp Creek (TN, TP, $NO_{3/2}$)



TMDLs

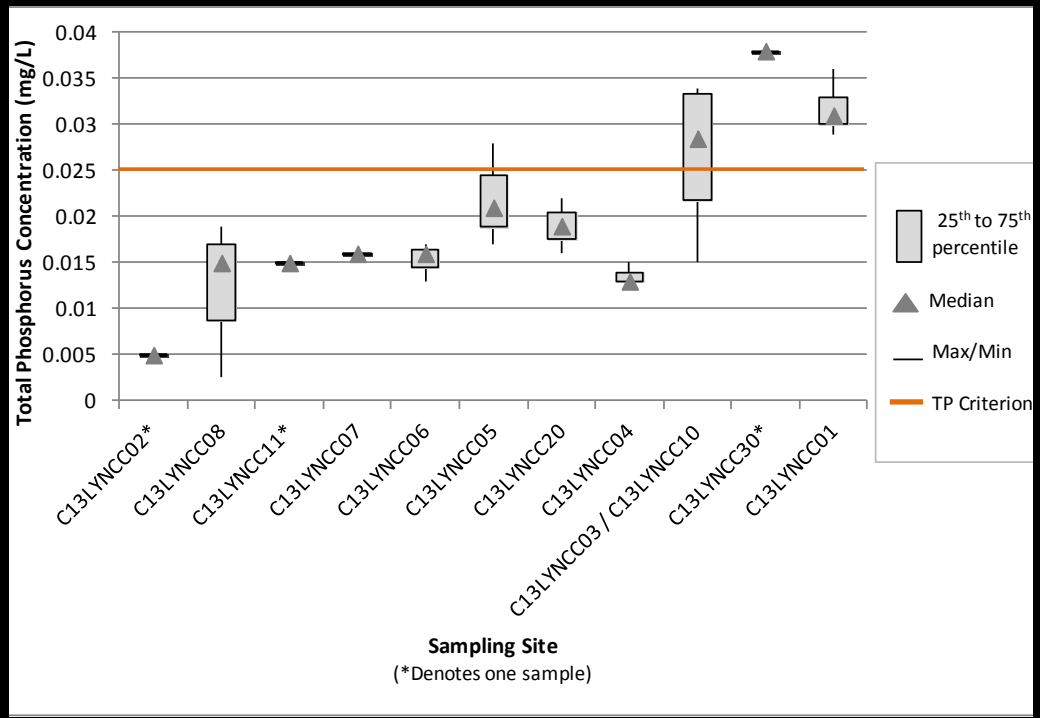
TMDL (lbs/day) = Target * Flow * Conversion Factor

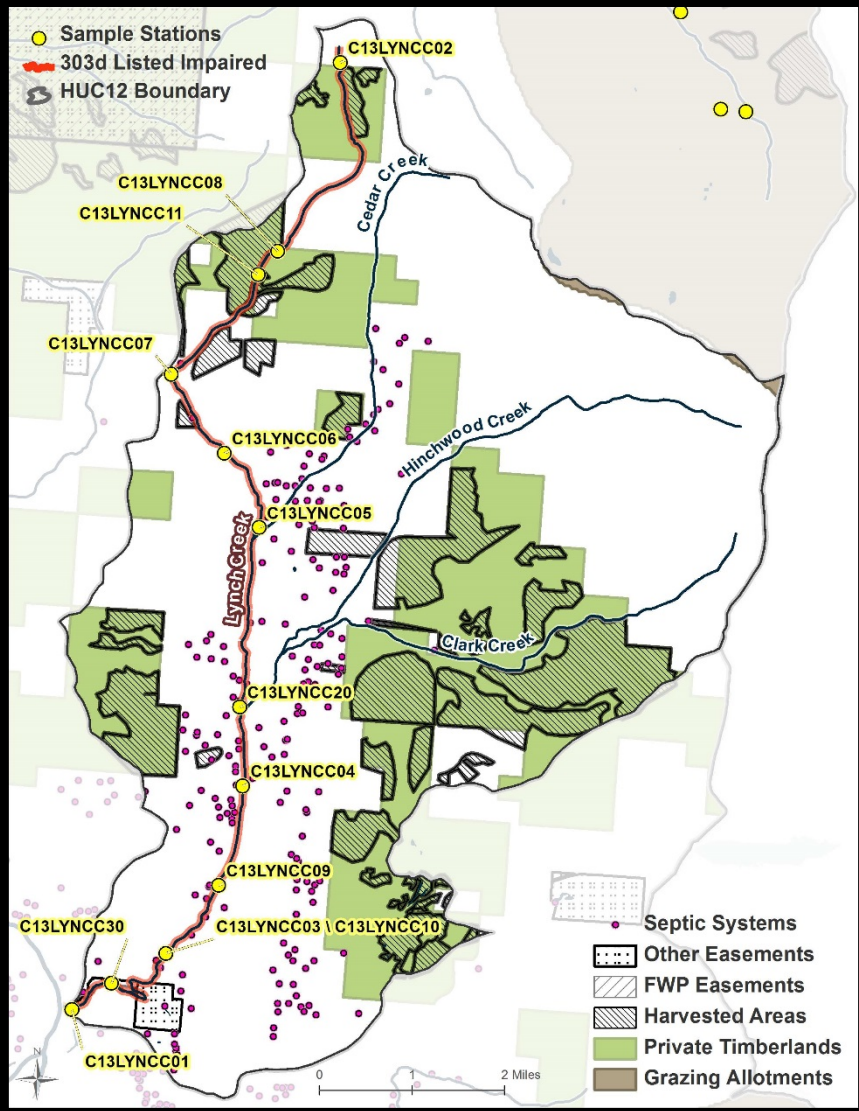
Parameter	Target
Total Phosphorus	0.025 mg/L
Total Nitrogen	0.275 mg/L



