

# Developing the Montana Pesticide Stewardship Partnership Program



## Montana Pesticide Stewardship — Partnership Program —

Rachel Malison, Janelle Groff,  
Jared Glass

October, 2024



**FLATHEAD LAKE  
BIO STATION**  
UNIVERSITY OF MONTANA



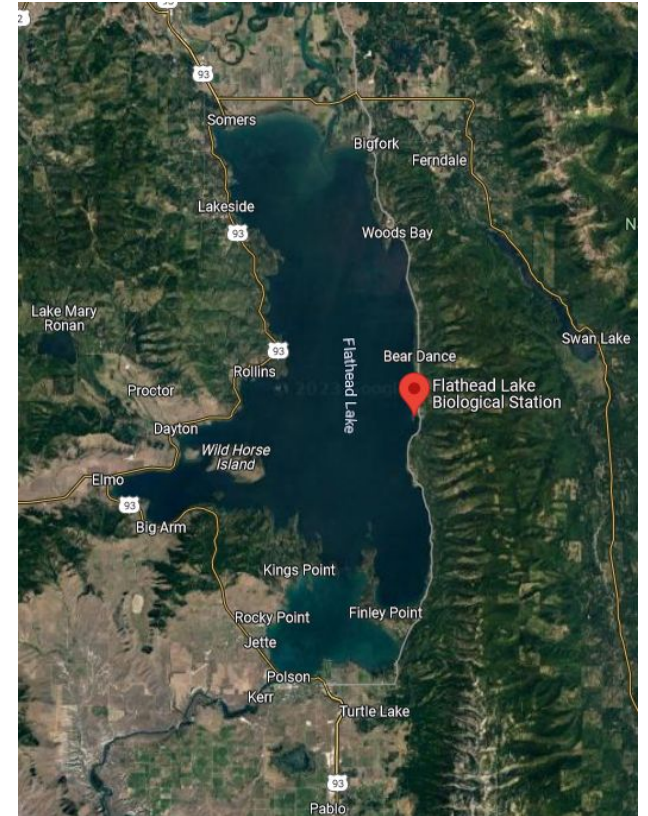
# Flathead Lake Biological Station

## Sentinel of the lake since 1899

- 2<sup>nd</sup> oldest Biological field station
- Celebrating 125 years
- Moved to yellow bay 1908
- Hub for freshwater research:
  - Long-term lake monitoring
  - Aquatic invasive species studies
  - Published research in ecology, microbiology, limnology



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# AmeriCorps



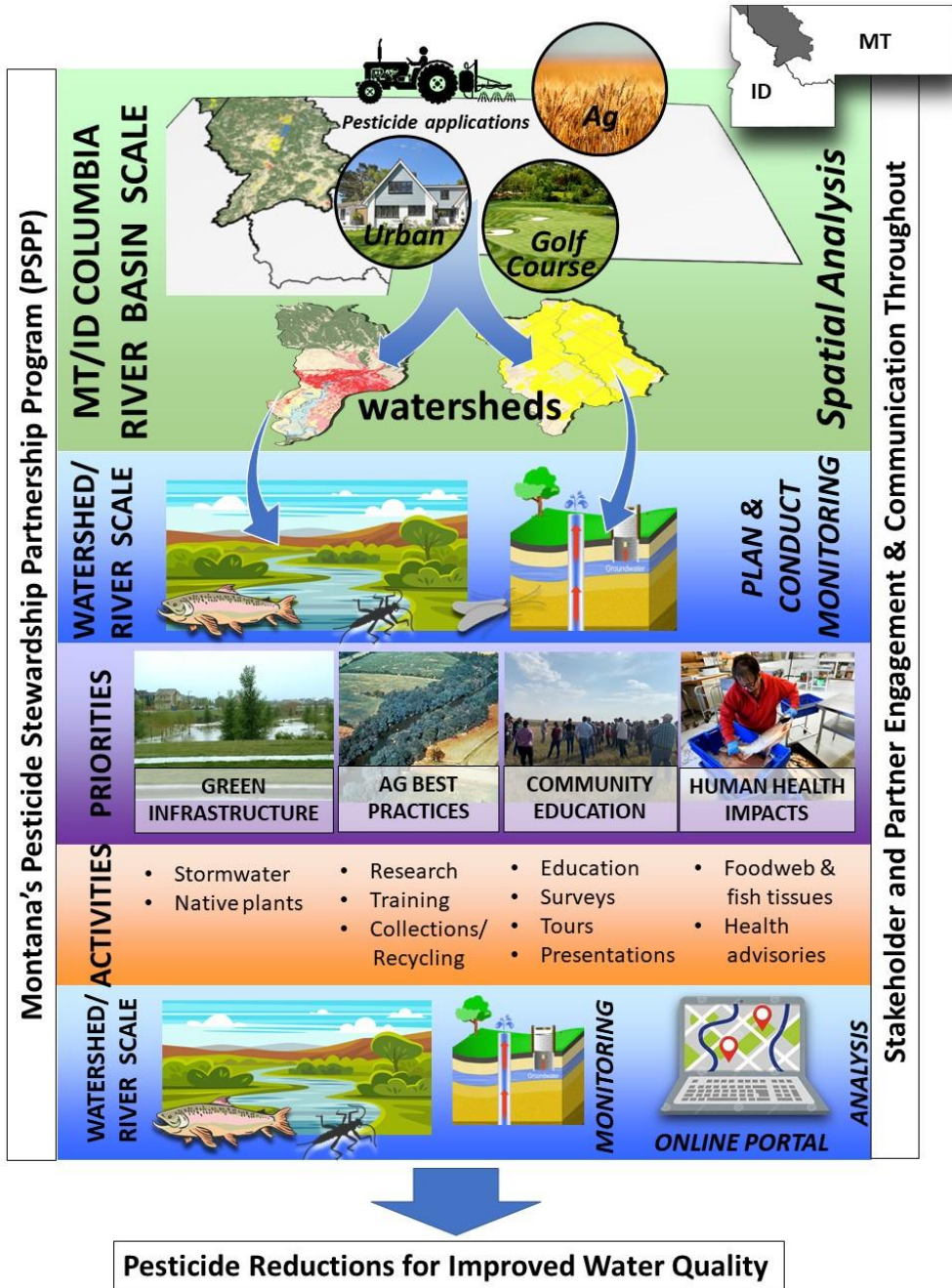
**AmeriCorps**

- AmeriCorps started in 1993
  - National Community Service and Trust act
  - 1933 FDR's Civilian Conservation Corps (CCC)
- AmeriCorps Mission
  - Bring out the best of America
  - Improve lives, strengthen communities, and foster civic engagement
  - "We get things done"
- Multiple state and national chapters
  - Vista, Trail crew, National Civilian Community Corps
  - Montana Conservation Corps

# Big Sky Watershed Corps

- Under Montana Conservation Corps
  - Only program to require an undergraduate degree
  - Placed with a host site through IPP
- 10 ½ month service
  - January-November
- ~50 members this year
- Hands on experience and training
  - BDA, AIS, Water Quality





# MT PSPP



- Official Award: 10/30/2023
- Upper Columbia of Montana
  - ~65,100 Km<sup>2</sup>
  - ~10.5 million football fields
- 12 counties
- Kootenai watershed
- Build and leverage partnerships and collaborations



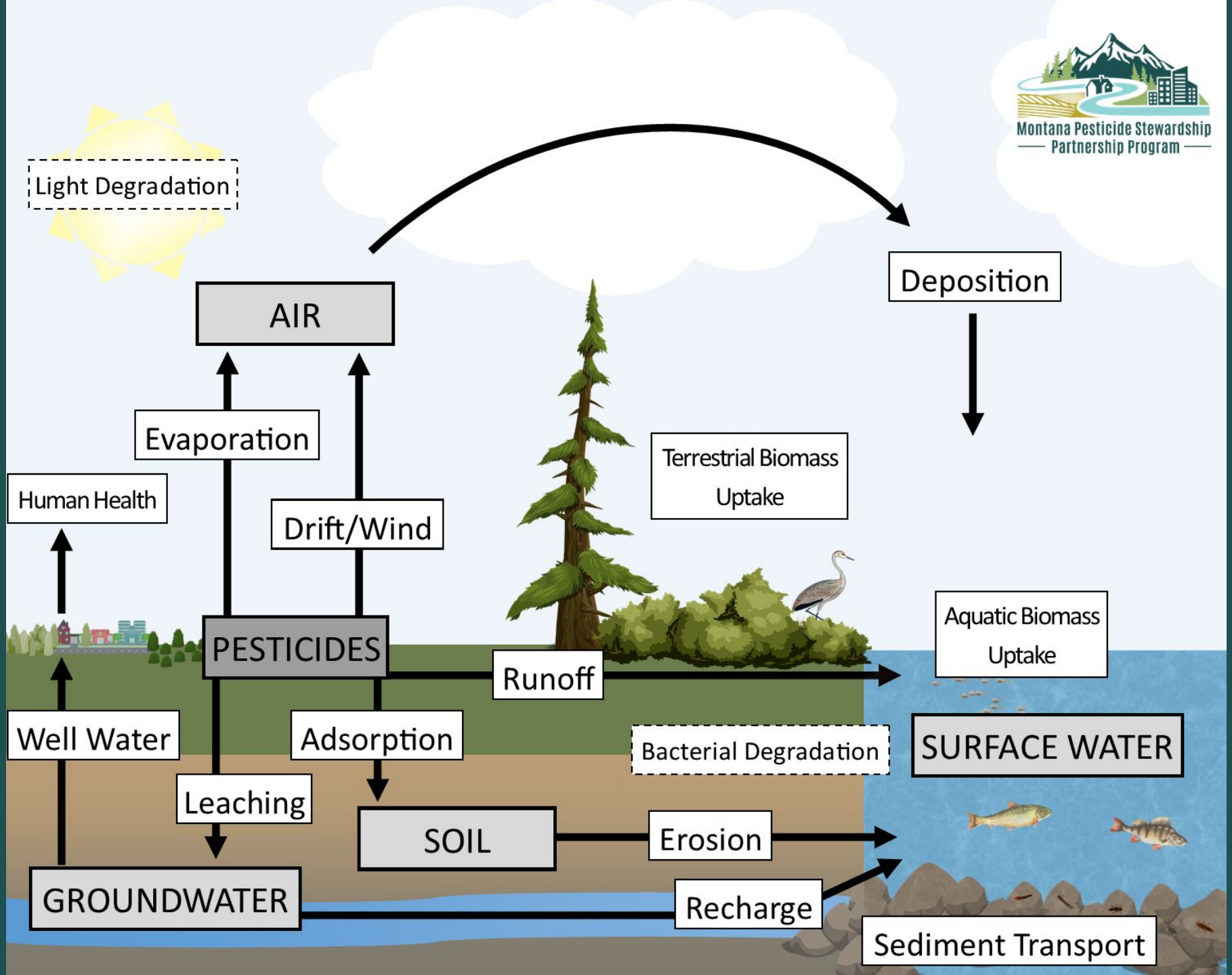
## MT PSPP Team:

