Laguna de Santa Rosa TMDL Update

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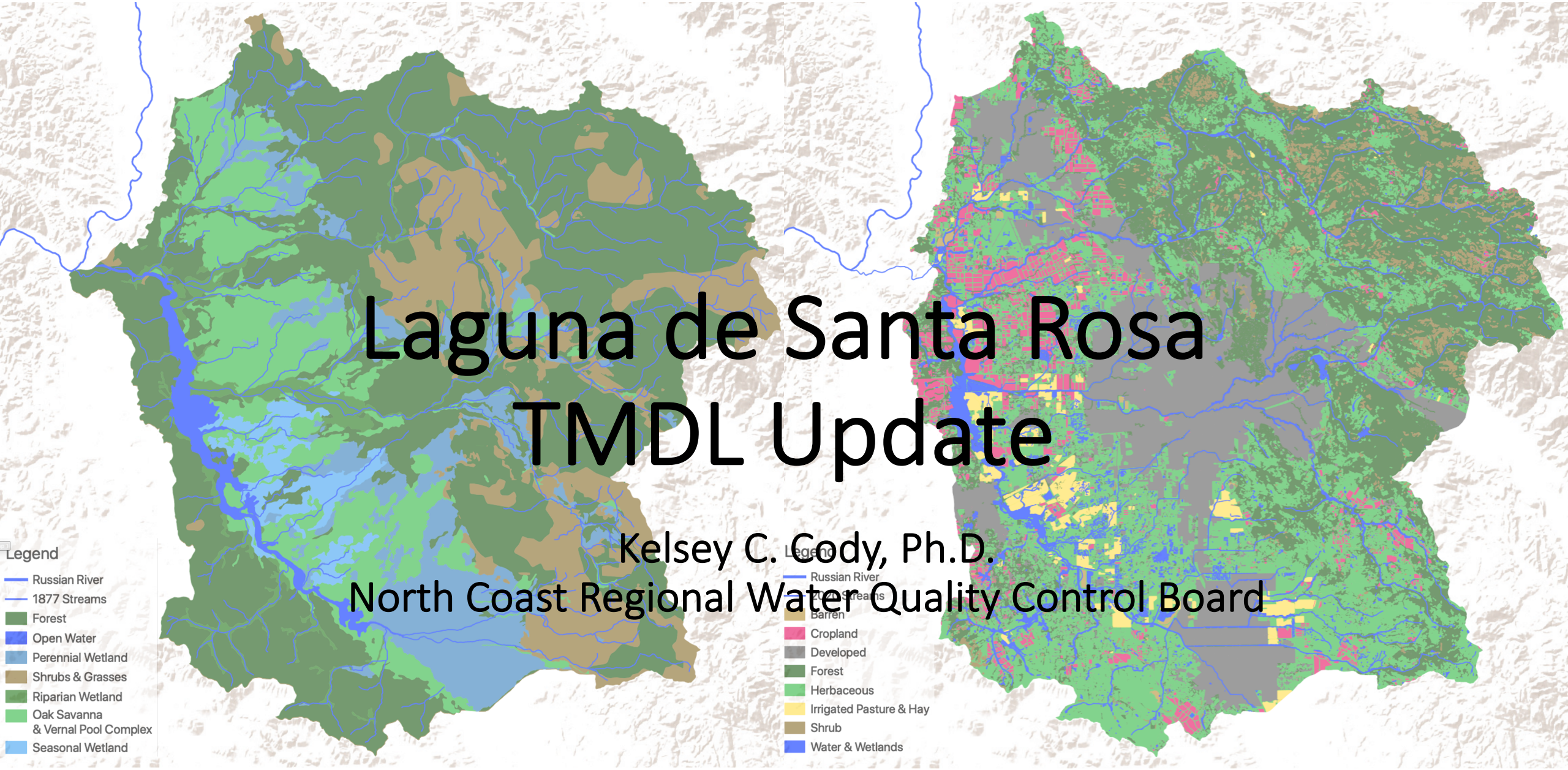
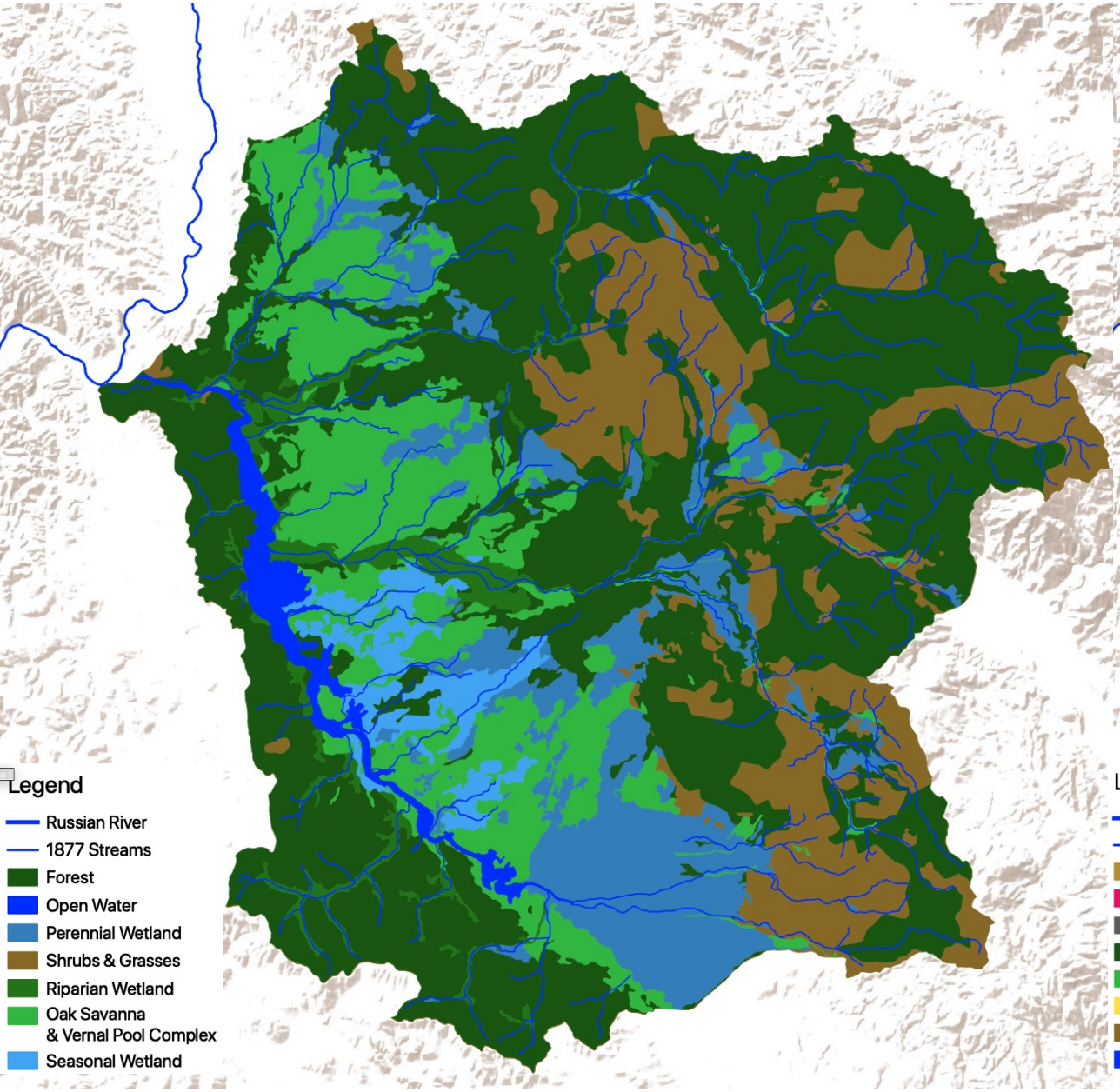
