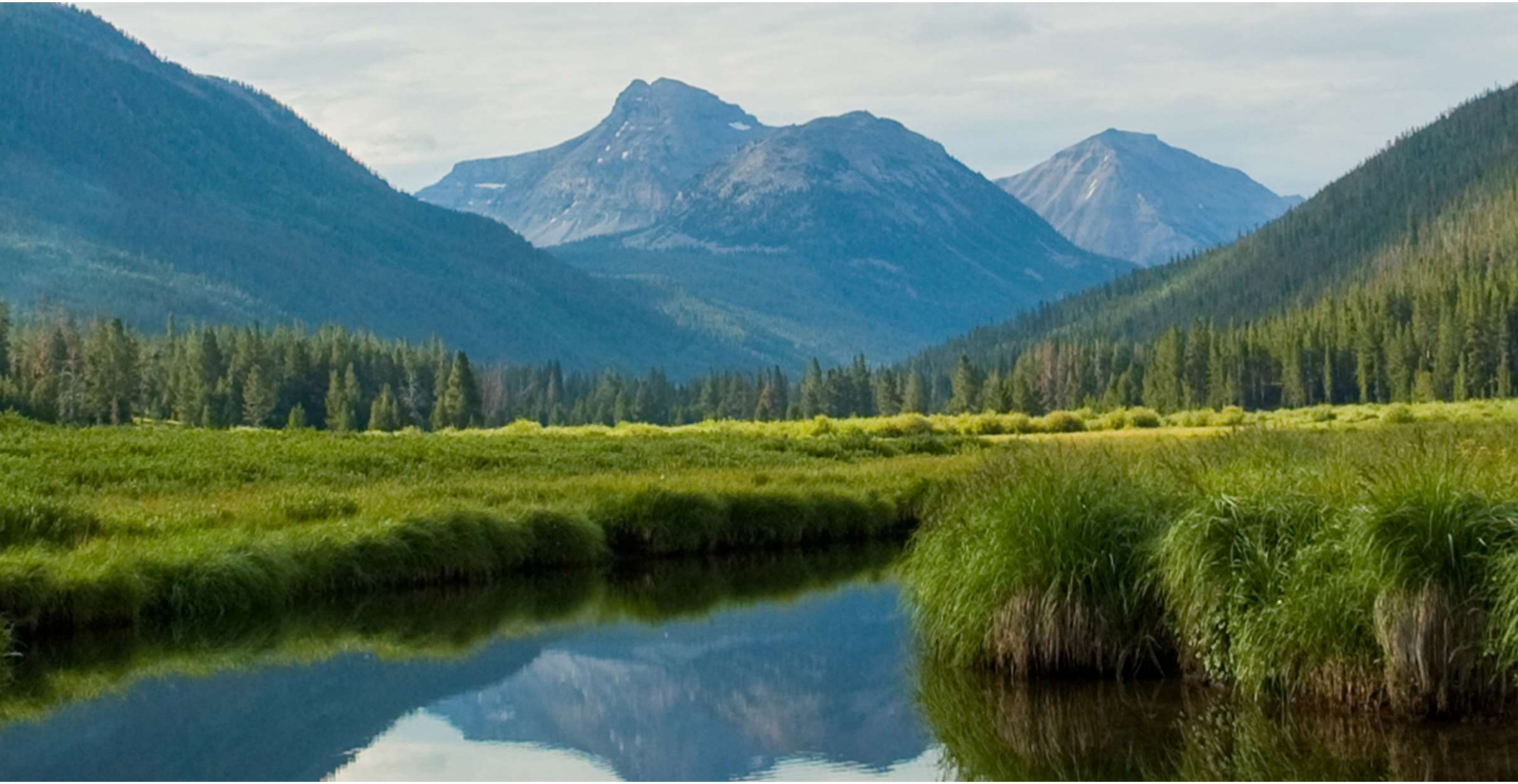


UTAH DEPARTMENT *of* ENVIRONMENTAL QUALITY

WATER QUALITY

Jordan River Watershed Wide *E. coli* TMDLs

Sandy Wingert
Leanna Littler-Woolf

Jordan River *E. coli* TMDLs – Part 2

Continue conversation from spring 2021

- What rivers are impaired for *E. coli* within the Jordan River watershed?
- What is a TMDL?
- Example: Lower Big Cottonwood Creek
- Stormwater management considerations in developing a TMDL

Today's discussion:

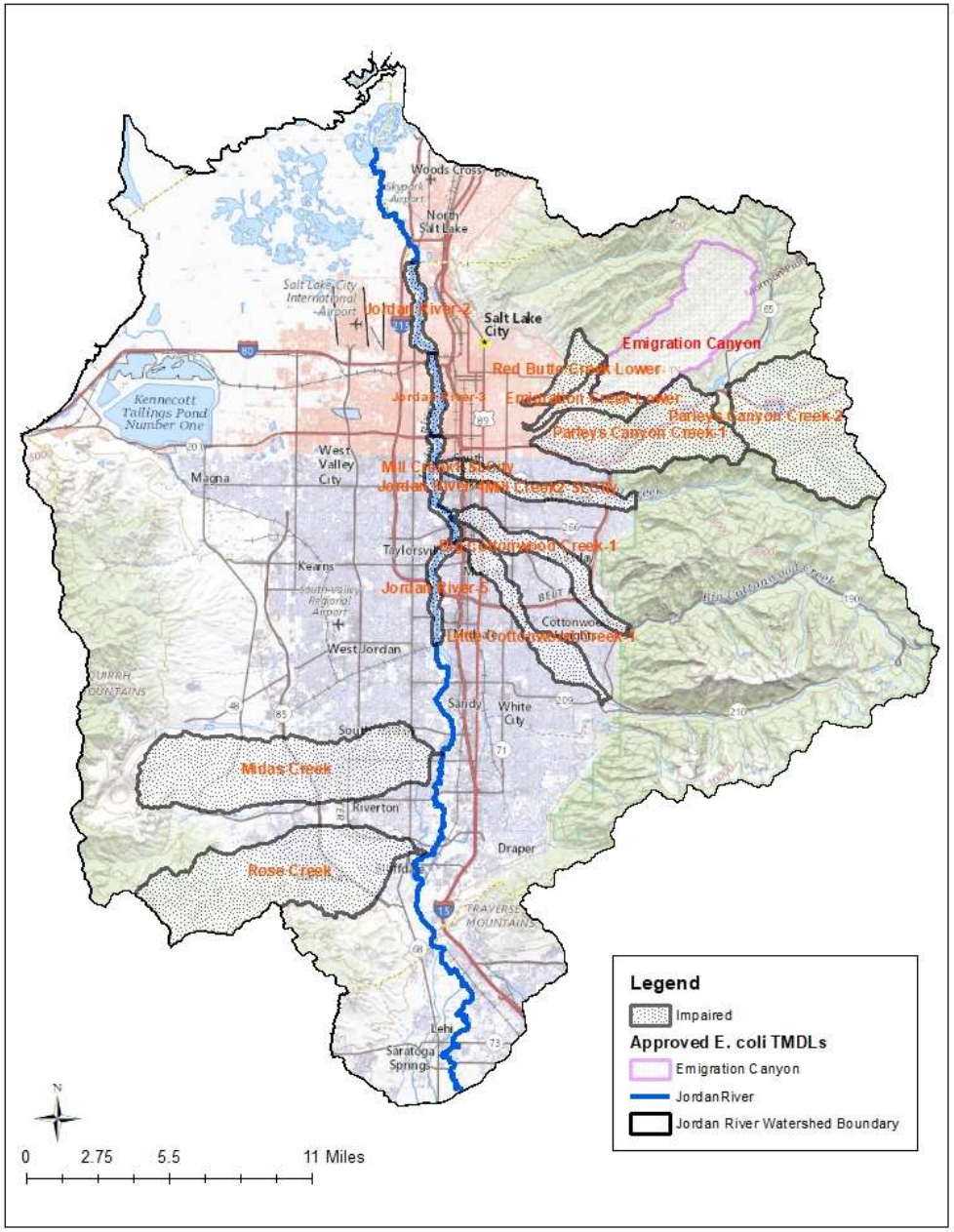
- Brief TMDL overview and sources of *E. coli* pollution
- Technical approach to TMDL development including sources specific for each impaired waterbody
- Proposed timeline
- How will MS4s be addressed within the TMDL framework?

14 *E. coli* Impaired Assessment Units (AUs)

Main Stem Jordan River: Confluence of Little Cottonwood Creek downstream to Davis County Line

East-side Tributaries: Big Cottonwood, Little Cottonwood, Mill, Parleys, Emigration, Red Butte

West-side Tributaries: Midas & Rose



Designated Uses & Water Quality Standards

Table 1. Designated uses of Utah's waters based on Utah R317-2-13.