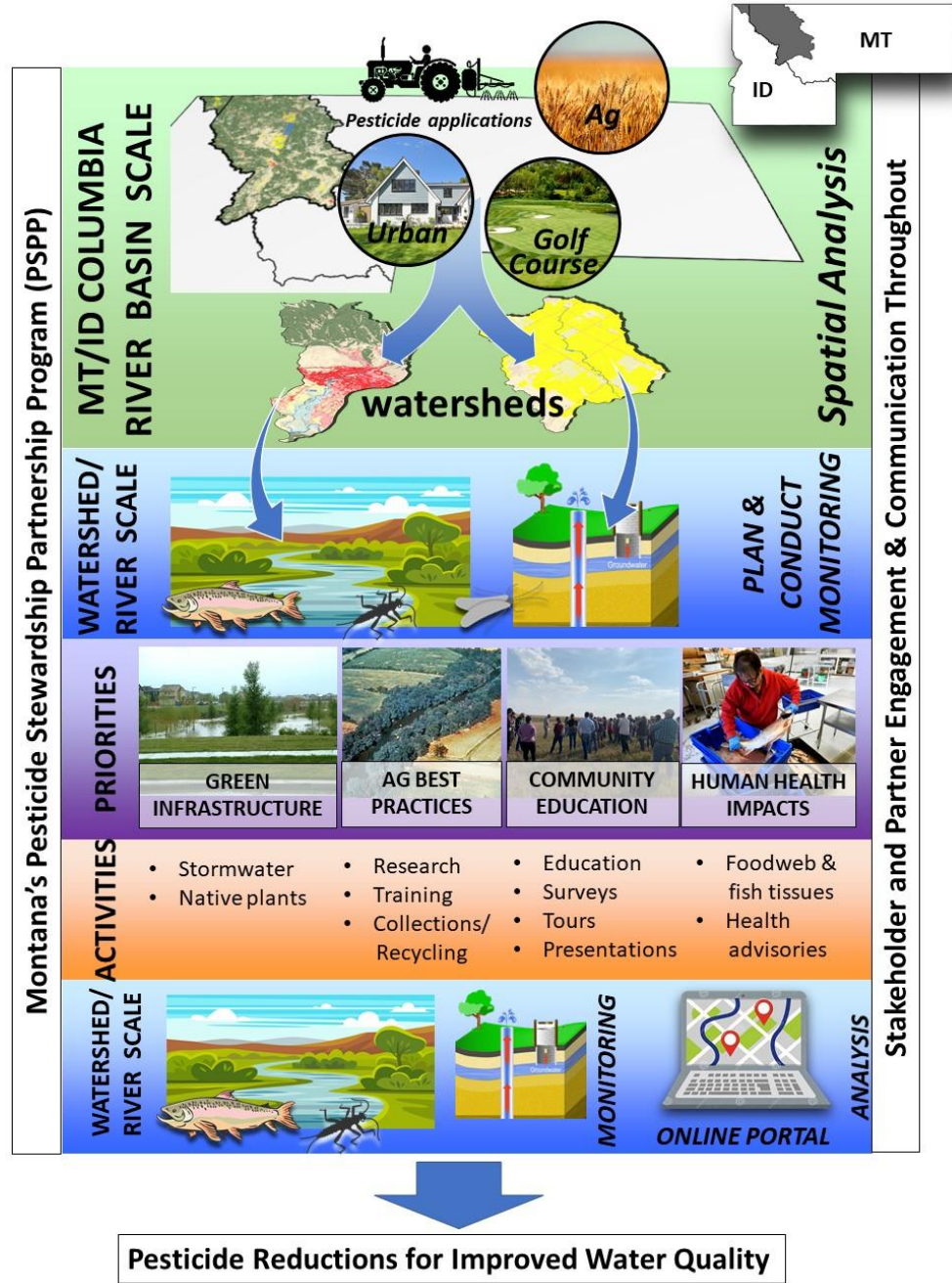
- **Dr. Rachel Malison**
  - Assistant Research Professor
  - MT PSPP Principal Investigator
  - MMW Program Leader
- **Janelle Groff**
  - Research Coordinator
- **Jared Glass**
  - Big Sky Watershed Corps Member



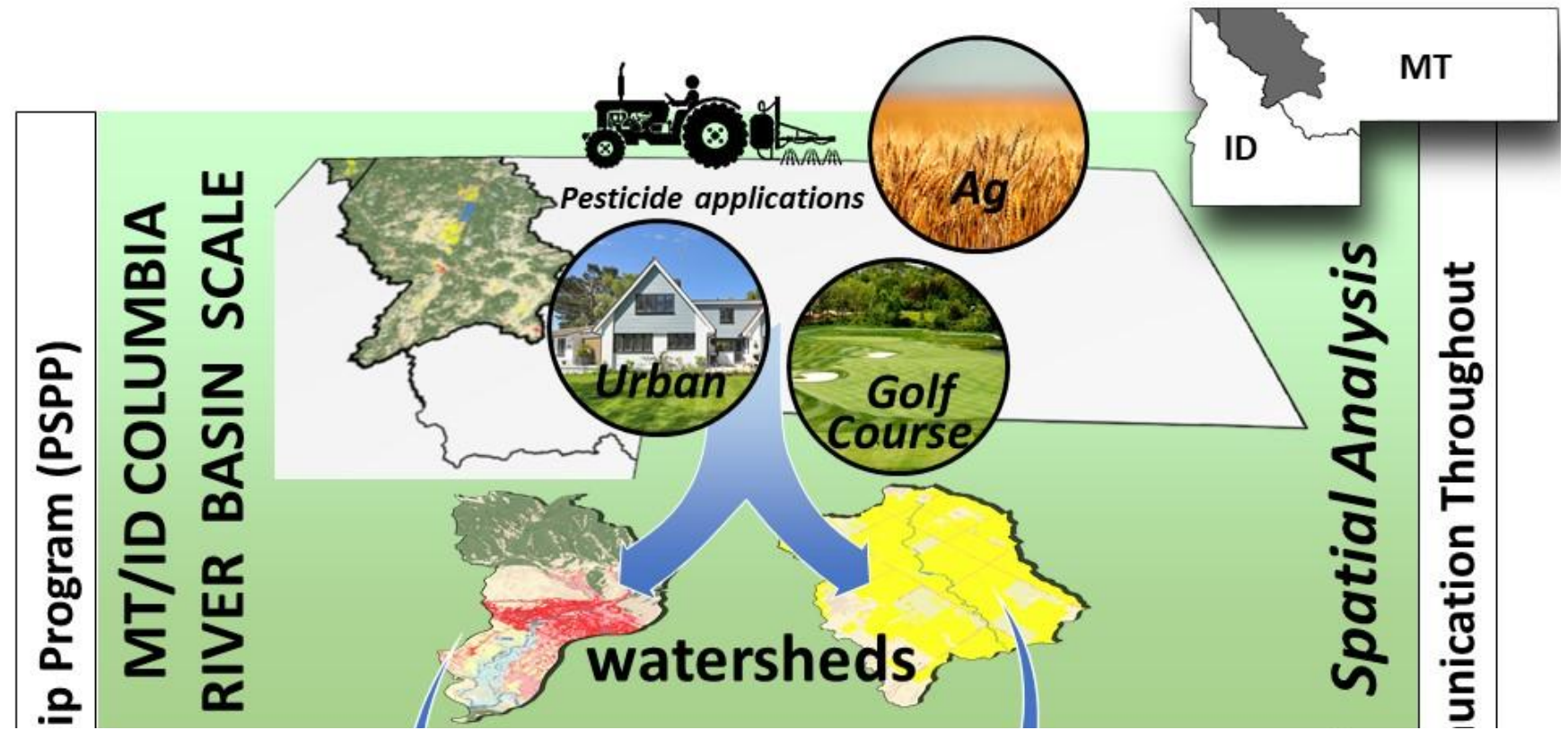
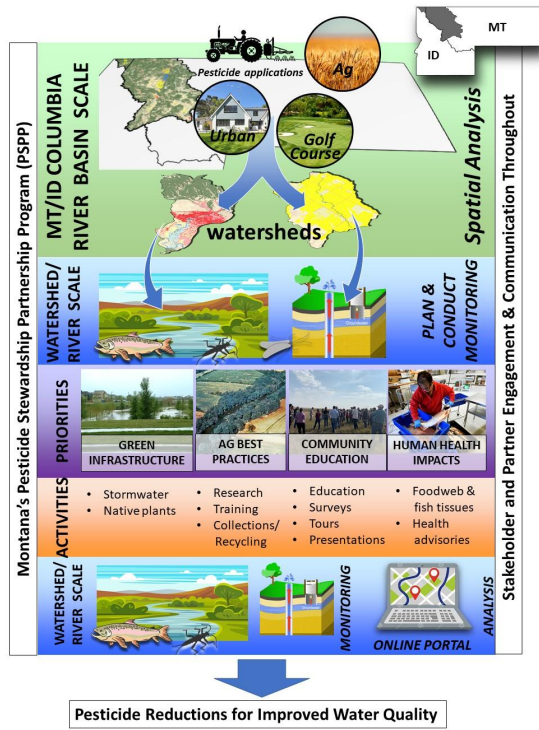
# Pesticides in Freshwaters

- Designed to kill organisms (pests, weeds, fungal diseases)
  - Includes insecticides, herbicides, fungicides
- However, equally effective at killing non-target organisms
- Estimated 1 billion pounds of pesticides are sprayed each year
- We do not have baseline data, or a monitoring program
- Do not know risk, nor will we know if actions will make a difference
- Pesticides are complex chemicals that interreact in numerous ways with in environment



