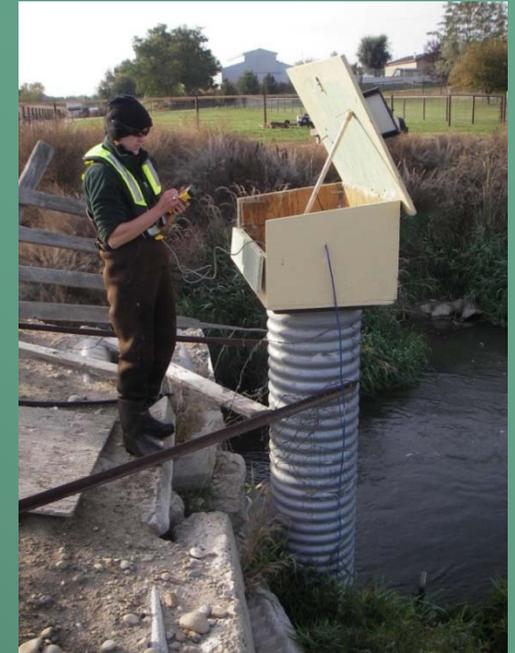




# Monitoring Update: USGS Monitoring Efforts 2009 - 2014



*In Cooperation With:*

U.S. Department of the Interior  
U.S. Geological Survey



# Outline

- Lower Boise Tributary monitoring 2009-2012
  - Fivemile and Tenmile Creeks WY2009
  - Indian Creek WY2010
  - Mason Creek WY2011 – 2012
  - Dry Creek and Eagle Drain WY2012
- Lower Boise River Monitoring – WY2013
  - Glenwood, Middleton, Parma
- Surrogate data and Monitoring – WY2014
  - Boise River near Parma

# Summary Tributary Work

## *Fivemile, Tenmile, Indian, and Mason Creeks*

- 3 event samples 5-6 sites in tributary watershed
  - Late April or Early May
  - July
  - November
- **Mason Creek**
  - Streamgage
  - Water-quality monitor
  - Monthly samples
  - Regression models
- **Biology**