Beneficial Use	Description
1C	Protected for domestic water systems
2	Protected for recreational uses and aesthetics
3	
4	
5	

Table 2. Applicable *E. coli* water quality standards for impaired AUs in the Jordan River Watershed (MPN/100 mL).

Beneficial Use	Description	*E. coli* Geometric Mean (MPN*/100 mL)	*E. coli* Not to Exceed (MPN*/100 mL)
1C	Drinking water	206	668
2B	Infrequent primary contact recreation	206	668

*MPN/100 mL = Most probable number [of colonies] per 100 milliliters of water

Review: What is a TMDL?

TMDL =

Total maximum daily load

Maximum amount of pollutant a waterbody can receive and still maintain its beneficial uses

TMDL = loading capacity

Concentration Based TMDLs

- Jordan River watershed has a complex hydrology and several probable sources of *E. coli.*
- Difficult to differentiate among sources.
- All *E. coli* TMDLs within the Jordan River watershed will be concentration based.

  Meaning all sources will be treated the same.

- Assumption: if all sources are at or below the standard = beneficial uses are maintained

Concentration Based TMDLs

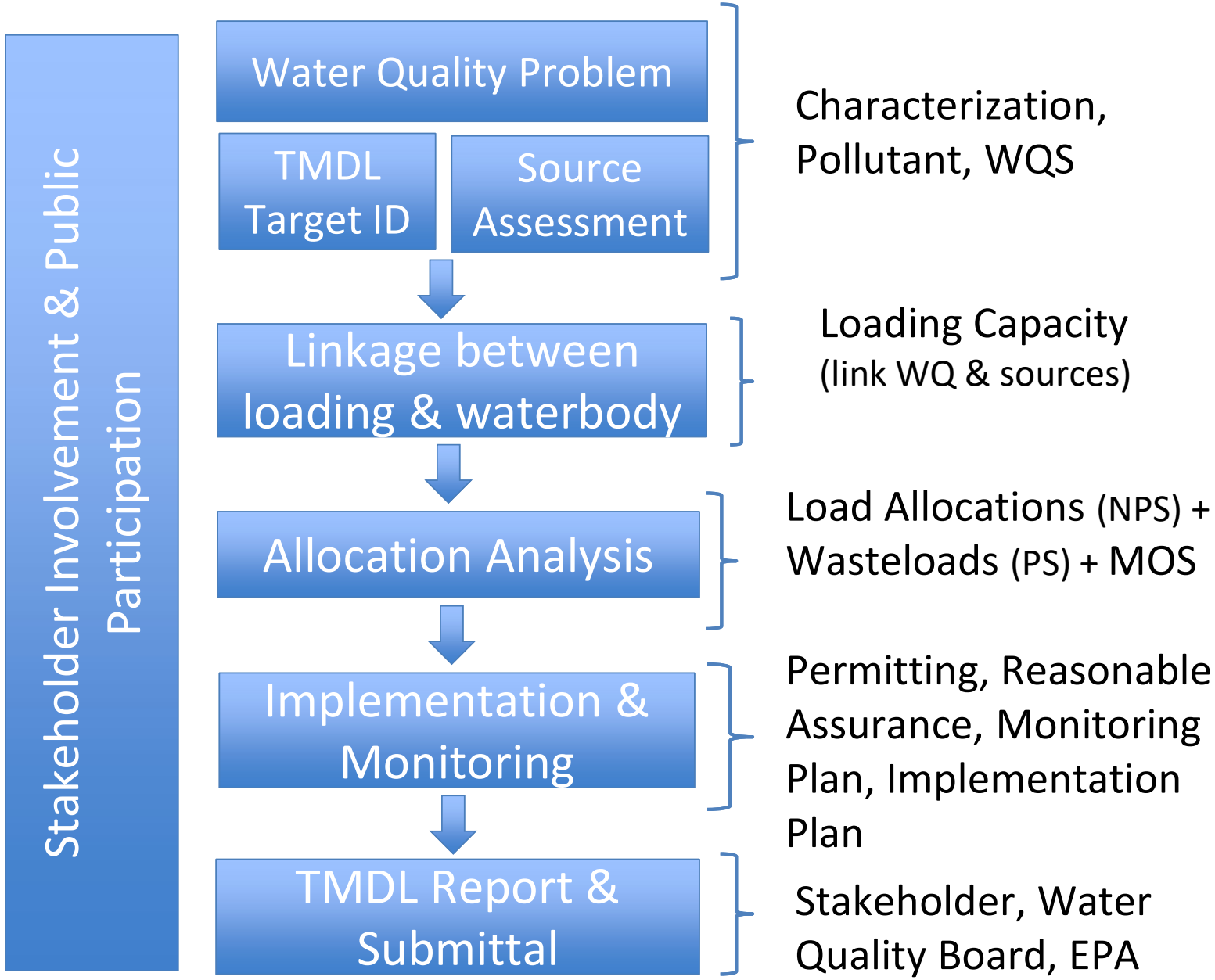
~~$TMDL = \sum WLAs + \sum LAs + MOS$~~

TMDL = Loading Capacity = Water Quality Criterion

Water Quality Standards for 1C and 2B waters:

- 206 MPN/100 mL as a 30-day geometric mean,
- 206 MPN/100 mL as a recreational season geomean, and
- 668 MPN/100 mL as a daily maximum during the recreational season

Typical TMDL Process



TMDL Development

Possible Sources of *E. coli*

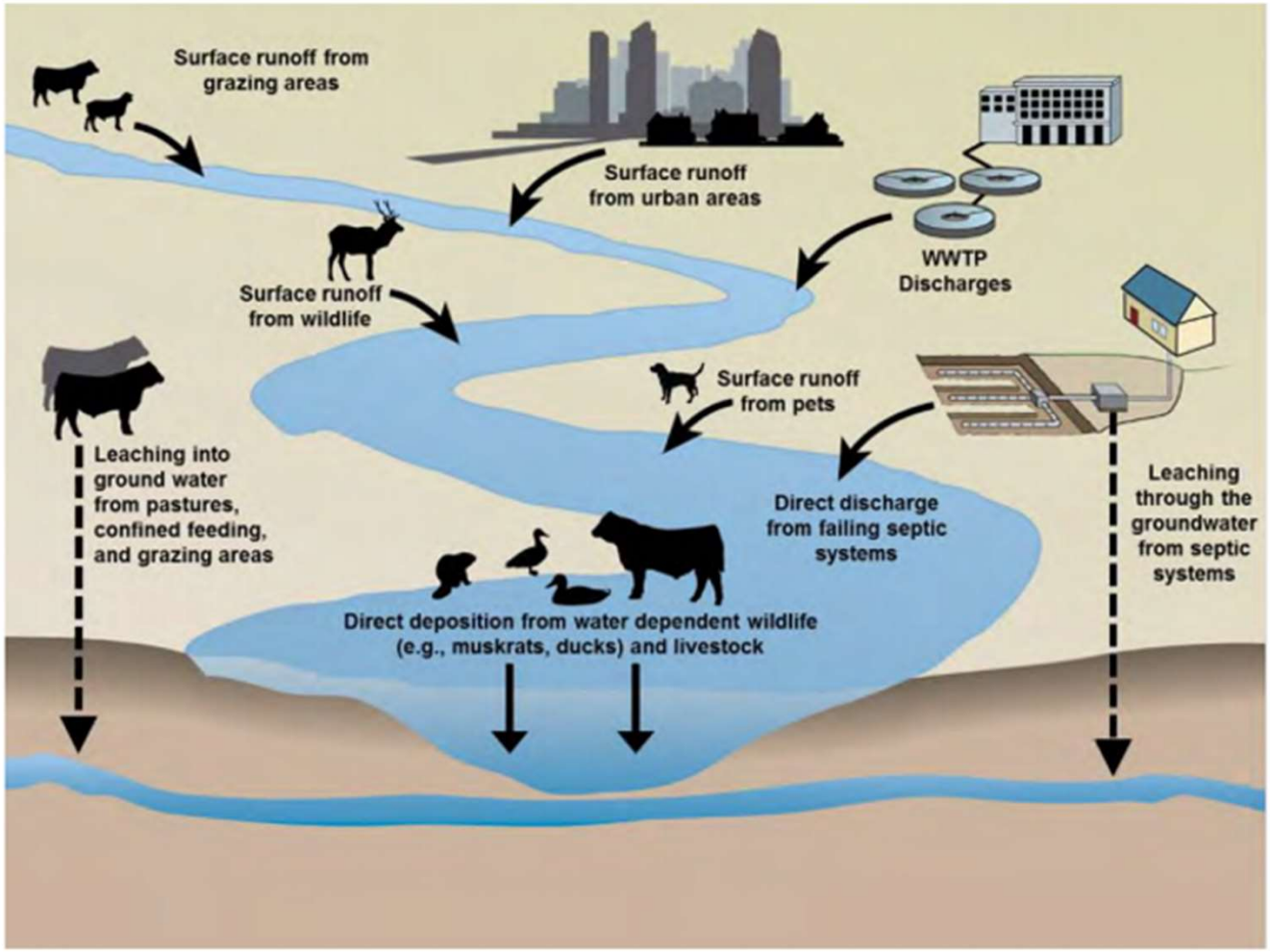


Figure 32. Possible Bacteria Transport Pathways Schematic (WY DEQ, 2018).