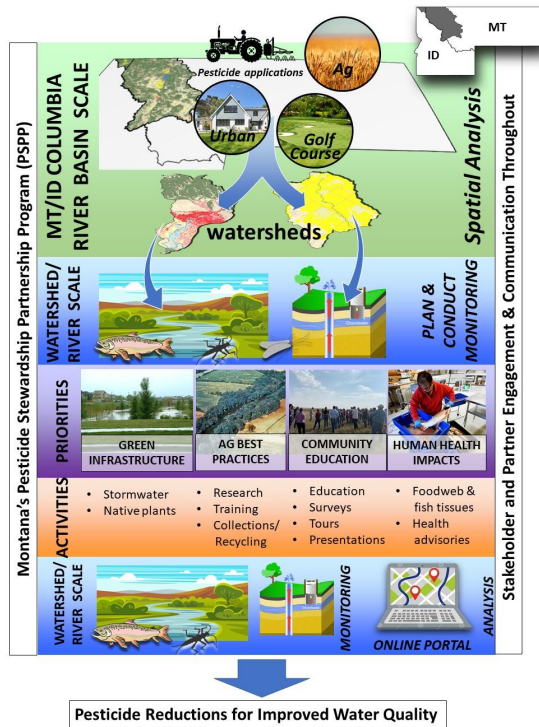


**Pesticide Reductions for Improved Water Quality**



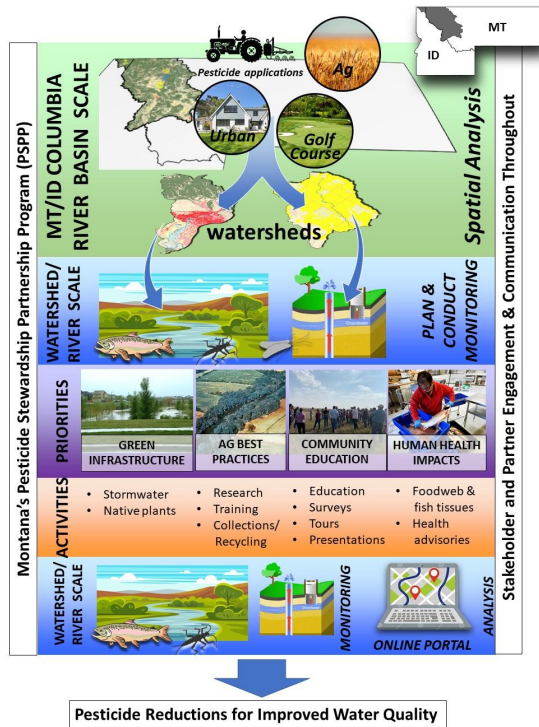
## Broad Scale: Spatial Analysis

- Design and map a broad-scale reconnaissance sampling plan
- Led by FLBS, with MDA
- Diane Whited – GIS specialist



## Watershed Scale: Monitoring for Pesticides

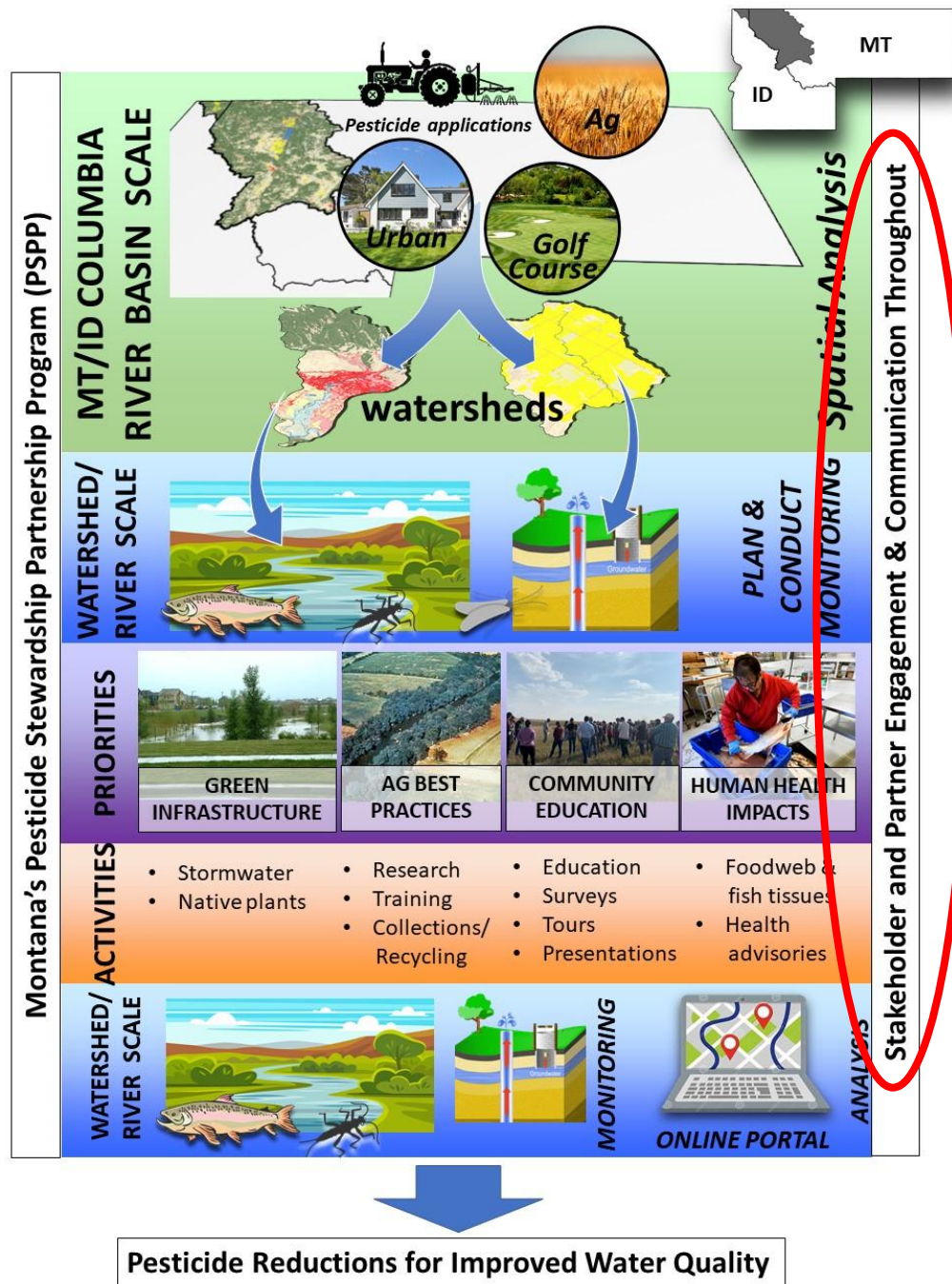
- Design and carry-out broad-scale monitoring for pesticides in surface waters and groundwater
- Sample targeted land-cover types (e.g. golf courses)
- But first... **Quality Assurance Project Plan (QAPP)**



## Watershed Scale: Monitoring for Pesticides

- Engage volunteer-led water quality monitoring groups and stakeholders for sample collection
- Broad scale monitoring will inform other targeted monitoring of watersheds with high pesticide concentrations





## Stakeholder and Partner Network:

- **Collaborators:** a network working together to understand and reduce pesticide pollution
  - Actively engaging and connecting with new partners
  - Monthly Zoom Meetings
- **Subaward Recipients:** Implementing various projects throughout the basin
- **Contracts:** competitive process to fund services that reduce pesticide use and/or pesticide pollution
  - Agricultural BMPs
  - Green infrastructure
  - Education and outreach

## Subaward Recipients:

- MT Department of Agriculture
  - Waste Pesticide Disposal Program
  - Pesticide Container Recycling Program
  - Groundwater Monitoring Program
- MT Department of Environmental Quality
  - Education and outreach, permits
  - Native plants and buffers
- Montana Watershed Coordination Council
  - New connections
  - Education and outreach
- Montana State University Extension
  - Lysimeter research
  - Pesticide Education Program
- Kootenai Tribe of Idaho
- Confederated Salish & Kootenai Tribes
  - Fish tissue and food web analysis
- City of Missoula
  - Green infrastructure



## Letters of Support

- Montana Trout Unlimited
- Montana Conservation Corps
- Flathead County Conservation District
- SalmonSafe
- Bitterroot River Protection Association
- Clearwater Resource Council
- Kootenai Watershed Allies
- Yaak Valley Forest Council



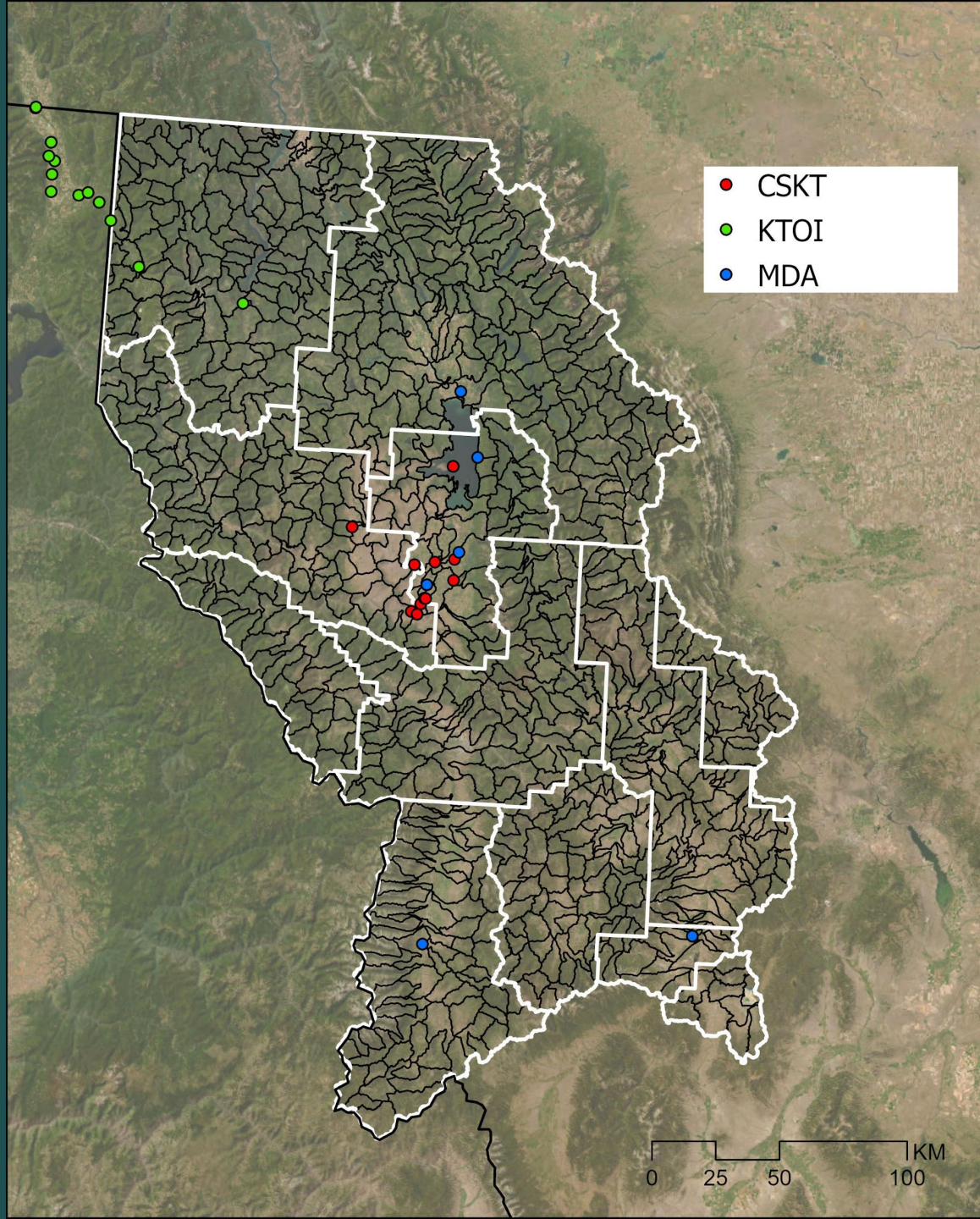
## (Some) Partners & Collaborators

- Flathead Lakers
- GrowSafe – Missoula
- Science on the Fly
- SalmonFly Project
- Missoula City County Health Department
- Western Montana Conservation Commission
- Conservation Districts
- Weed Districts
- USFS Weed Specialists
- Watershed Groups