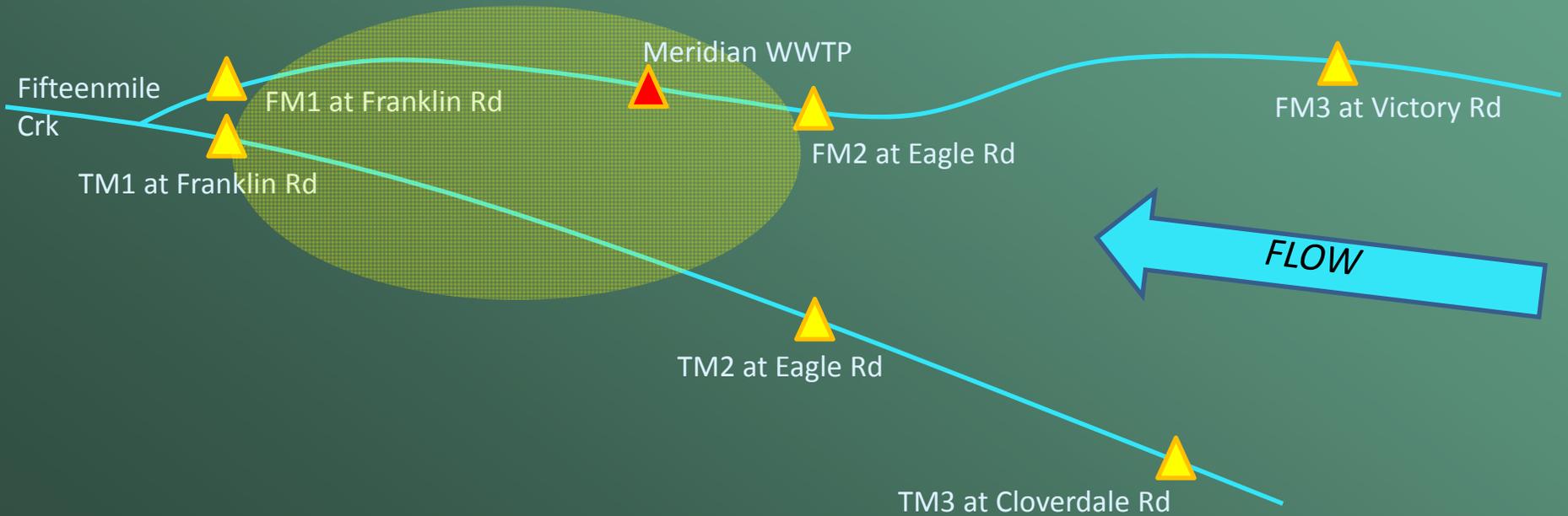
*Provisional Results*

# Key Finding

## Spatial Loading

### *Fivemile and Tenmile Creeks*

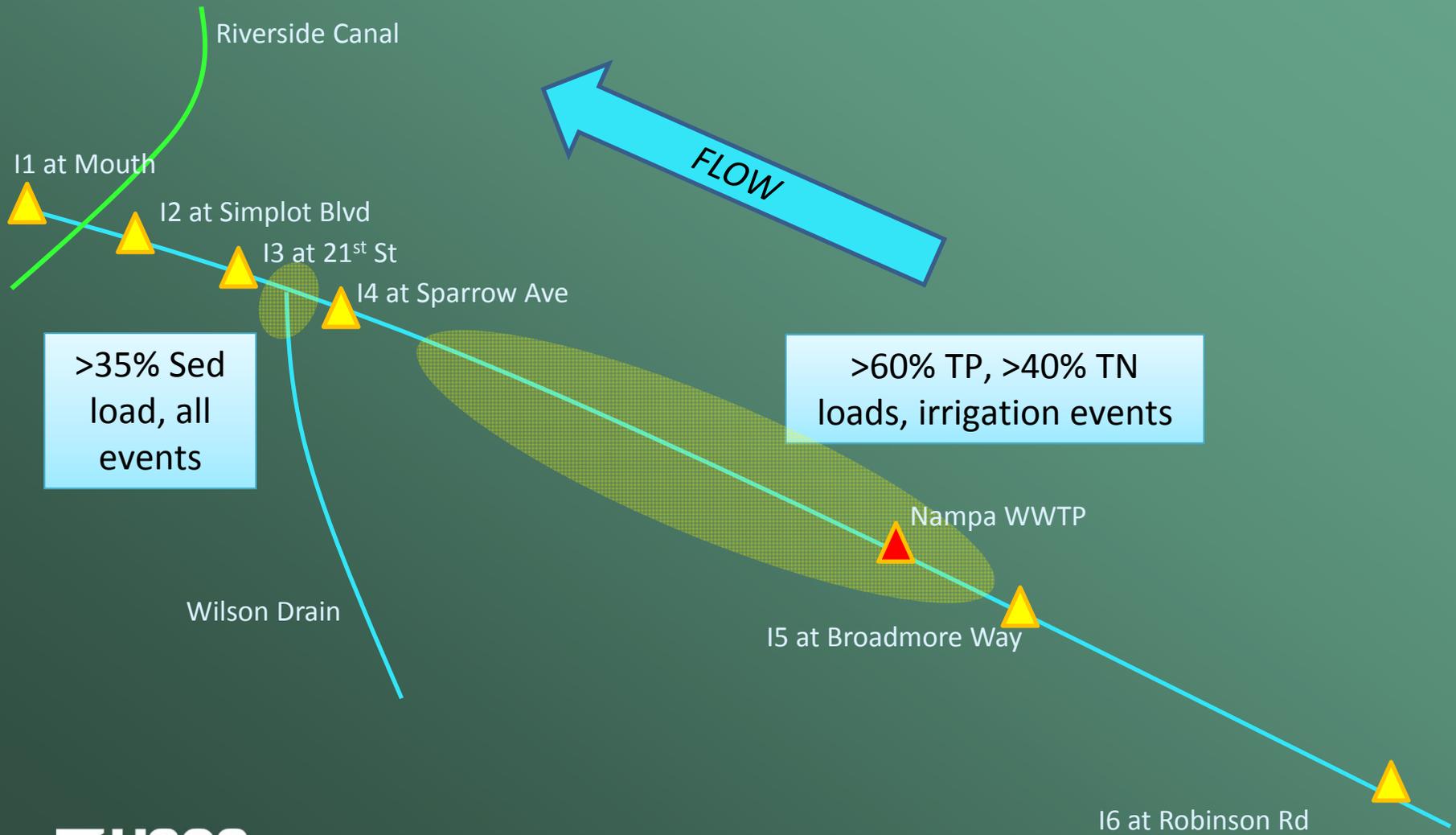
>90% TP, Sed, TN loads,  
every event



*Provisional Results*

# Spatial Loading

## Indian Creek



*Provisional Results*