Source Assessment: Hydrology

How is water moving within the AU?

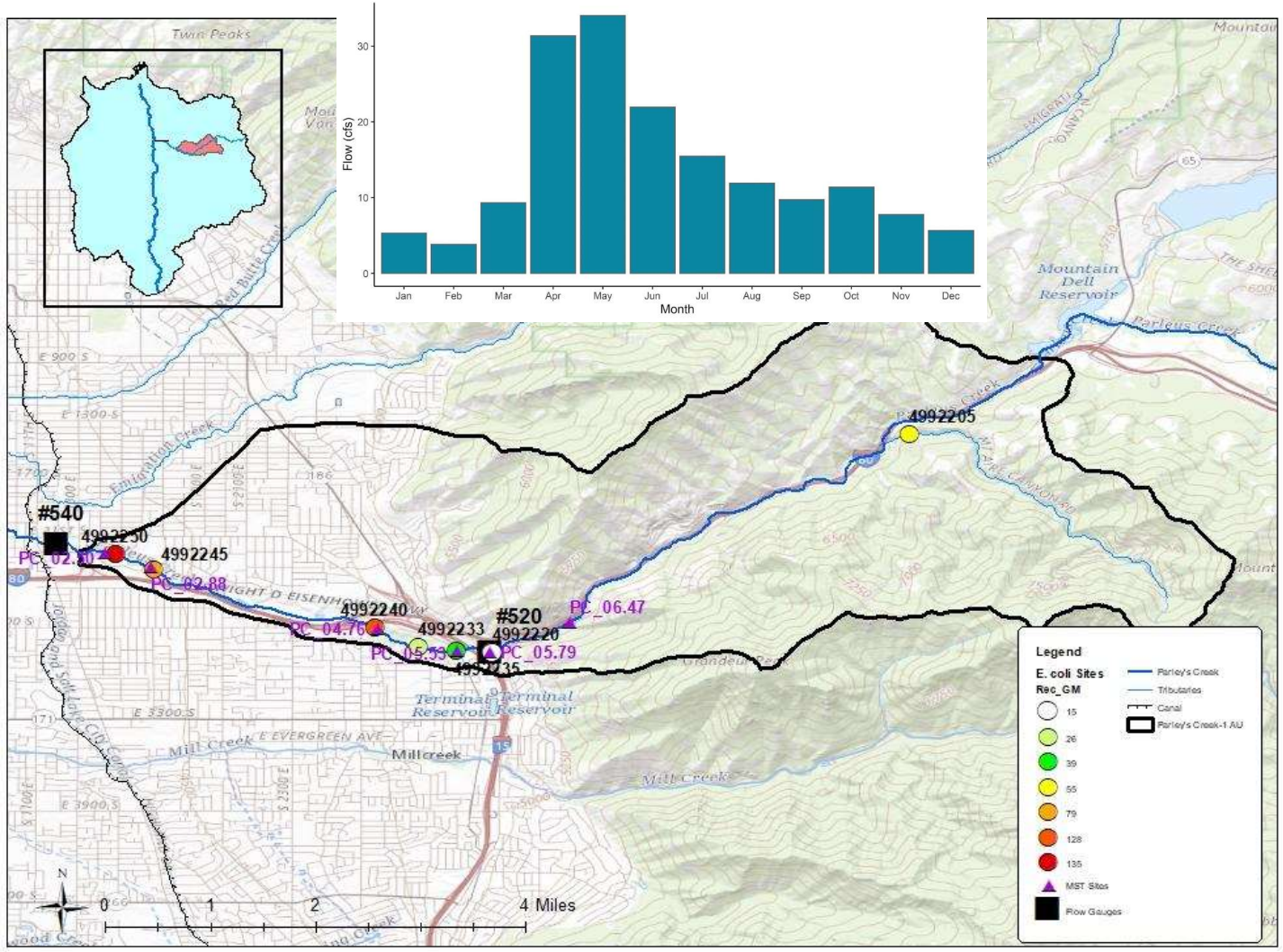
What are the inputs and outputs?

Diversions?

Springs?

Canals?

Seasonality?



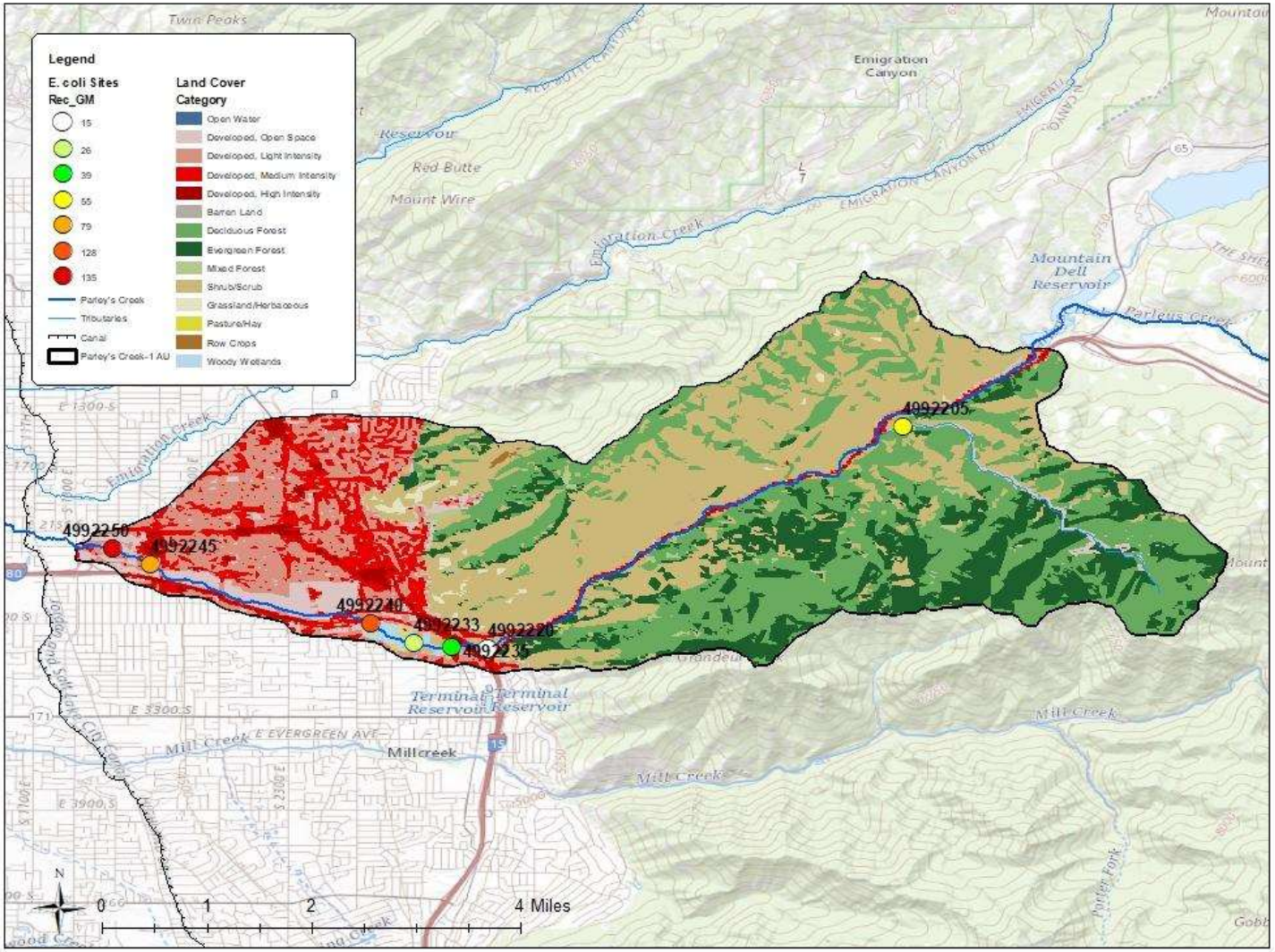
Source Assessment: Land Use

Land use in the AU?