Potential Sources

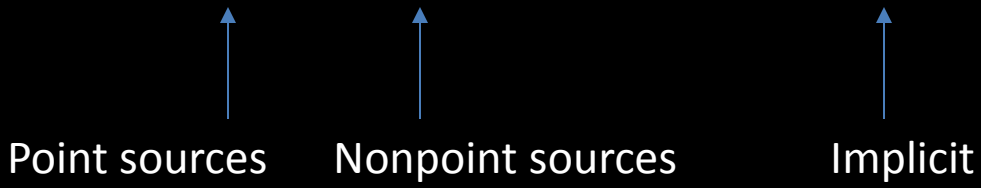
- Agriculture
- Development
- Septic
- Timber Harvest
- Natural Background





Allocations

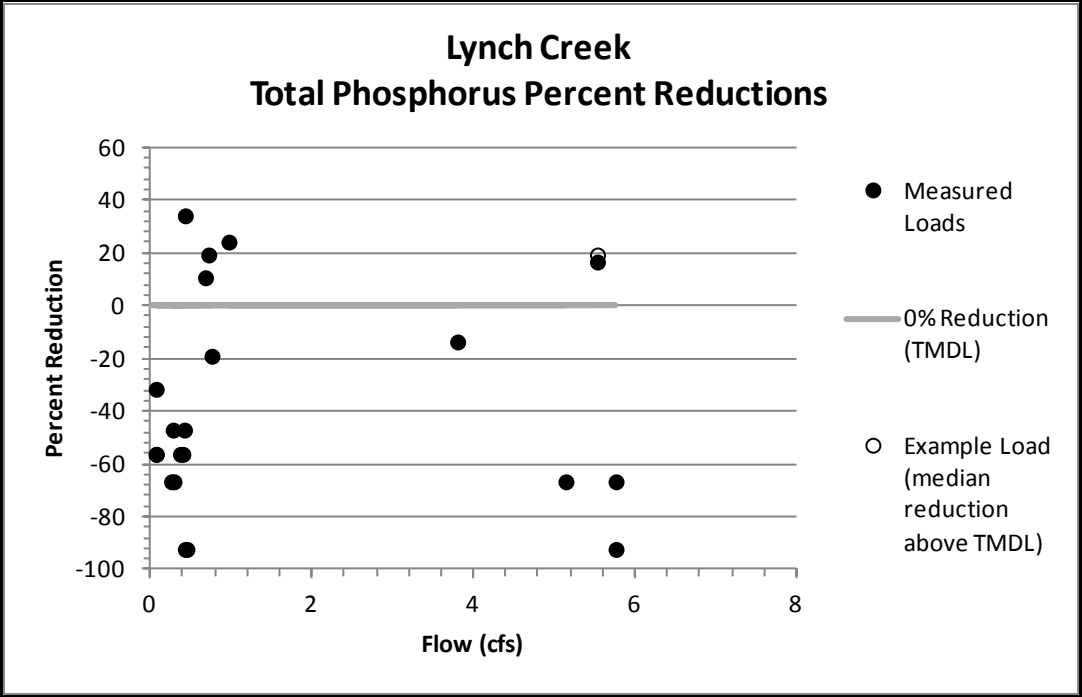
TMDL = WLA + LA + Margin of Safety



- There are no nutrient point sources
- Load allocations are composited to all nonpoint sources (including natural)