# Spatial Loading

## Mason Creek

A, Solomon, Noble,  
Lower Fivemile Drains

FLOW

M1 near Mouth

M2 at Wells Rd

M3 at Ustick Rd

M4 at Madison Ave

M5 at Powerline Rd

>60% TP,  
Sed loads,  
55% TN  
load, July  
event

Highline  
Diversion

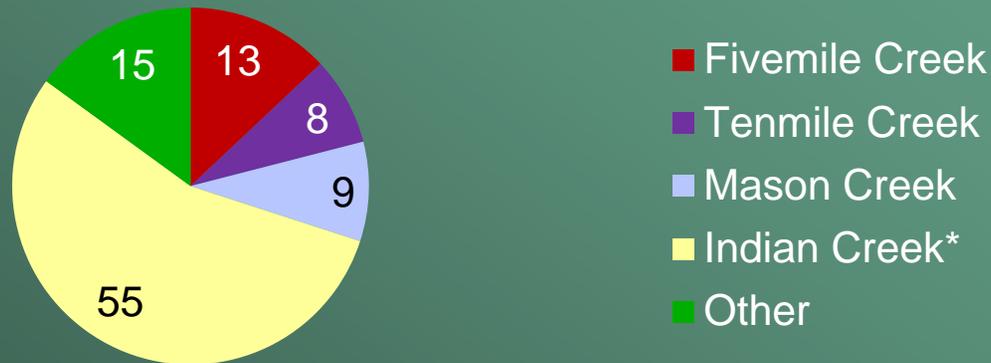
35% Sed,  
44% TP load  
Irrigation  
events