# Monitoring Plans





# Site Selection Framework: Land Use Categories

**General/  
Nonspecific**

**Discrete**

Land Use Type	Category	% Land Cover	Risk
<b>Forest</b>	Active Timber Operations	61.60%	?
	Grazing Allotments		
	Stream Intersects with Active Timber Operations		
	Stream Intersects with Roads Used to Reach Active Timber Operations		
<b>Agriculture</b>	Field Crop	3.60%	?
	Orchards		
	Livestock		
<b>Urban</b>	Low Density	1.44%	?
	Moderate Density		
	High Density		
<b>Discrete Land Uses</b>	Golf Courses	0.03%	?
	Airports	0.02%	
	Green Spaces/Parks	0.72%	

\* From 2021 National Landcover Dataset from USGS

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# Road and Stream Buffer Criteria for Pesticide Risks

Stream Order	Buffer size (m)
1	5
2	10
3	20
4	30
5	40
6	50
7	60
8	70

Road Type	Buffer size (m)
Interstate/Primary	30 + Surface Width*
Secondary	15 + Surface Width*
Other	3

\*Surface width of roads included with Interstate/Primary and Secondary roads.

Stream database – National Hydrography Dataset USGS  
Roads database – MT DOT and USFS

# Scaling and Weighting Pesticide Risk for Forested Areas

All metrics of pesticide risk scaled from 0 to 100, 100 being a higher risk at the HUC 12 scale

1. Area of Grazing/Range Allotments (Area) (0 – 100)
2. Area of Timber Harvest (Area) (0- 100)
3. Area of Timber Harvest/Stream Intersect
4. Area of Roads /Stream Intersect (0- 100)



**Overall Risk = Average of all Risks**

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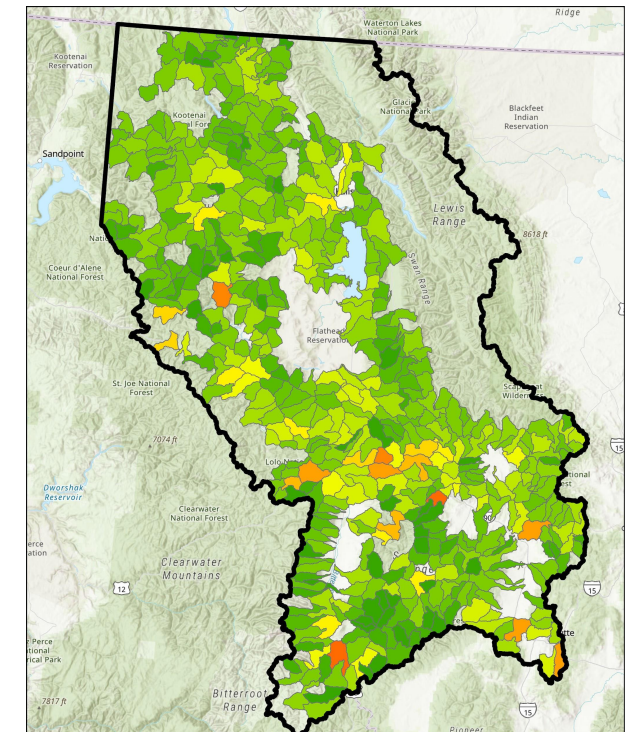
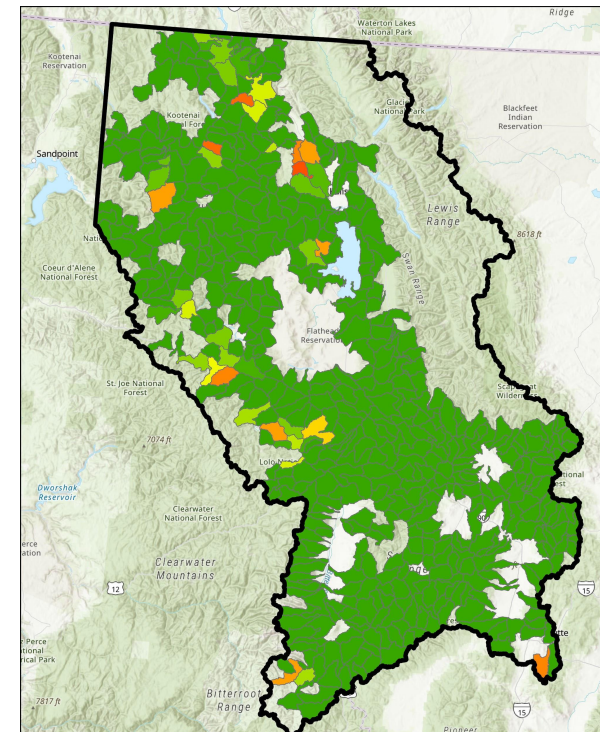
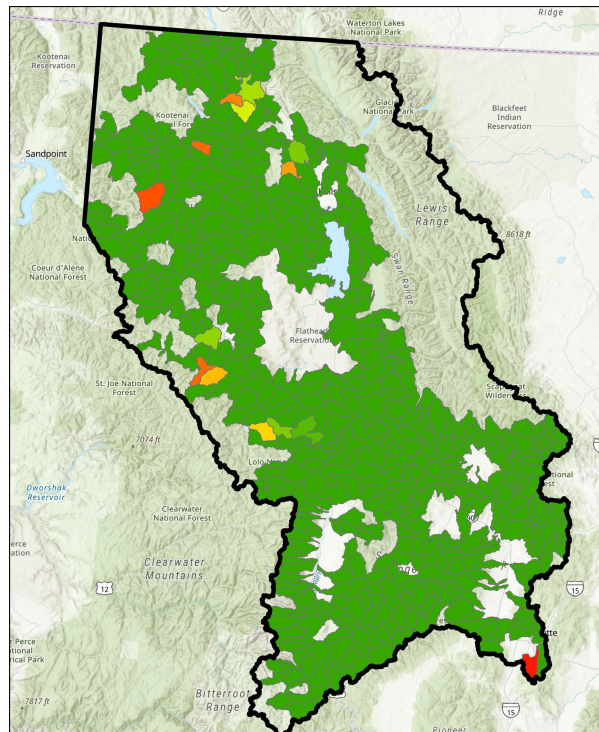
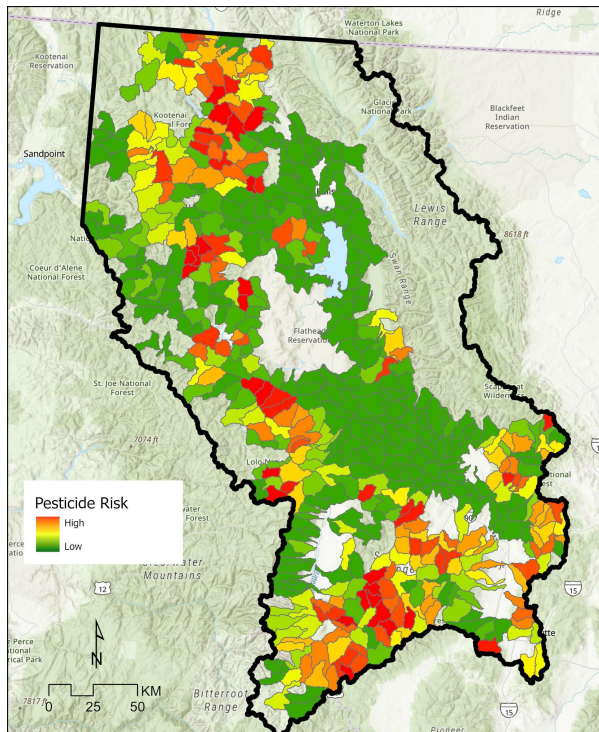
# Pesticide Risks for Forested Areas FY 24 & 25