Example TMDL: Lynch Creek TP

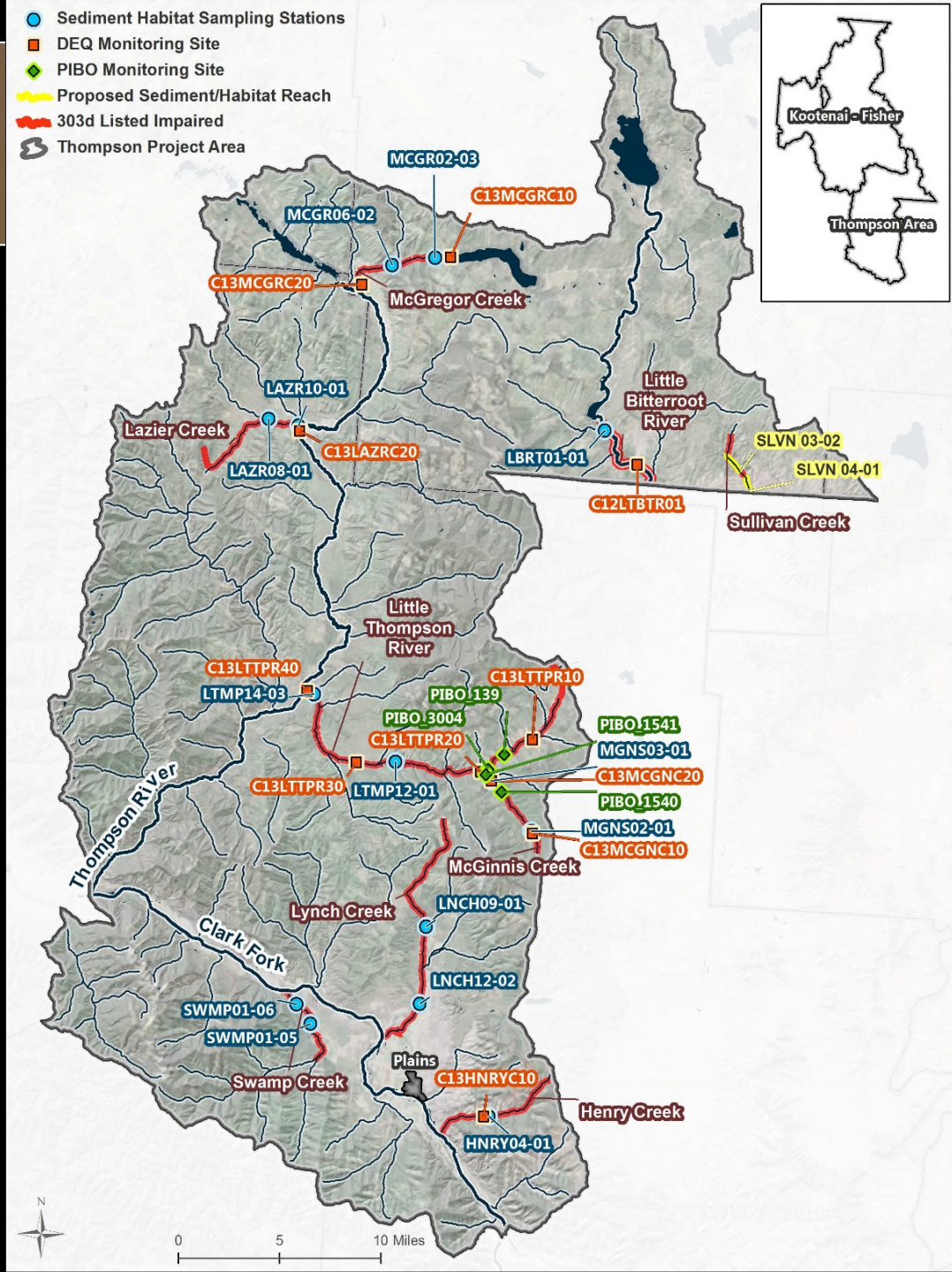
Source Category	TMDL & Composite Allocation (lb/day)[1]	Existing Load (lbs/day)[1]
All Sources	0.0972	0.1205
[1] Based on a flow of 0.72 cfs		