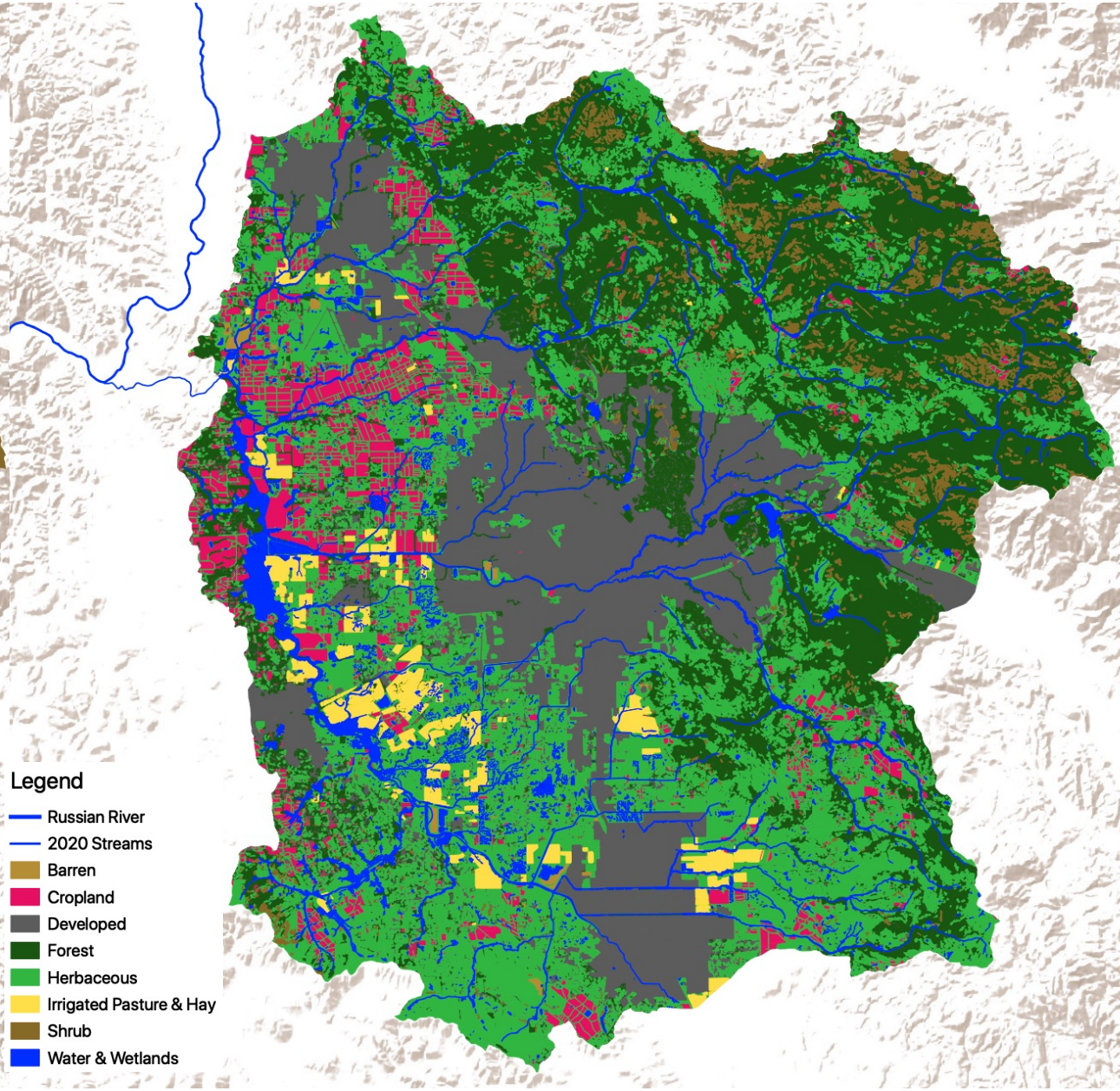
North Coast Regional Water Quality Control Board