## Grazing

## Timber

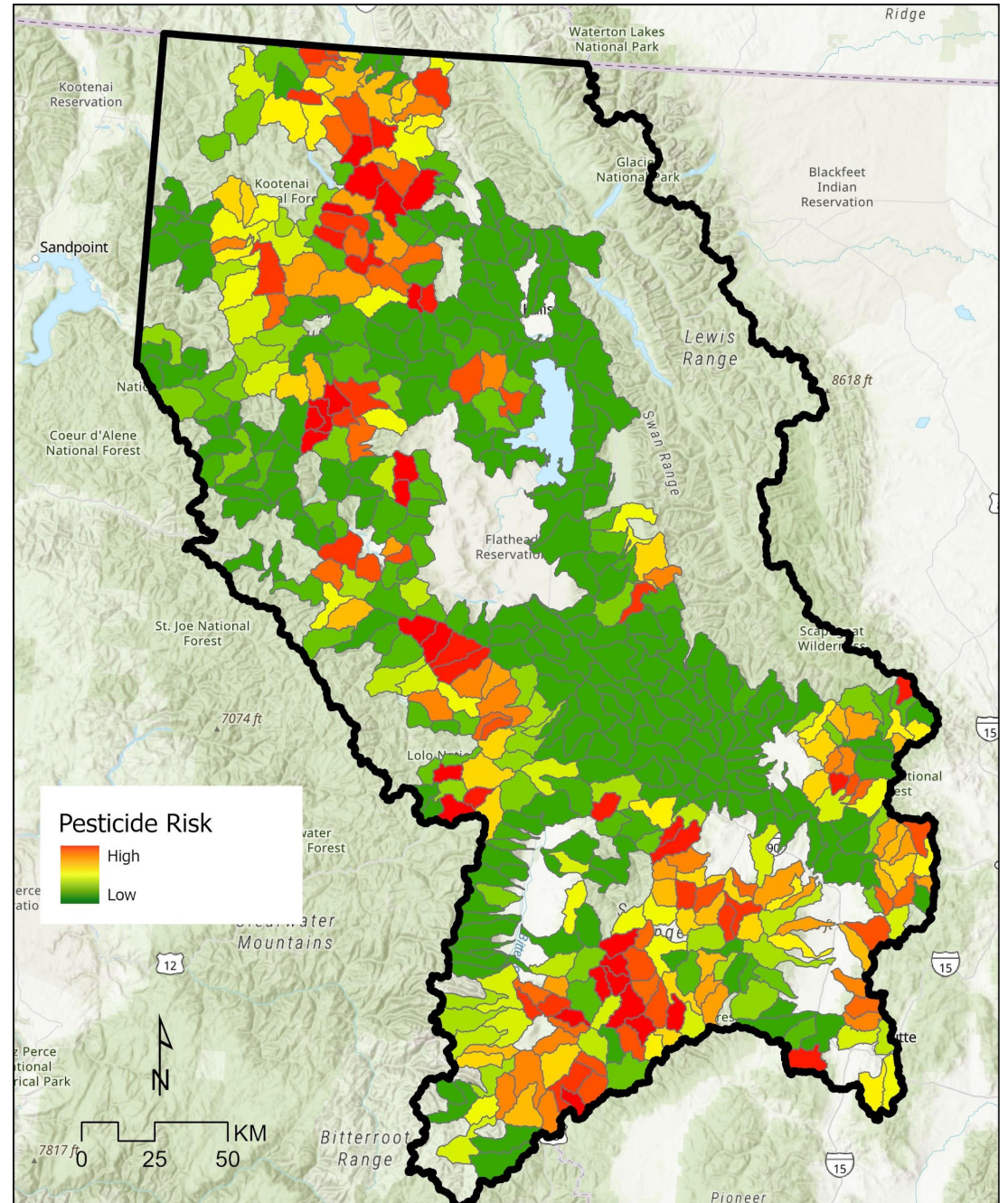
## Timber-Stream

## Roads-Stream

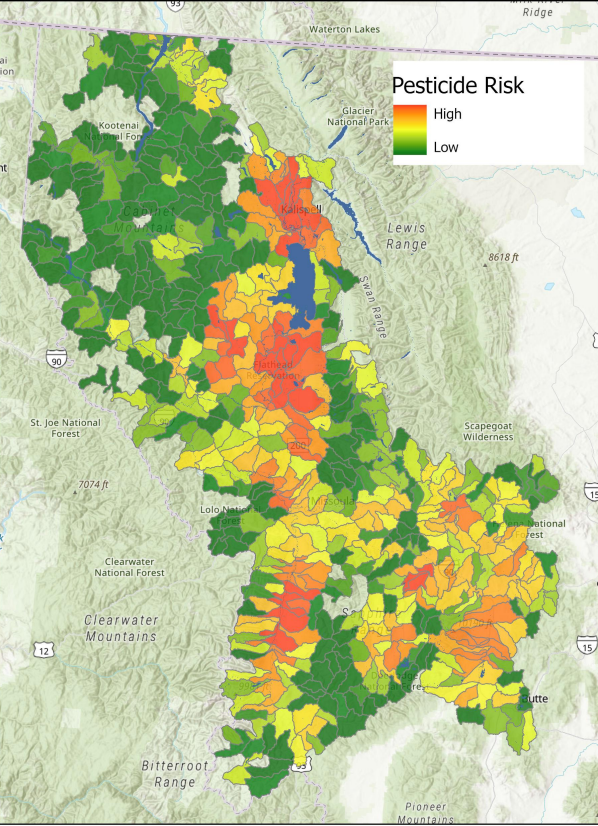


**Overall Risk = Average of all Risks**

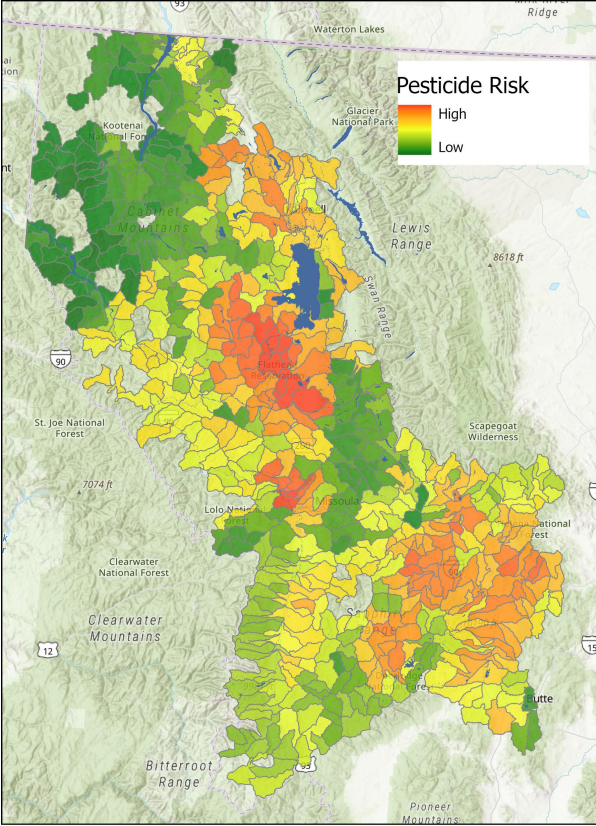
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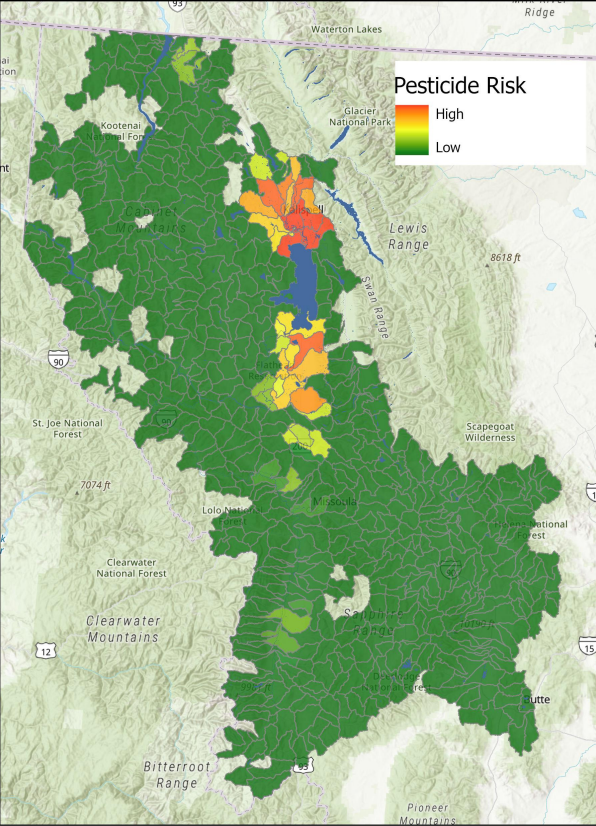
# Pesticide Risks for Ag Areas



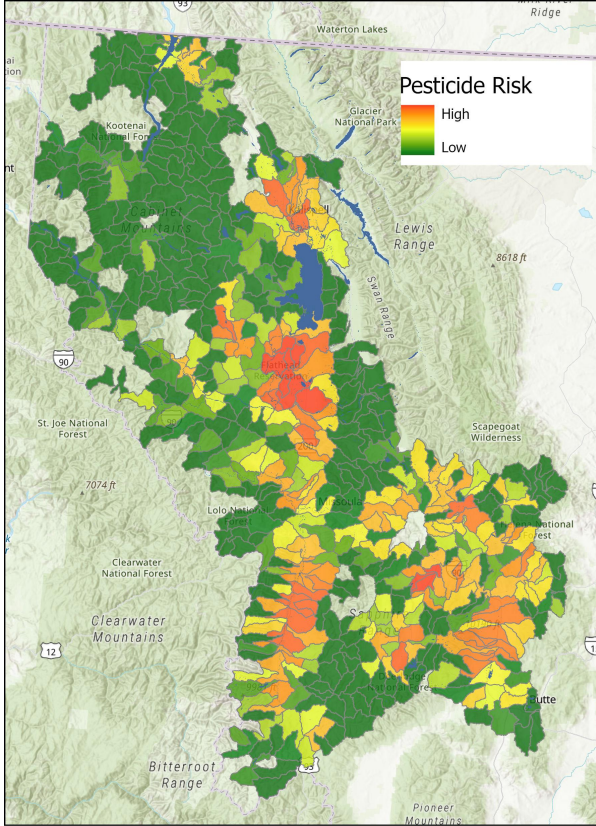
Percent Ag



Leaching Rate



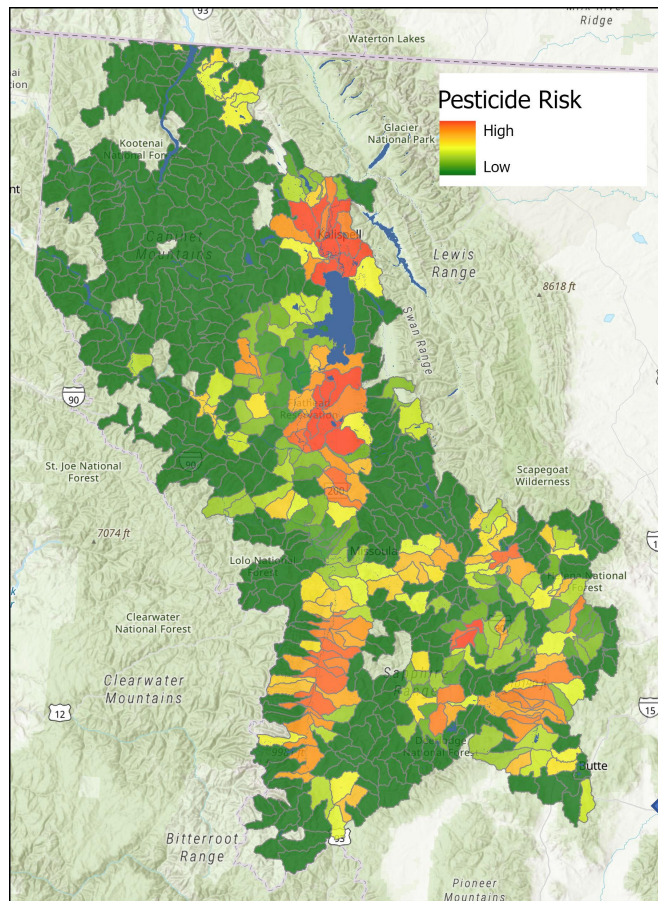
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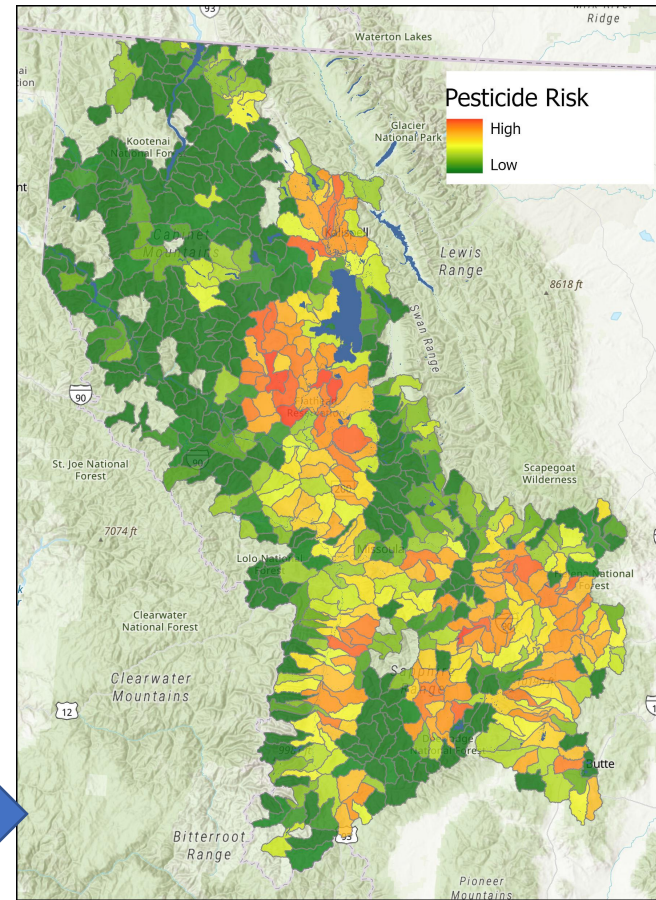
Irrigated Ag