- 11-34% reduction

9 Streams Listed for Sediment Impairment

- Henry Creek
- Lazier Creek
- Little Bitterroot River
- Little Thompson River
- Lynch Creek
- McGinnis Creek
- McGregor Creek
- Sullivan Creek
- Swamp Creek



Sediment and Habitat Monitoring

*Collected from 16 sites in 2011

Parameters of Interest

- Fine sediment
  (<6mm and <2mm in riffles and in pools)
- Channel form stability
  (W/D ratio and entrenchment)
- Instream habitat
  (LWD, pools/mile, and pool depth)
- Riparian health
  (% understory shrub cover)
- Bank Erosion
  (Loads and associated causes and severity)

Parameters of interest are selected for their ability to display response to increases or decreases in sediment loading, and their linkage to effects upon aquatic life/cold water fish.

Data Evaluation and TMDLs

- Targets were developed to translate the narrative standard and evaluate condition of each stream
  - Targets based on reference data
- Sediment TMDLs are based on following all reasonable land, soil, and water conservation practices
  - TMDL is based on a percent reduction approach for all potentially significant sediment sources

Potential Sediment Source Categories

Natural erosion

- Result of climatic and hydrologic processes

Human influenced sediment/erosion

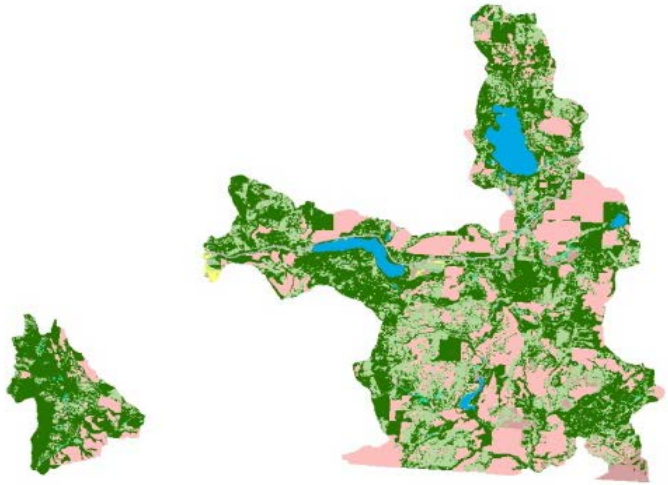
- Streambank erosion
  - Streamside Vegetation Removal
  - Unnatural Flow Fluctuations
  - Livestock trampling
- Sediment from unpaved roads
  - Non-"BMP'ed" roads and crossings
  - Culvert failure
- Sediment from land use (upland sediment)
  - Grazing practices
  - Timber harvest
  - Streamside Vegetation Removal
  - Crop Production
  - Development
- Point Sources
  - Permitted entities

Sediment Source Categories: Roads

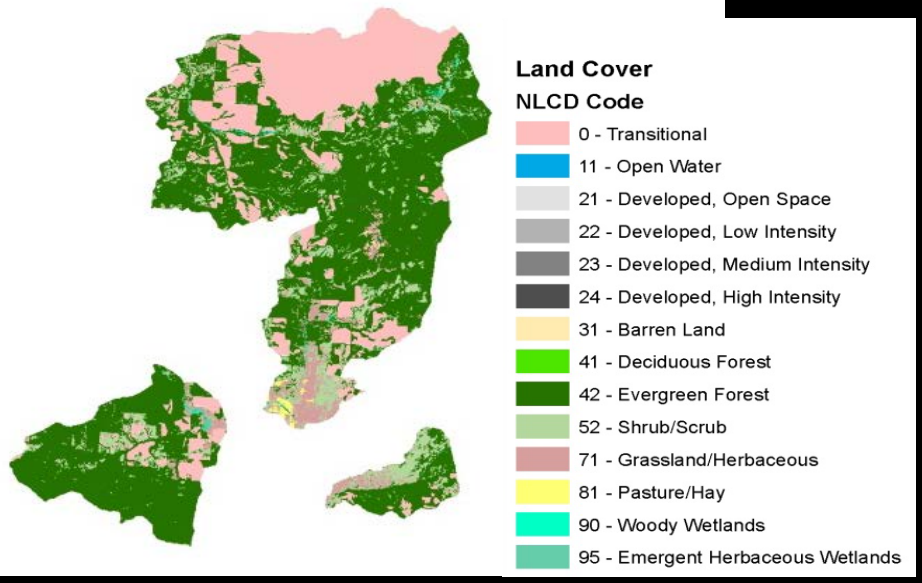
- Completed a full evaluation at 40 crossings and recorded conditions at an additional 13 in 2011
- Used WEPP:Roads model to average Load per crossing/parallel segment
- Existing Condition/BMP Scenarios
- Culvert failure and fish passage also evaluated