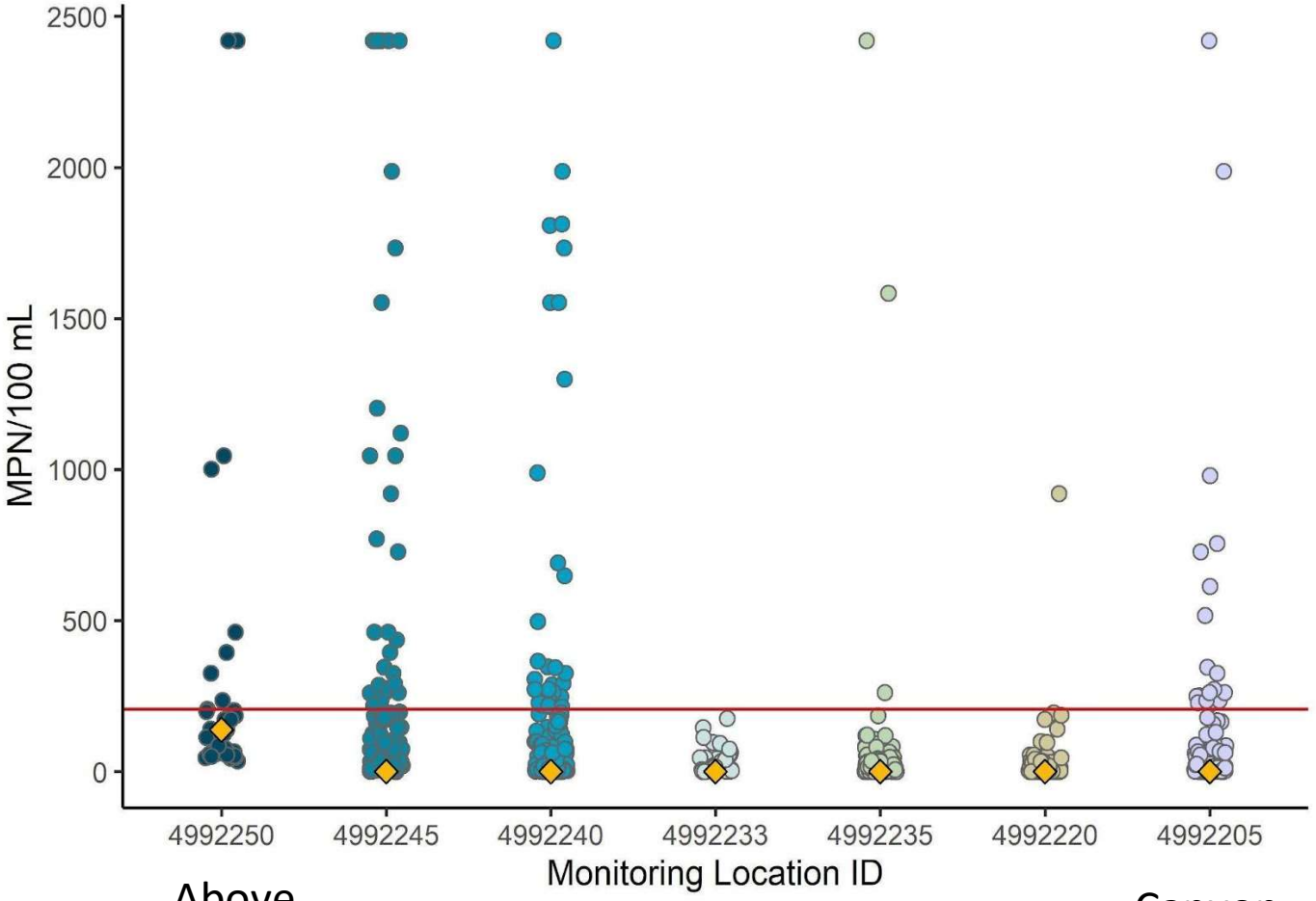
Dominant uses?

Impervious surfaces?

Predicted population change?



Source Assessment: *E. coli* data

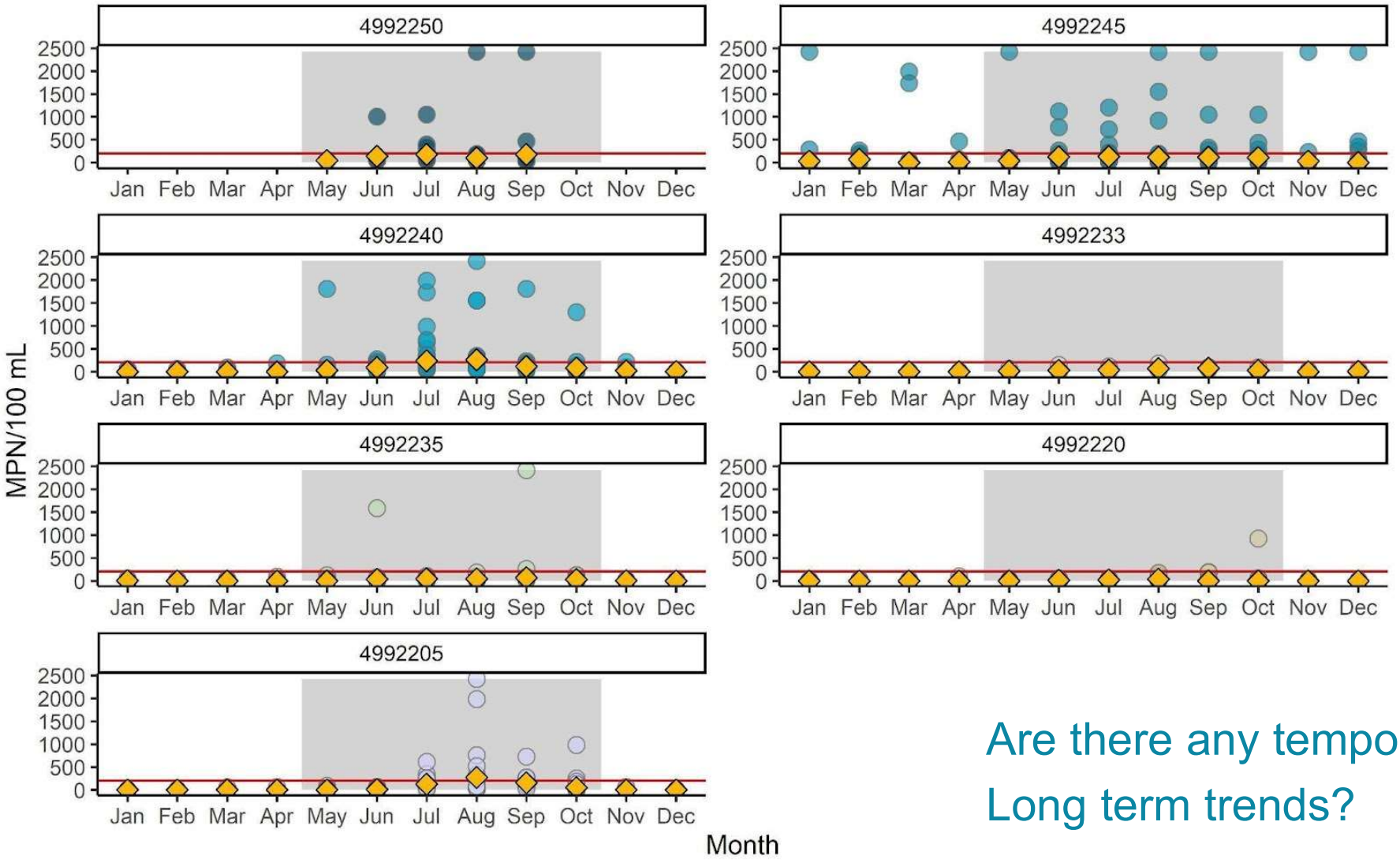


Spatial trends in the *E. coli* data?

Temporal trends?

Source Assessment: *E. coli* data

Above Sugarhouse Pond



Canyon Mouth

Are there any temporal trends?

Long term trends?