**AG input rankings**

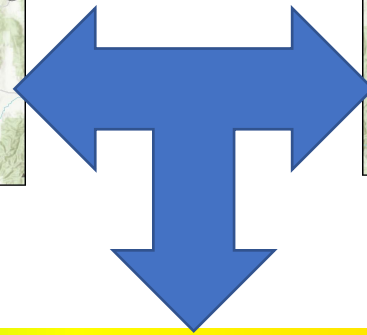
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Ag Inputs

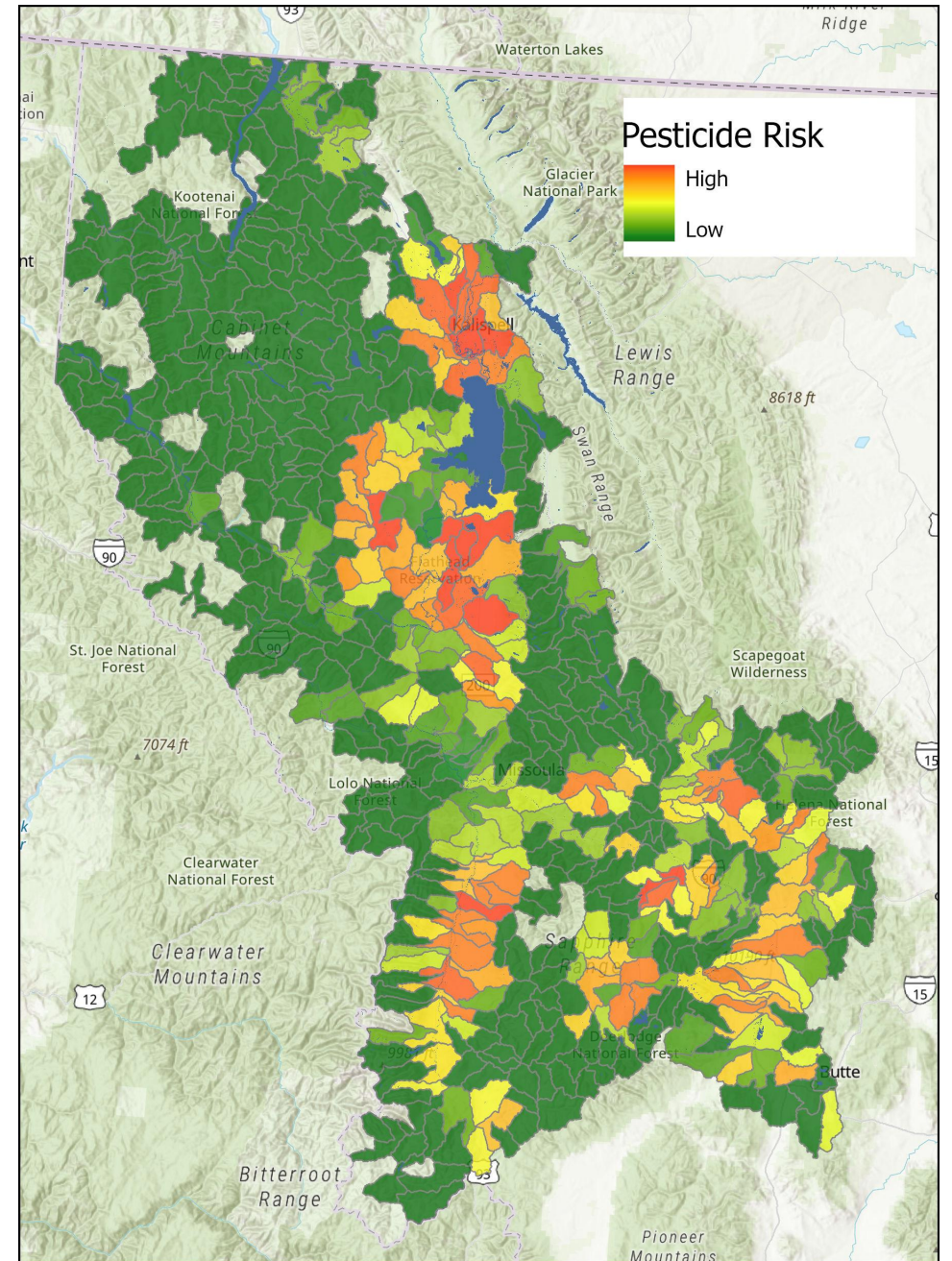


Ag/Stream Intersect

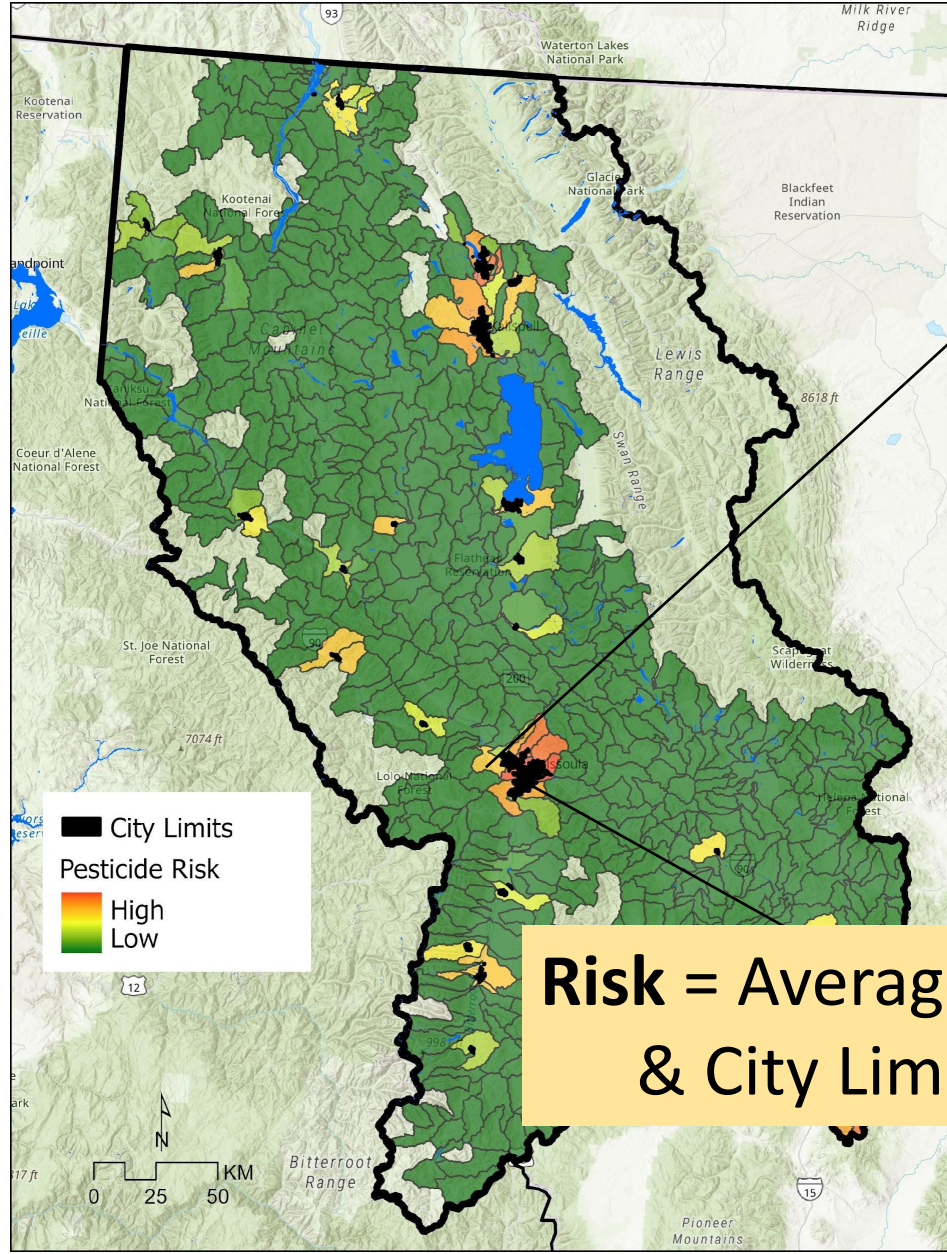


**Overall Risk = Average of Ag Inputs & Ag/Stream Intersects**

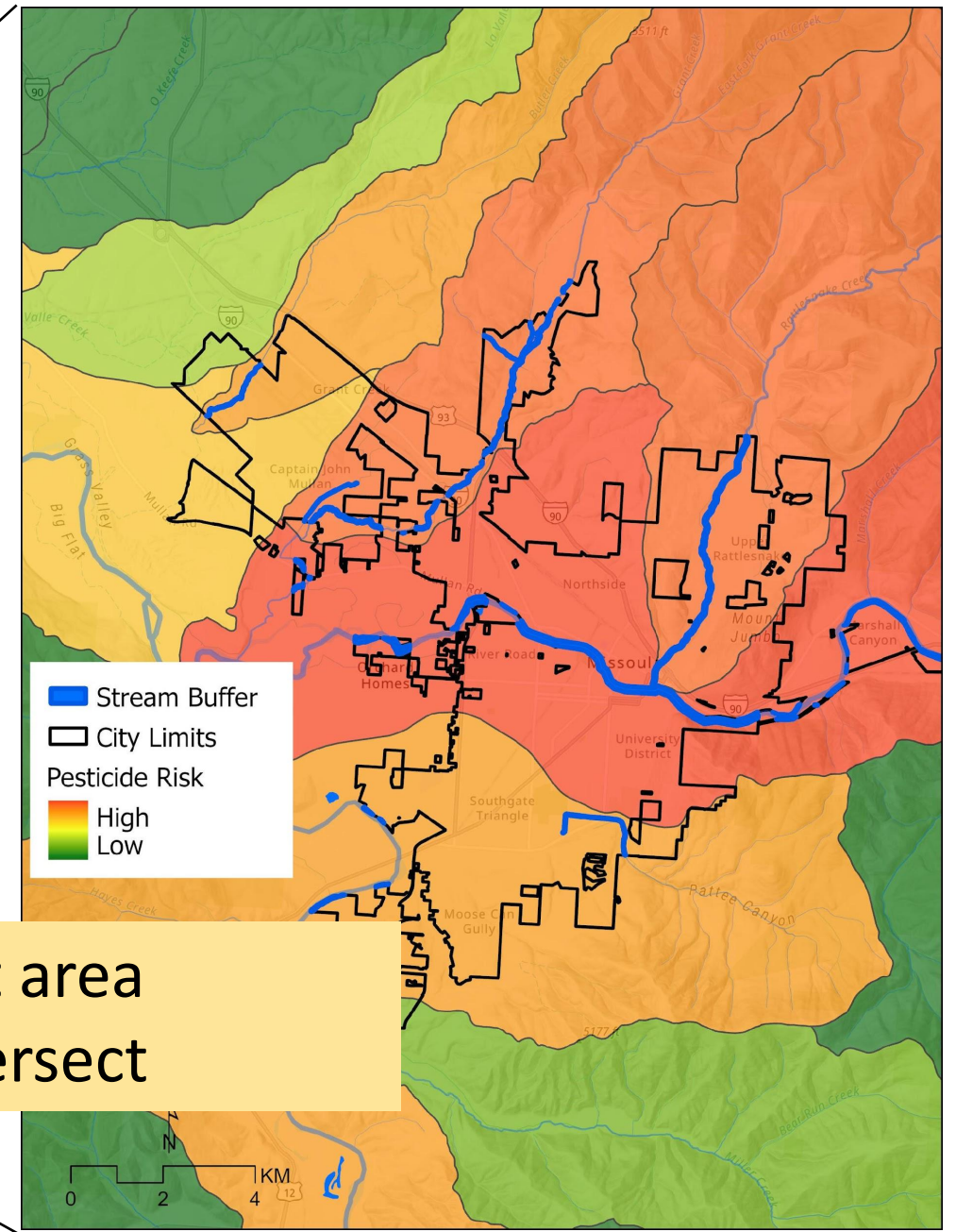