Photo courtesy of USDA NRCS

Sediment Source Categories: Upland Erosion



- USLE Model
- NLCD land use/land cover maps
- Riparian condition (aerial photo assessment)
- BMP scenario represents vegetation cover improvement on range land and riparian areas



Sediment Source Categories: Bank Erosion

- Used data collected at the monitoring reaches in 2011 and from the Kootenai-Fisher TMDL project area
- Calculated average load per mile by reach type
- Used reach type loads to extrapolate throughout each watershed
- Load reductions estimated by decreasing the percentage of human caused bank erosion to 30% to approximate riparian BMPs

Sediment Source Categories: Point Sources

- Industrial Stormwater – McGregor Creek watershed
- No permitted outfalls
- Retains stormwater on-site and not anticipated to be a source

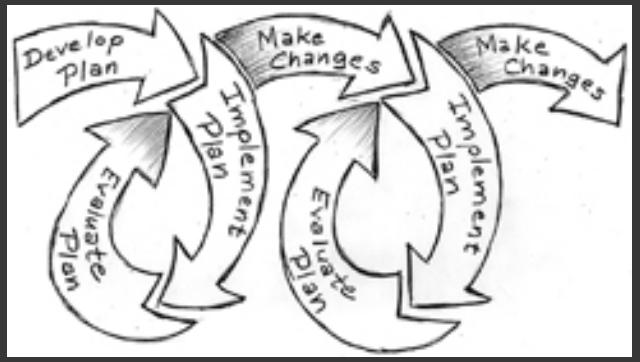
Example TMDL: Lynch Creek

Sediment Sources	Current Estimated Load (Tons/Year)	Total Allowable Load (Tons/Year)	Load Allocations (% reduction)
Roads	6.43	3.39	47%
Streambank Erosion	451	300	33%
Upland Sediment Sources	306	208	32%
Total Sediment Load	763	511	33%

Implementation Strategy and Project Schedule

Watershed Restoration Plans

- WRP are now required by EPA in order to be eligible for Clean Water Act Section 319 (Nonpoint Source) funding
- Nine elements ensure an effective integrated approach to water quality restoration and protection
- Locally lead planning effort to prioritize activities based on needs, concerns, and local interest



- *Identify sources and causes of problems, determine changes necessary to attain standards*
- *Identify the actions necessary to make the changes, the partners and assistance needed for those changes*
- *Develop timeframe, milestones, and criteria to keep on track or make necessary adjustments*

MONTANA Watershed Protection

9 Minimum Elements

1. Identify causes and sources of pollution
2. Estimate pollutant loading into the watershed and the expected load reductions
3. Describe management measures that will achieve load reductions and targeted critical areas
4. Estimate amounts of technical and financial assistance and the relevant authorities needed to implement the plan
5. Develop an information/education component
6. Develop a project schedule
7. Describe the interim, measurable milestones
8. Identify indicators to measure progress
9. Develop a monitoring component

http://water.epa.gov/polwaste/nps/upload/watershed_mgmnt_quick_guide.pdf

MONTANA Watershed Protection

Resources

- EPA Website and Handbook
  - Handbook for Developing Watershed Plans to Restore and Protect Our Waters – with a shorter Quick Guide
    - http://water.epa.gov/polwaste/nps/handbook_index.cfm
  - Incorporating Wetlands into WRPs
    - http://www.epa.gov/region5/agriculture/pdfs/wetlands-in-watershed-planning-supplement-region-5-201302.pdf
- DEQ Staff and Website
  - Wiki Site (http://montananps319grants.pbworks.com/w/page/40496302/Watershed%20Restoration%20Plans)
  - Staff with Expertise (http://svc.mt.gov/deq/staffdir.asp#wqp)
- 319 Call for Proposals (2015) Webinar
  - June 19th – 1-2pm
- Other
  - NRCS – EQIP
  - Montana Watershed Coordination Council (MWCC)
    - http://www.mtwatersheds.org/
  - DNRC
  - FWP – Future Fisheries
  - Other planning efforts
  - Volunteers
  - Big Sky Watershed Corps
  - State and federal agency personnel, consultants, other experts
  - Other watershed groups with WRPs