*Provisional Results*

# Instantaneous Loads: Contributions to the Boise River near Parma

## Total Phosphorus – Mid-Irrigation Event



## Suspended Sediment – Mid-irrigation Event

**\*Results shown for  
Indian Creek at  
Simplot Blvd (I2)**



# Fivemile and Tenmile Creeks

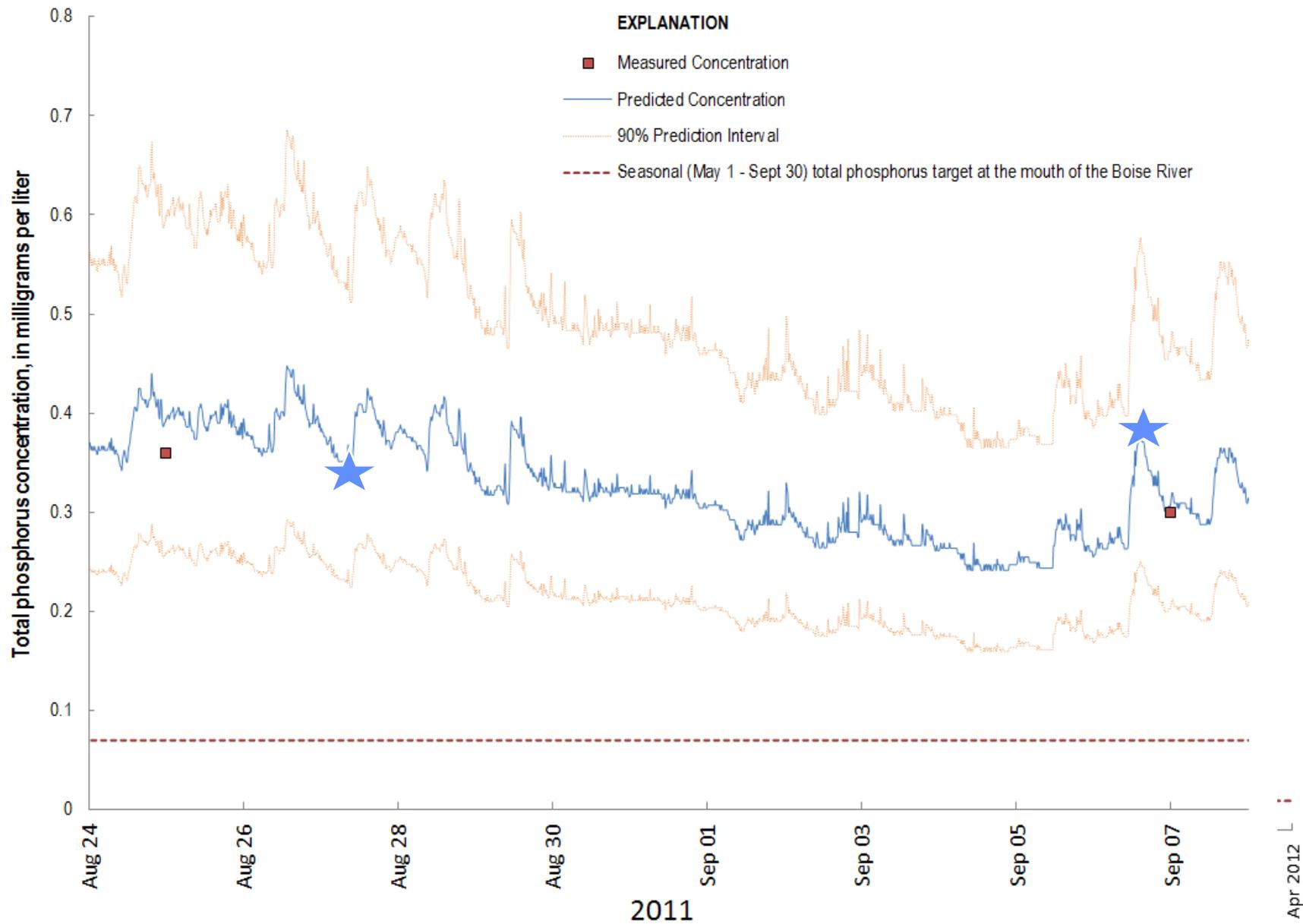
- **Bacteria**
  - **Fivemile and Tenmile at Franklin Rd**
    - Median irrigation season E. Coli >300 (N=20)
  - **Indian Creek**
    - Median irrigation season E. Coli = 310 (N = 37)
  - **Mason Creek**
    - Median irrigation season E. Coli = 470 (N = 37)

# Mason Creek Expanded Monitoring and Models

- Streamgage + Continuous Turbidity & Temp
  - Regression models (surrogates)
    - 15-minute estimates
      - Loads
        - Mass/time/ac, mass/time
      - Concentrations
    - Potential for real-time estimates