Source Assessment: Load Duration Curve

Use flows & E. coli
conc
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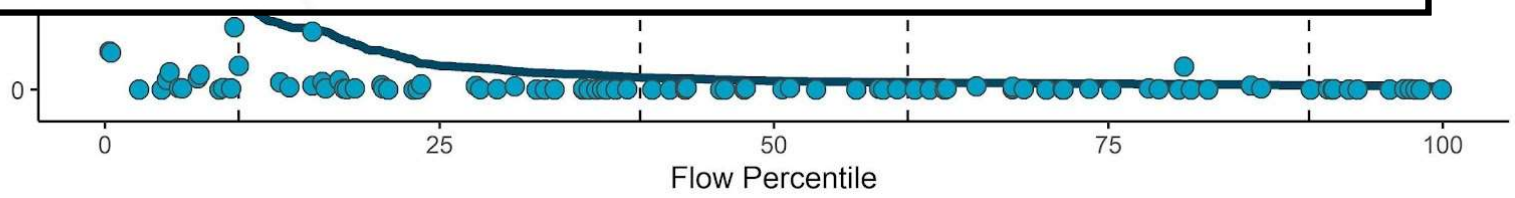
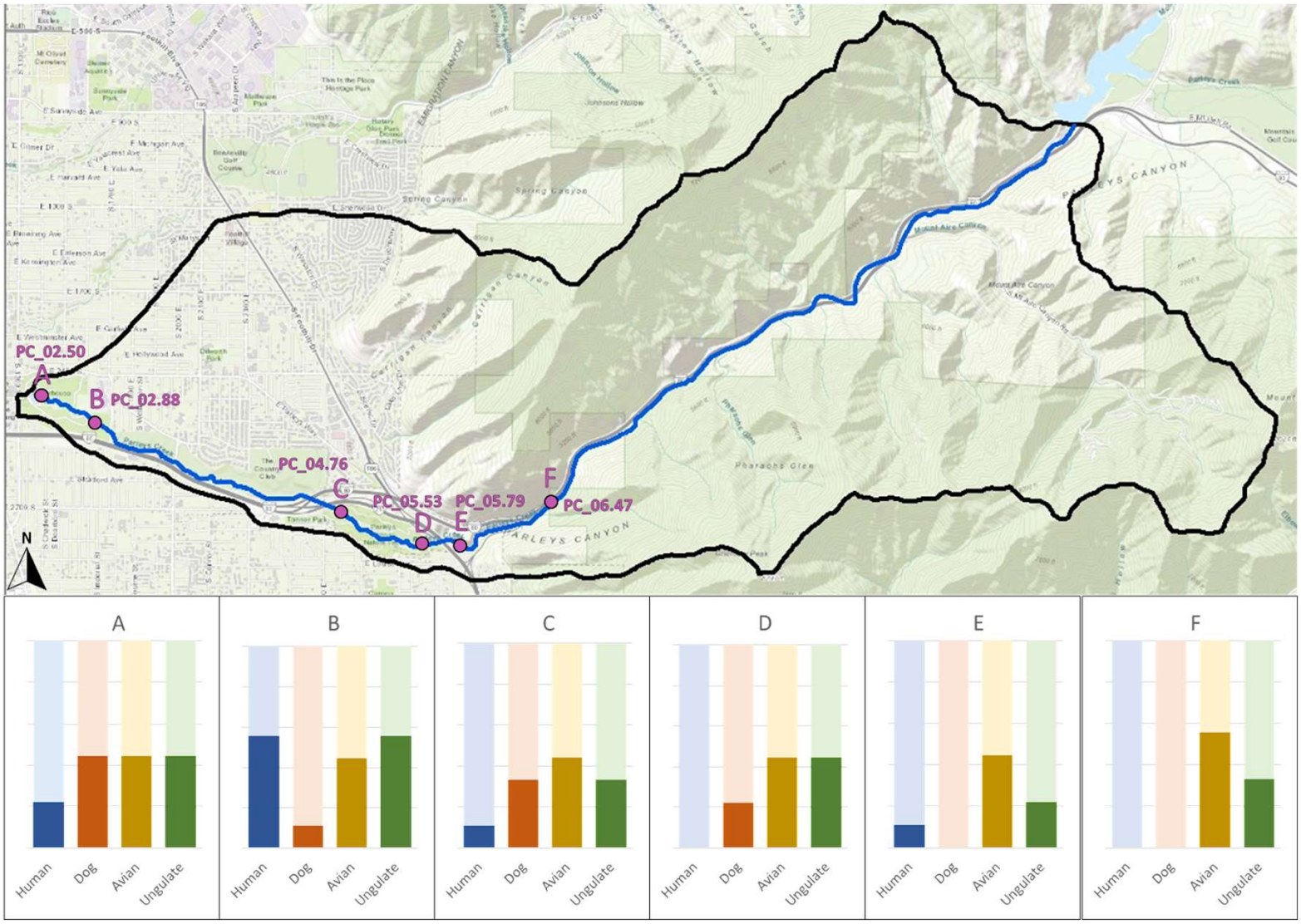
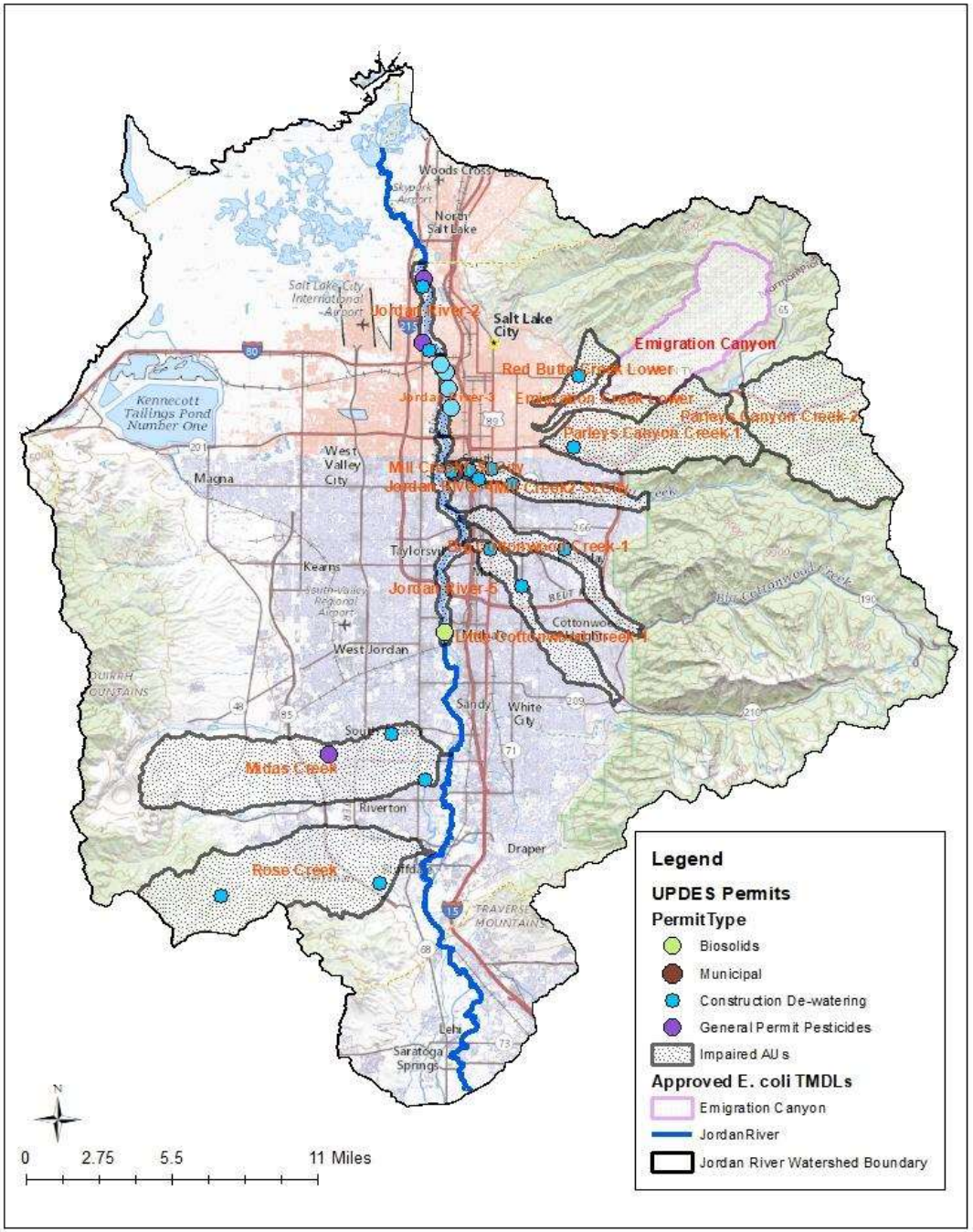
Contributing Source Area	Hydrologic Regime				
	High (0-10%)	Moist (10-40%)	Mid-Range (40-60%)	Dry (60-90%)	Low (90-100%)
Point Sources	Low	Low	Low	Medium	High
Onsite Septic Systems Treatment	Low	Low	Low	Medium	Low
Riparian Areas	Low	High	High	High	Low
Stormwater: Impervious	Low	High	High	High	Low
Stormwater: Upland	High	High	Medium	Low	Low
Bank Erosion	High	High	Low	Low	Low