MONTANA Watershed Protection

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MONTANA Watershed Protection

Project Schedule

- 30 day public comment period on draft TMDL document
  - Started on June 11th and runs until July 11th
- Final document expected to be complete shortly after public comment period for submittal to EPA for approval

What to Expect from a Completed TMDL?

- A completed TMDL provides information on water quality problems and strategies to reduce pollutants by changing land and water management activities

- Implementation of the TMDLs by the use of appropriate BMPs will improve the water quality of addressed waterbodies

- A Watershed Restoration Plan (WRP) may be developed by stakeholders to implement the goals of the TMDL

TMDL Project Website and DEQ Website

- Specific TMDL information can be found online at the Montana DEQ TMDL Project Website:
  - http://montanatmdlflathead.pbworks.com/
- General DEQ information, water quality information, rules and regulations, and public comment opportunities can be found on the DEQ website at:
  - http://deq.mt.gov/default.mcpx

Thompson TMDL Project Area

last edited by Jordan Tollefson 3 hours, 33 minutes ago

Page history

THOMPSON TMDL PROJECT

Project Outreach ***Project Documents***

Page Contents:

Project Purpose

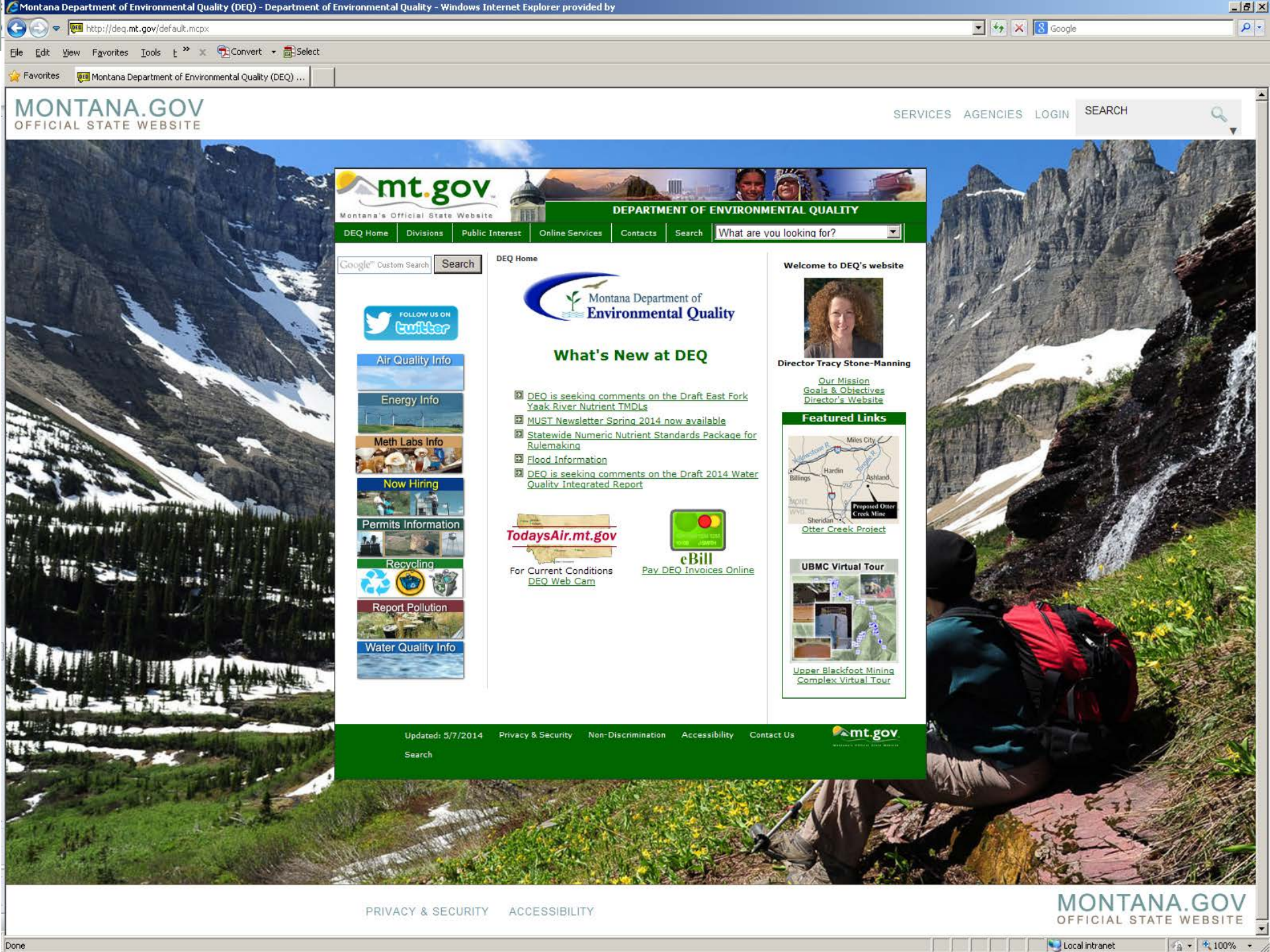
The state of Montana monitors its waters and conducts water quality assessments to determine if waterbodies are supporting their designated uses. All waterbodies in the Thompson TMDL project area must be maintained suitable for aquatic life, drinking water, agricultural, industrial, and recreational uses. Waters that are determined not to be supporting their designated uses are called impaired and are placed on Montana's list of impaired waters. Impaired waterbodies and their associated probable causes and sources of impairment are published within Montana's biennial water quality integrated report.