# Overall Pesticide Risks for Ag Areas



# Urban Risks



# Missoula Area



**Risk = Average of City Limit area & City Limit/Stream intersect**

# Site Selection Framework: Land Use Categories

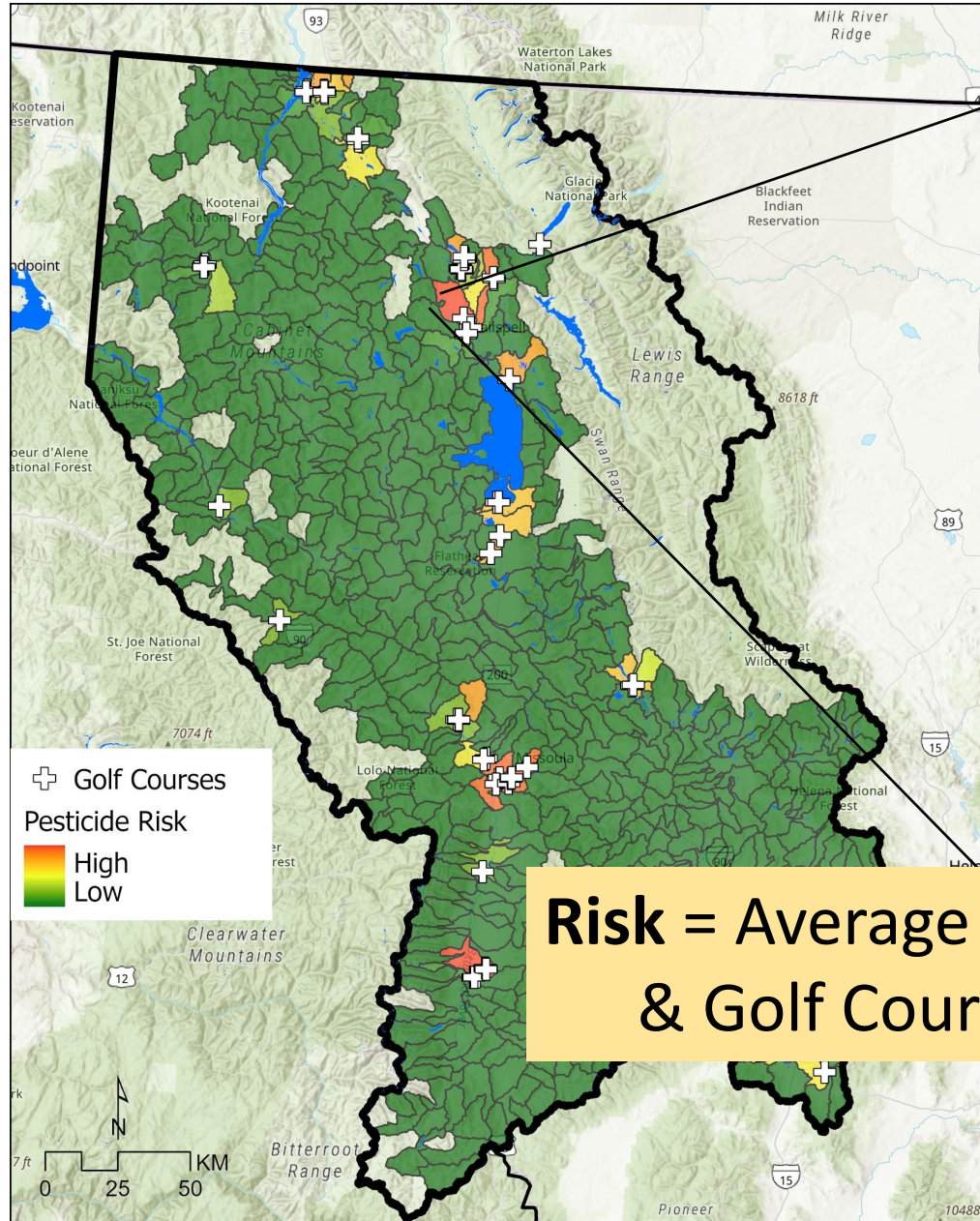
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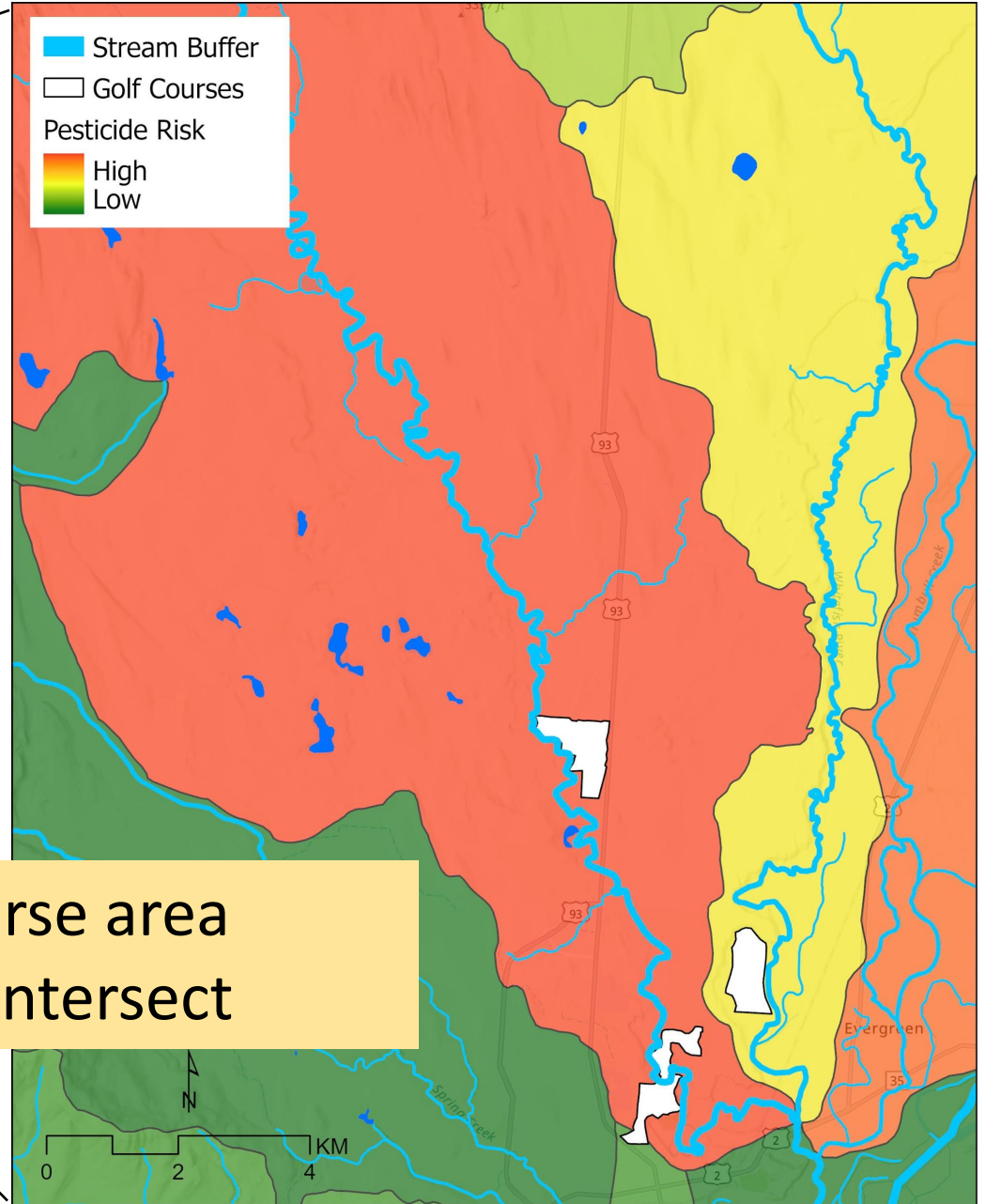
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\* From 2021 National Landcover Dataset from USGS