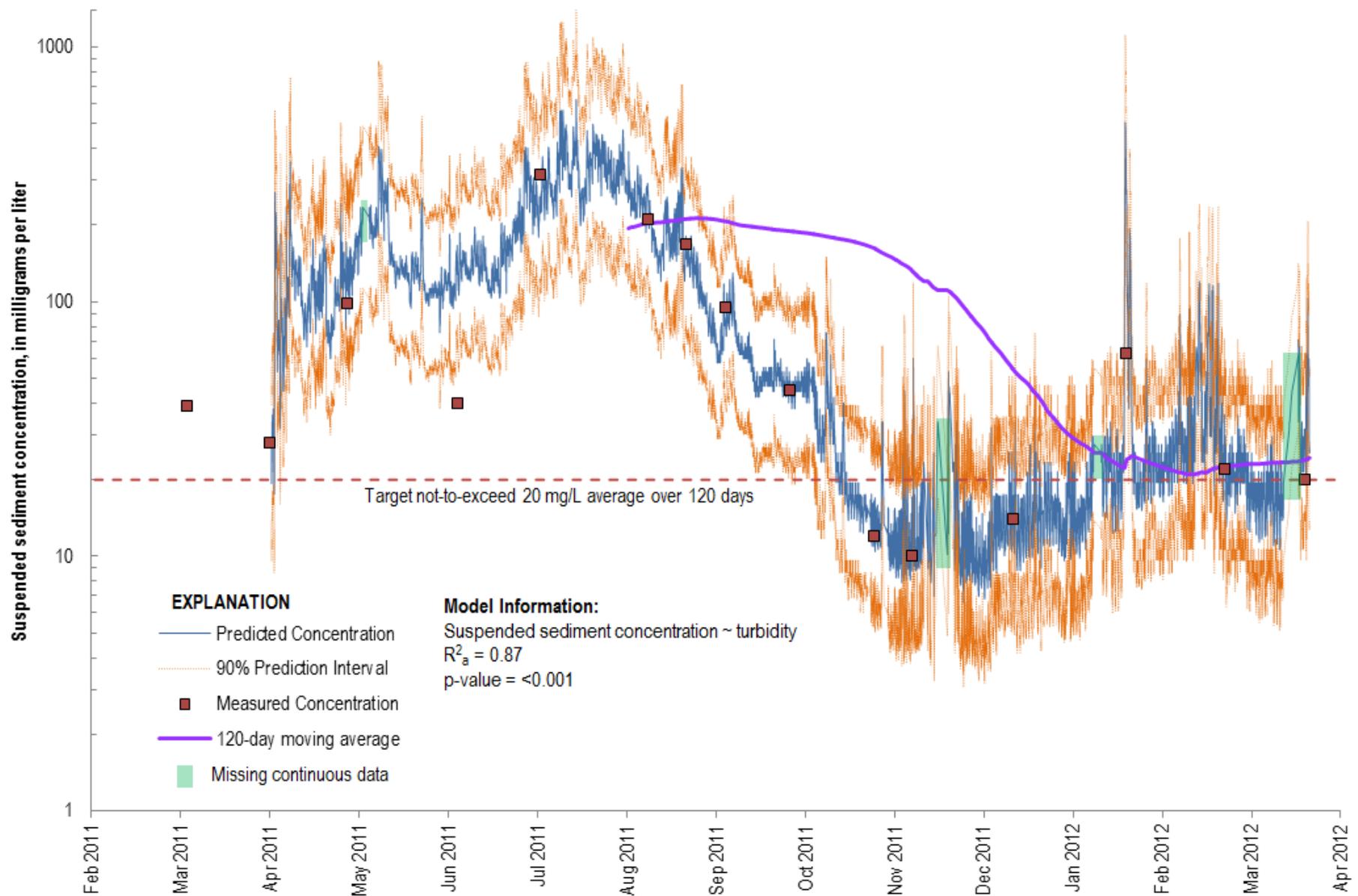


# Phosphorus Surrogate



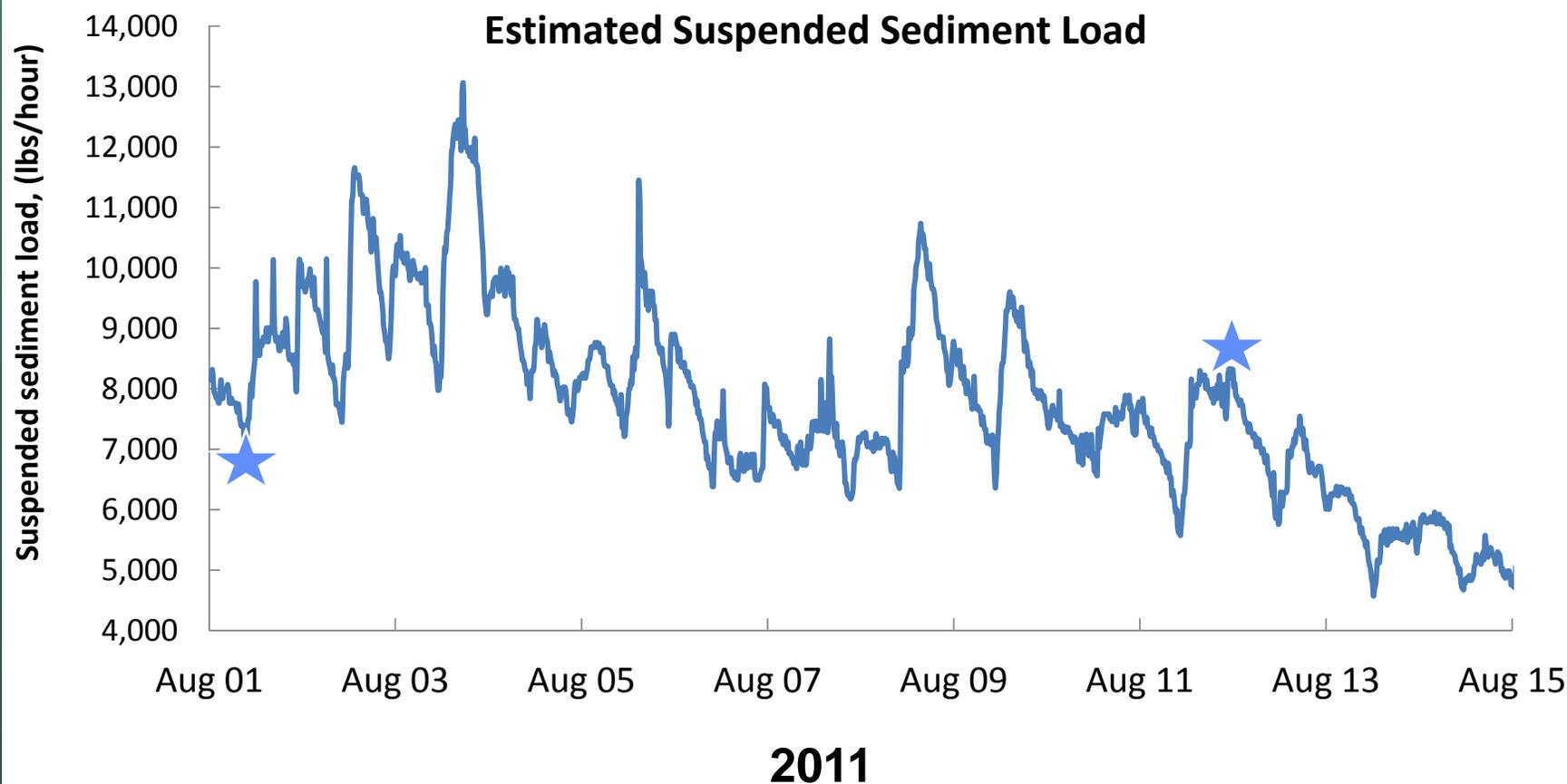
*Provisional Results*

# Sediment Surrogate



*Provisional Results*

# Application of Surrogate



# Application of Surrogate, cont.

- Estimate 12,100 ton/yr sediment load
  - ~23,180 ac in crop in watershed
  - 1,044 lb/ac sediment runoff
    - Assuming all runoff from irr. land
- Estimate 31 ton/yr TP load
  - 2.67 lb/ac TP runoff



# More Potential for Surrogates

- Fivemile and Tenmile Creeks at Franklin Rd
  - FM: TP, TN, Sed
  - TM: Sed, E. Coli
  - Turbidity may help, no data
- Indian Creek
  - Simplot Blvd - need more data
  - At mouth – mixing a problem
- Dixie Drain, Conway Gulch, others?