Montana's state law, and the federal Clean Water Act that was established by Congress in 1972, require development of total maximum daily loads (TMDLs) for all waterbodies impaired by a pollutant (e.g., metals, nutrients, sediment, temperature). A TMDL is the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards (think of a TMDL as a loading rate). TMDL development includes four main steps:

- Characterizing the impaired waterbody's existing water quality conditions and comparing those conditions to Montana's water quality standards. During this step, measurable target values are set to help evaluate the stream's condition in relation to the applicable water quality standards.
- Quantifying the magnitude of the pollutant contribution from each significant source
- Determining the total allowable load of the pollutant to the waterbody (the TMDL)
- Allocating the total allowable pollutant load into individual loads for each significant source (referred to as load allocations for nonpoint sources and wasteload allocations for point sources)

The TMDL planning process for this project incorporates a combination of water quality sampling and hydrologic modeling to further identify and quantify metals, nutrient, sediment, and temperature contributions from all significant sources to the streams identified in the table below. For more information about the development of TMDLs, please see the What is a TMDL? page on this site or download our pamphlet: Understanding the TMDL Process.

SideBar
Home Page
How to Navigate This Site & Request Access
What is a TMDL?
Link to the DEQ Nonpoint Source & 319 Grants Wiki
Link to the DEQ TMDL Webpage
Completed Projects
(Older Pages)
Current Projects:
Beaverhead
Bitterroot
Blackfoot Watershed
Bonita-Superior
Boulder-Elkhorn
Flathead
Flint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Energy Info
Meth Labs Info
Now Hiring
Permits Information
Recycling
Report Pollution
Water Quality Info
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Montana Department of Environmental Quality
What's New at DEQ
DEQ is seeking comments on the Draft East Fork Yaak River Nutrient TMDLs
MUST Newsletter Spring 2014 now available
Statewide Numeric Nutrient Standards Package for Rulemaking
Flood Information
DEQ is seeking comments on the Draft 2014 Water Quality Integrated Report
TodaysAir.mt.gov
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Goals & Objectives
Director's Website
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Hardin
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Otter Creek Project
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Upper Blackfoot Mining Complex Virtual Tour
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Local intranet
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Public Comment Information

- Copies of the draft documents can be found online at: http://www.deq.mt.gov/pubcom.mcpx and are also available at the Thompson Falls and Plains public libraries, and also at the State Library in Helena. Comments may be mailed to:

  Montana Department of Environmental Quality

  P.O. Box 200901

  Helena, Montana 59620-0901

- Comments can also be submitted electronically at: http://comment.cwaic.mt.gov/

- Comment forms are also available today at the meeting

  *Note that verbal comments cannot be accepted as part of the official public record


Questions?