Source Assessment: Microbial Source Tracking





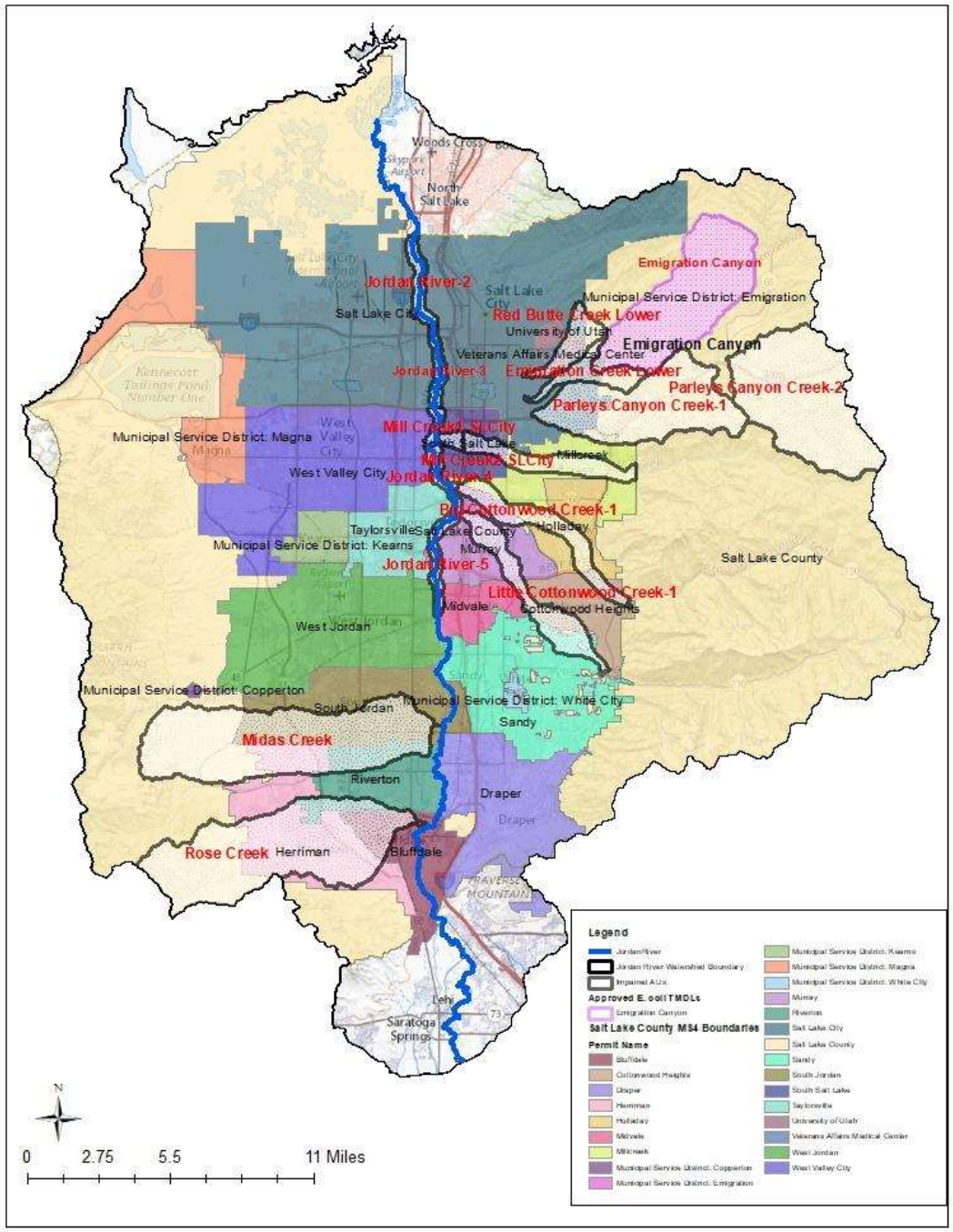
Possible Point Sources:

Wastewater treatment facilities

Construction stormwater

Industrial stormwater

Municipal Stormwater



Possible Point Sources:

Wastewater treatment facilities

Construction stormwater

Industrial stormwater

Municipal Stormwater

Stormwater Monitoring

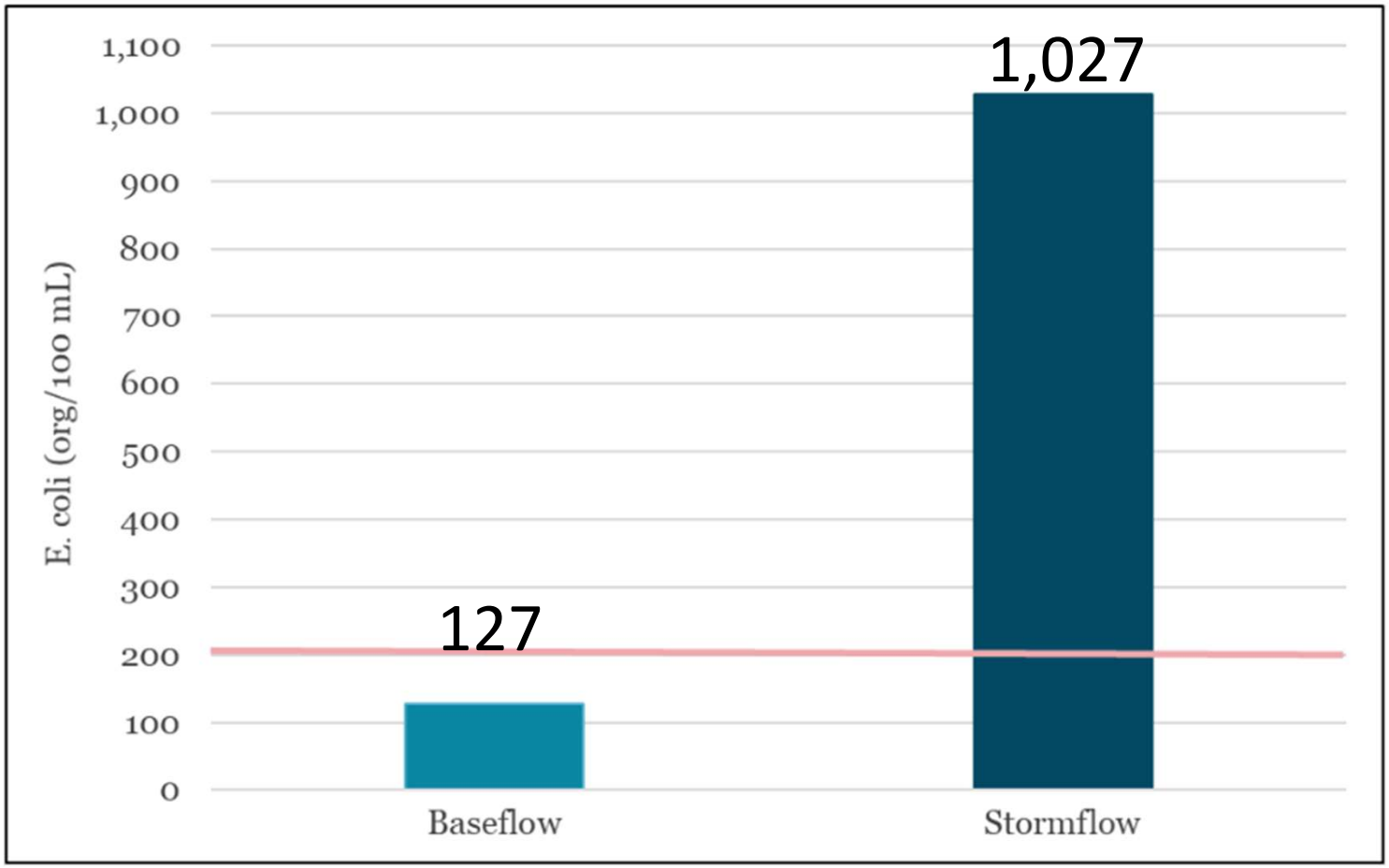


Figure 7. *E. coli* geomean during baseflow and stormflow conditions from several locations monitored by Salt Lake County from 2008 - 2016. The red line denotes the *E. coli* criteria of 206 MPN/100mL.