# Golf Course Risks

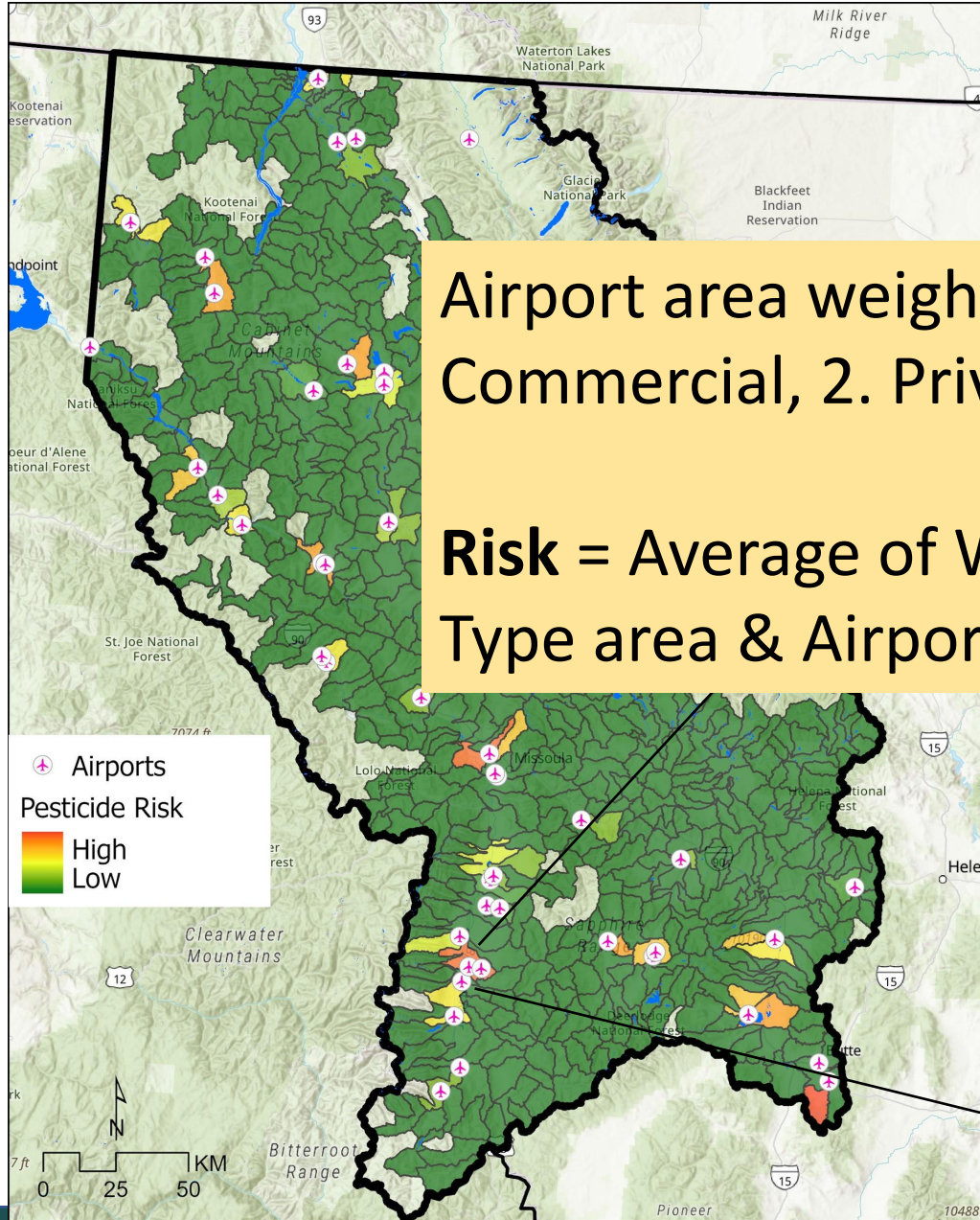


# Kalispell Area

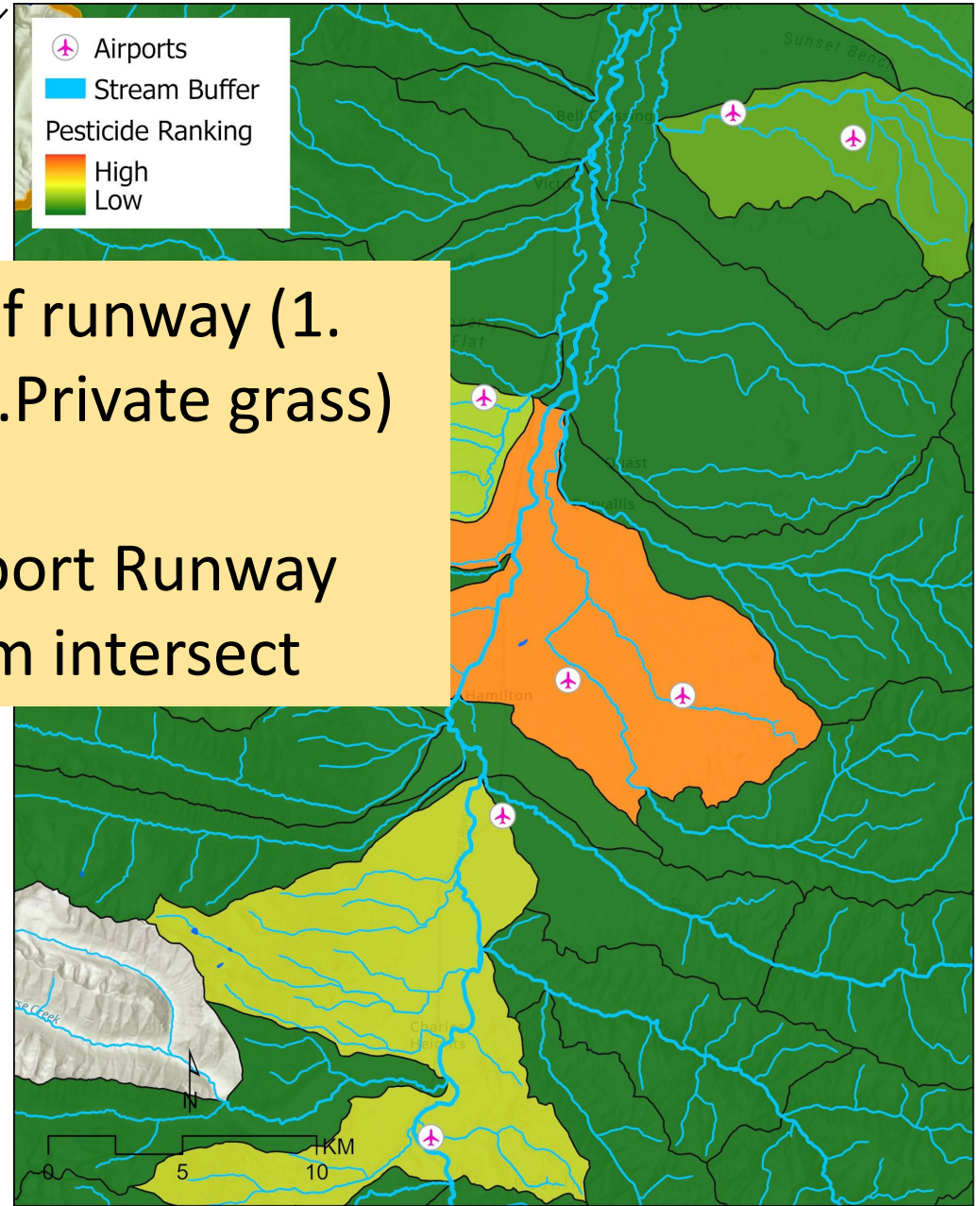


**Risk = Average of Golf Course area & Golf Course/Stream intersect**

# Airport Risks



# Hamilton Area



Airport area weighted by type of runway (1. Commercial, 2. Private paved, 3. Private grass)

**Risk = Average of Weighted Airport Runway Type area & Airport Area/Stream intersect**

# What's Next?

- Finalizing QAPP
- Starting funding opportunities
- Continue to develop materials
  - BMP
  - Reduction Efforts
  - Pesticide Effects
- Education and Outreach and community events
  - PSPP Annual Meeting October 28<sup>th</sup> and 29<sup>th</sup>
- Monitoring to start next spring



# Volunteering with the PSPP

- Actively looking for volunteers and watershed group in CRB
  - We would provide training and equipment
  - A good excuse to get out by the water
- Feel free to reach out if you have any interest in volunteering



# QUESTIONS?

## Rachel Malison

Rachel.malison@flbs.umt.edu

406-872-4518

## Janelle Groff

Janelle.Groff@flbs.umt.edu

406-872-4508

## Jared Glass

Jared.Glass@flbs.umt.edu

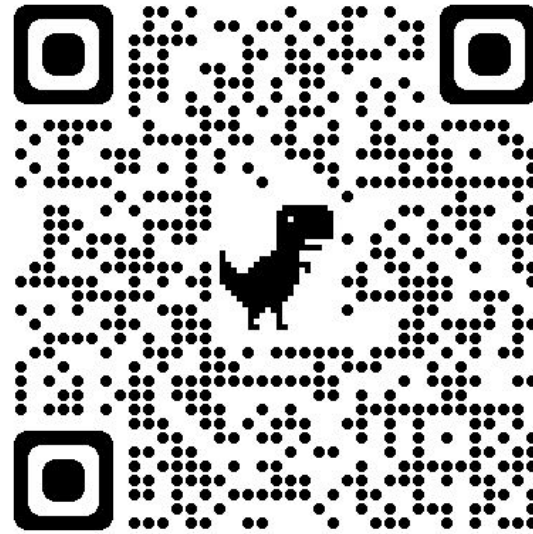
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## PSPP Annual Meeting

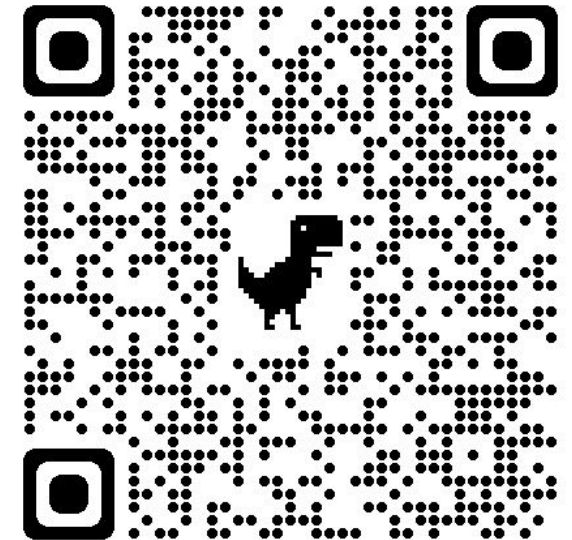
October 28<sup>th</sup> and 29<sup>th</sup>

Register on website

## Newsletter



## Website



Montana Pesticide Stewardship  
— Partnership Program —

mtpspp@flbs.umt.edu



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MONTANA WATER



FLATHEAD LAKE  
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