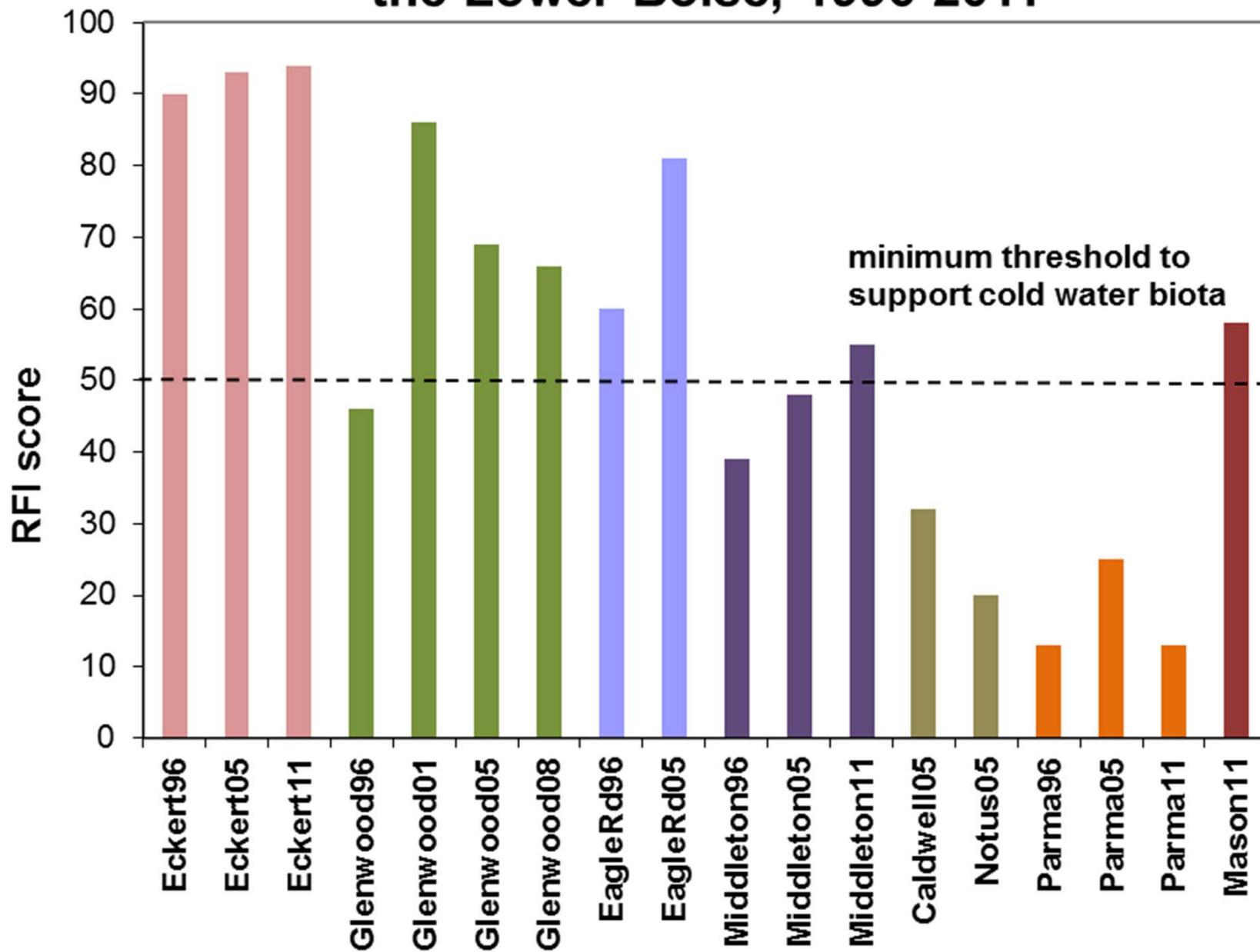


# Fish & Invertebrates in Mason Creek

- 26 caught
- 7 trout
- 2 weatherfish
- Invertebrates dominated by NZ Mudsnail



## Idaho State river fish index (RFI) for sites on the Lower Boise, 1996-2011



# WY2012 and 2013 Data Collection

- **2012 - Eagle Drain and Dry Creek**
  - Continuous monitors, SC, temp, DO, turbidity
  - Stream gages
  - Biology
  - No report planned
- **2013 – Mainstem monitoring completed**
  - Potential for daily TP load model at Glenwood, Middleton, and Parma
  - No report planned

# 2014 Data Collection and Analysis

- Collect samples at Parma
- Install continuous monitor at Parma
  - Publish real-time estimates TP and SSC
  - [nrtwq.usgs.gov/id/](http://nrtwq.usgs.gov/id/)
- Parma - Model weighted regression on time, discharge, and load 1980s – present
- No report planned

# Summary

- Tributary Report due ~June 2014
- Reporting needed
  - 2012 – Beneficial uses Eagle Drain, Dry Creek
  - 2013 – TP & SSC TMDL support, load models
  - 2014 – WRTDS model findings
- Ongoing support of TMDL monitoring possible, sediment & TP
  - Parma
  - Mason Creek
  - Others?

A scenic view of a river winding through a landscape. The river is the central focus, flowing from the upper left towards the lower right. The banks are lined with lush green trees and shrubs, particularly on the left side. In the foreground, there is a large, dense green bush. The ground around the river is a mix of green vegetation and dry, brownish soil. In the background, a line of trees separates the river from a residential area with houses and a clear blue sky. The word "Discussion" is overlaid in the center of the image in a bold, yellow, sans-serif font.

# Discussion