Stormwater Monitoring

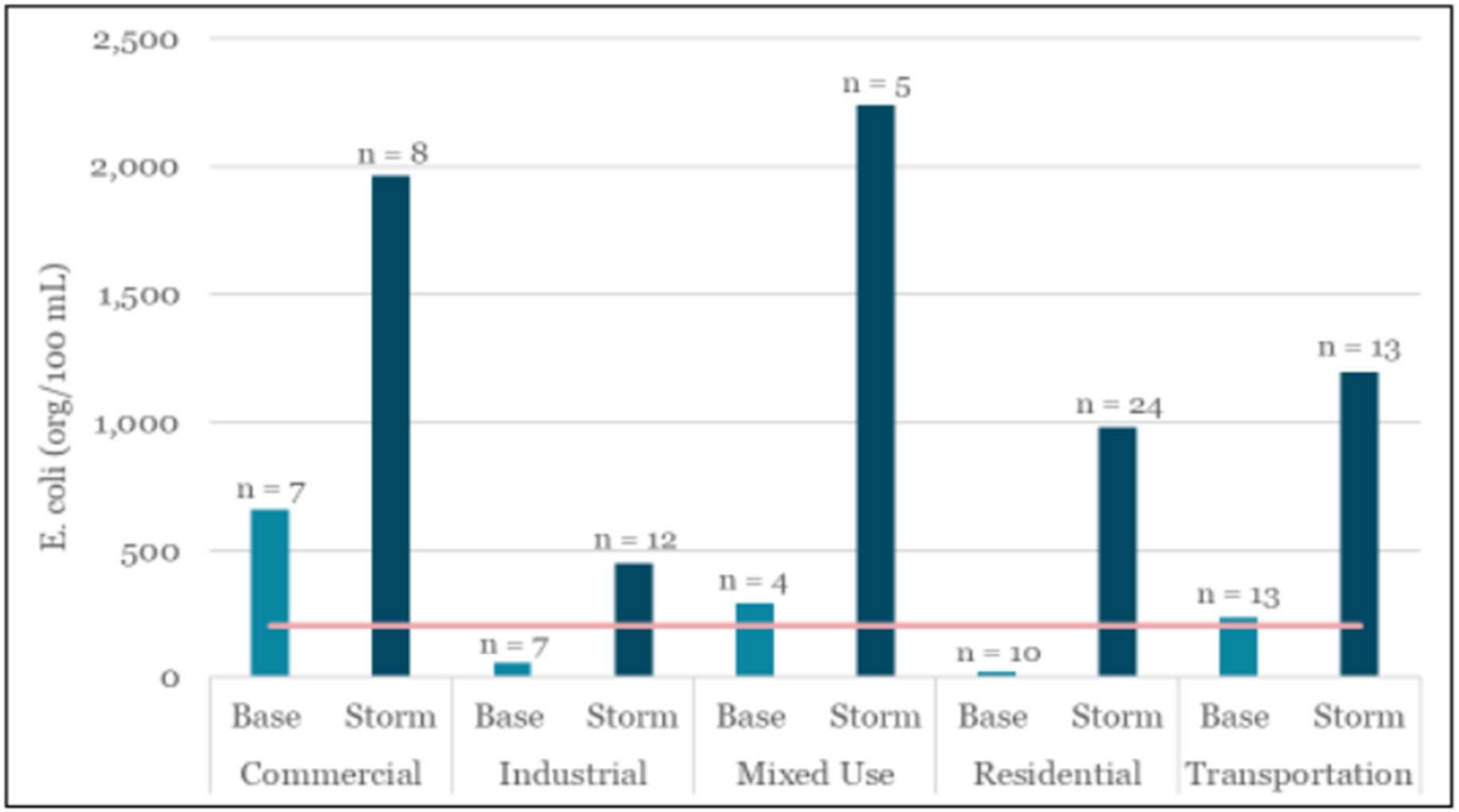
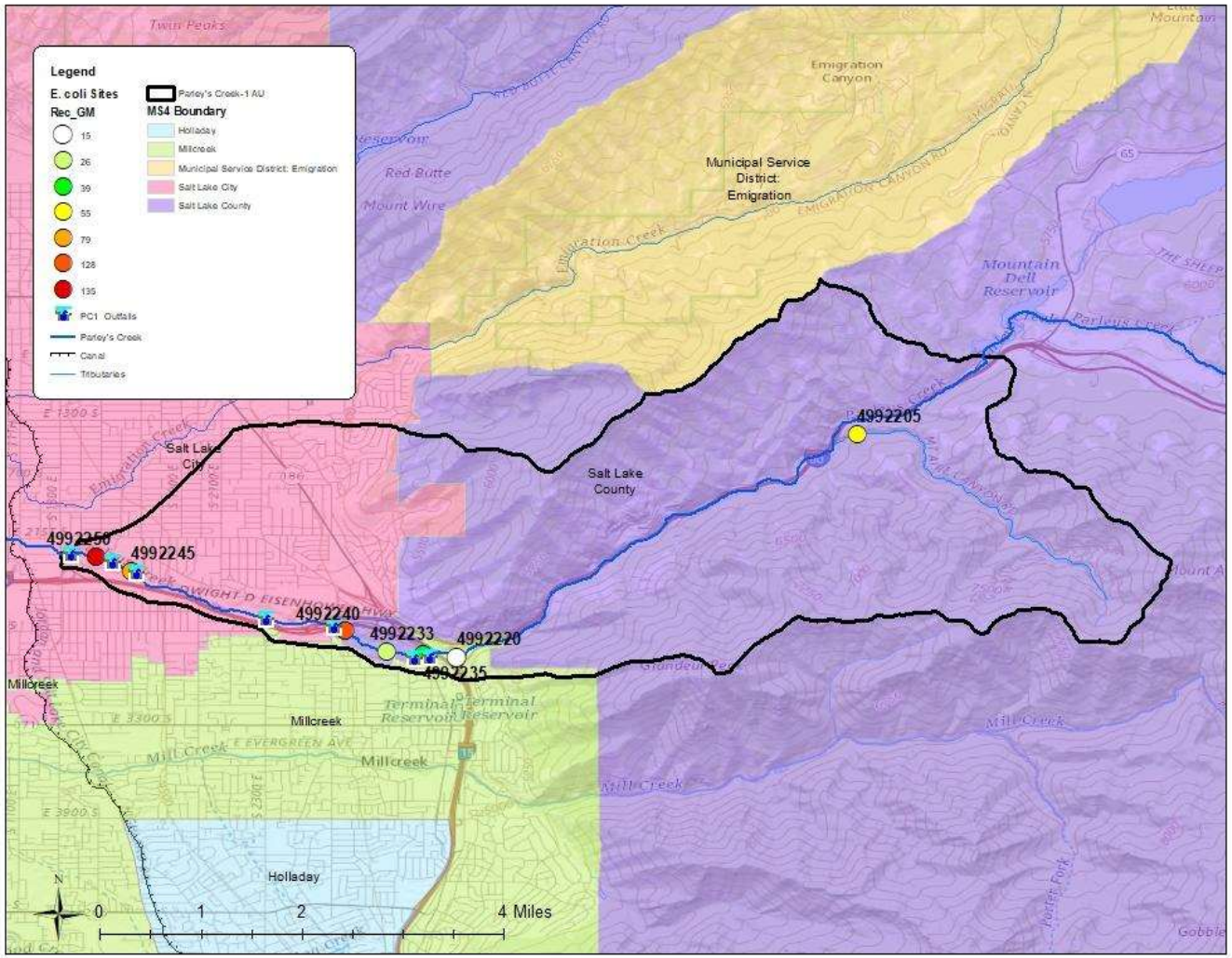


Figure 8. *E. coli* geomean during baseflow and stormflow conditions for different land use types monitored by Salt Lake County from 2008 - 2016. The red line denotes the *E. coli* criteria of 206 MPN/100mL.

Possible Point Sources: Parleys



Wastewater treatment facilities

Construction stormwater

Industrial stormwater

Municipal Stormwater

Possible Nonpoint Sources

Septic Systems

Agricultural: Grazing, Irrigation, pasture, etc.

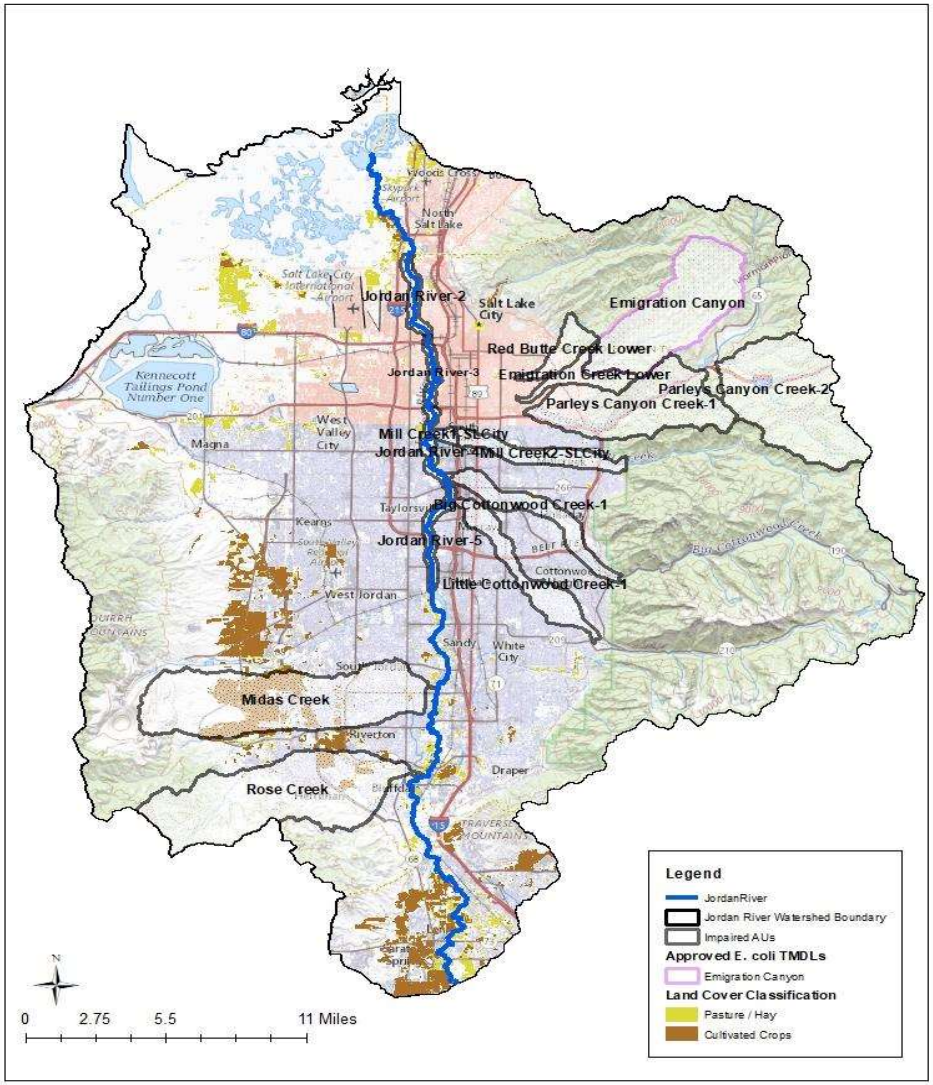
Agricultural: Canals

Recreationists / Unhoused

Pets

Nuisance wildlife species

Wildlife species



Possible Nonpoint Sources: Parleys

Septic Systems

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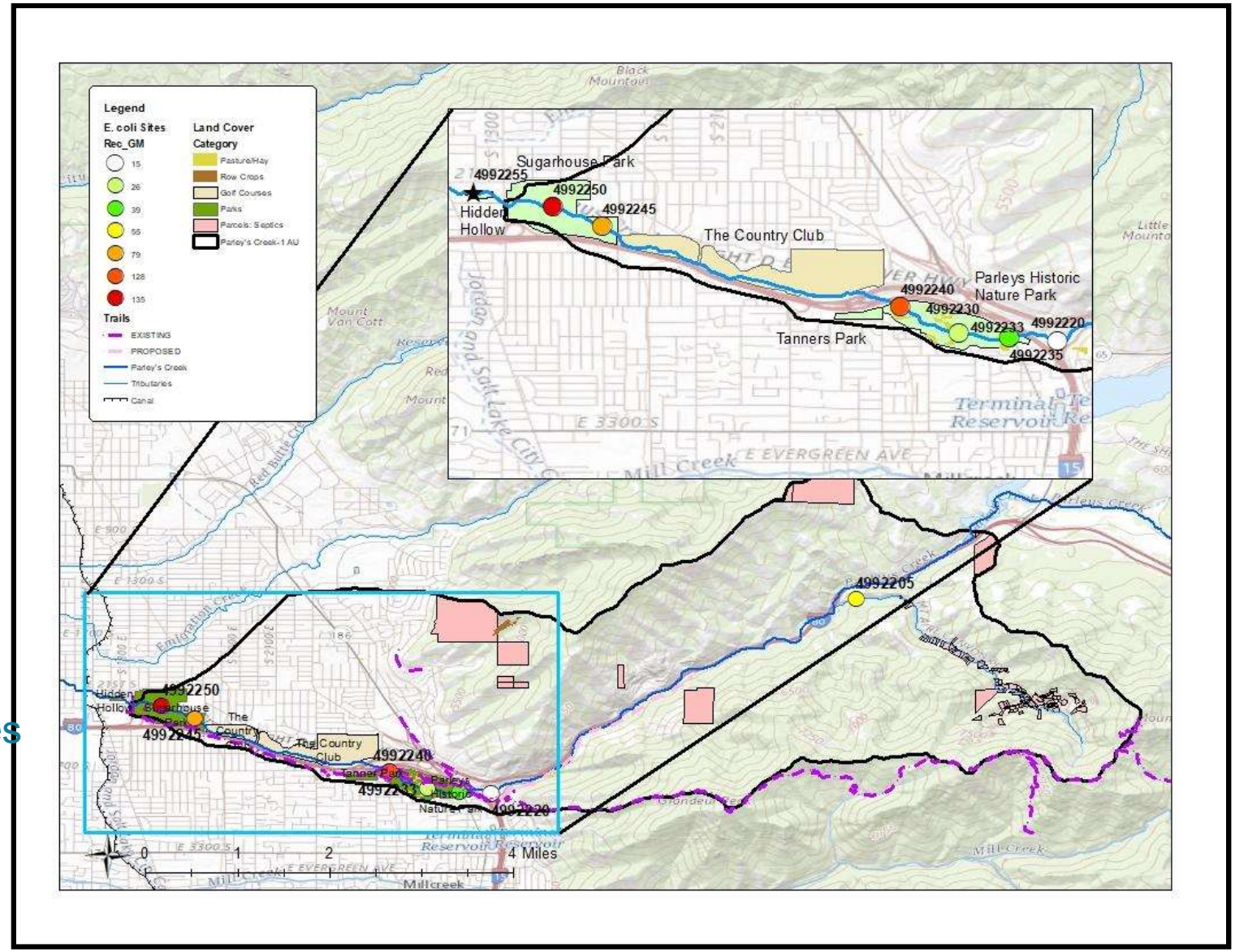
Wildlife species



What Can MS4s Expect?

Modification of permits late 2022 or early 2023 to include permit requirements addressing the TMDL.

Permit requirements will include enhancements to the existing 6 MCMs:

- Education and Outreach;
- *E. coli* Source Inventory;
- Street Sweeping;
- Review of “High Priority” Permittee Owned and/or Operated Facilities;
- Evaluation of Standard Operating Procedures (SOPs);
- Low Impact Development (LID);
- Retrofit Plans; and
- Wet-Weather Monitoring (**PHASE 1 ONLY**)

Permittee’s will be required to report annually on their compliance with the TMDL as part of their annual report response.

TMDL Report

Main Report

- TMDL Overview
- Bacteria Pollution
- Water Quality Standards
- TMDL
- Sources
- Monitoring Plan
- Implementation Strategy
- Public Participation
- References

Appendices

- A: Big Cottonwood Creek
- B: Little Cottonwood Creek
- C: Mill Creek 1 and 2
- D: Parleys Creek 1 and 2
- E: Lower Emigration Creek
- F: Lower Red Butte Creek
- G: Midas Creek
- H: Rose Creek
- I: Jordan River 2, 3, 4 and 5

Timeline

Date	Schedule
February 5, 2019	Kickoff Stakeholder Meeting (Jordan River Watershed Council)
March 21, 2021	Salt Lake County Stormwater Coalition: TMDL Update
April 21, 2021	Salt Lake County Stormwater Coalition: TMDL Tracking Tool
May 26, 2021	Water Quality Board Introduction
June 2021	Jordan River Commission Technical Advisory Council: TMDL and Technical Approach
November 2021	Jordan River Watershed Symposium
Summer '21- Spring 22	TMDL Technical Approach, Report Writing
April 2022	Stakeholder engagement: Salt Lake Conservation District, SLCo Stormwater Coalition, UDAF
May 2022	Internal review
June 2022	Stakeholder engagement: MS4 specific, Jordan River Commission Stakeholder draft report
July 2022	Stakeholder review
August 2022	Water Quality Board preliminary approval & initiate rule-making 30-day rulemaking process (official public comment period)
September 2022	Address public comments, Water Quality Board request for formal adoption into rule, final submission to EPA
Winter 2022/2023	Amend existing MS4 permits

Questions

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