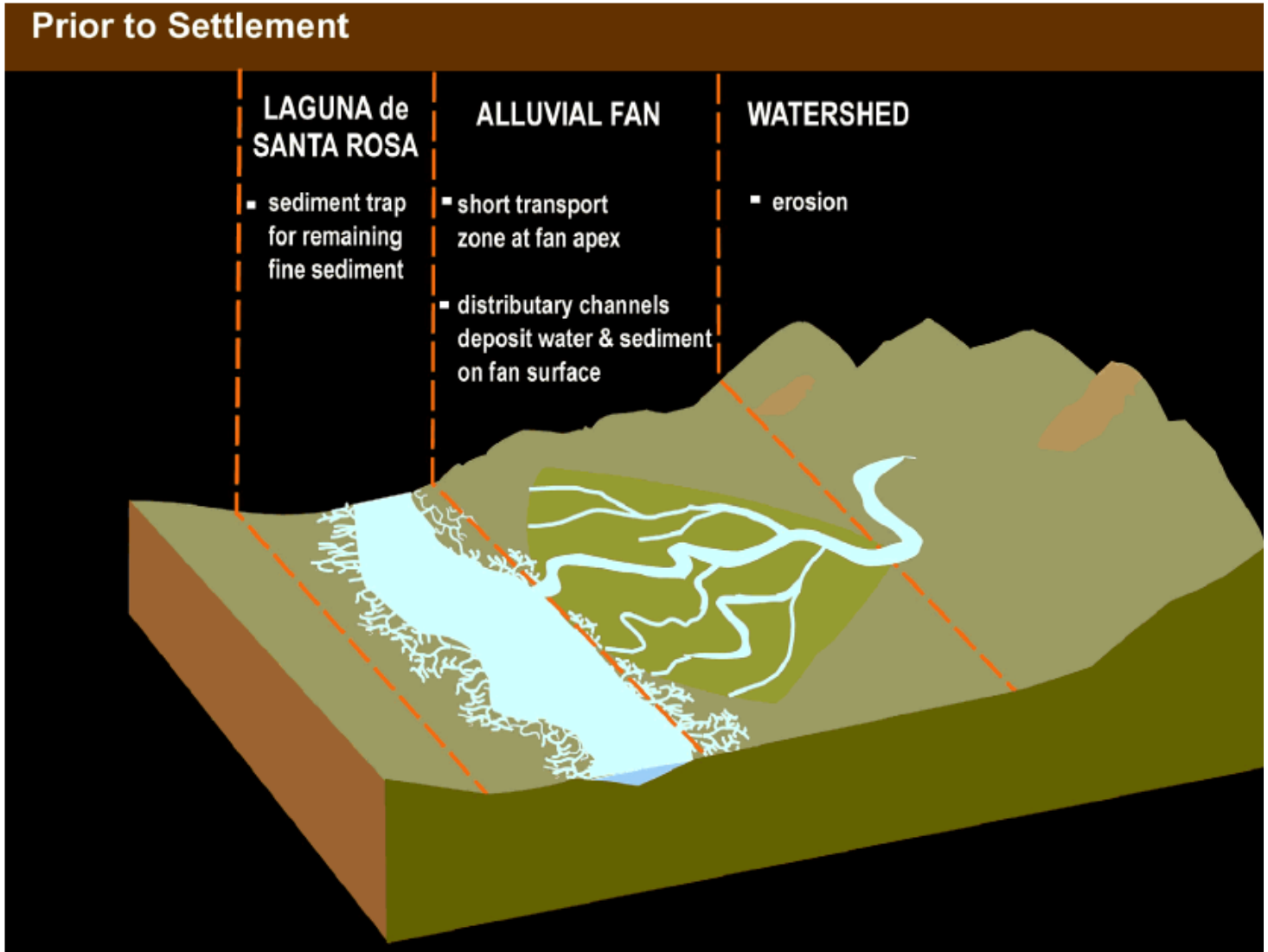



Legend
Russian River
1877 Streams
Forest
Open Water
Perennial Wetland
Shrubs & Grasses
Riparian Wetland
Oak Savanna
& Vernal Pool Complex
Seasonal Wetland


Legend
Russian River
2020 Streams
Barren
Cropland
Developed
Forest
Herbaceous
Irrigated Pasture & Hay
Shrub
Water & Wetlands

History of Modification

- Changes to Land Use
  - Deforestation
  - Agriculture
  - Urbanization
  - Increased loads overall
- Changes to Hydrology
  - Flood control (trapezoidal)
  - Increased channel network density
  - Wetland draining
  - Increased transport of loads
- Loss of Habitat, Function
  - Wetlands
  - Riparian forest
  - Open water and lakes
  - Less assimilative capacity



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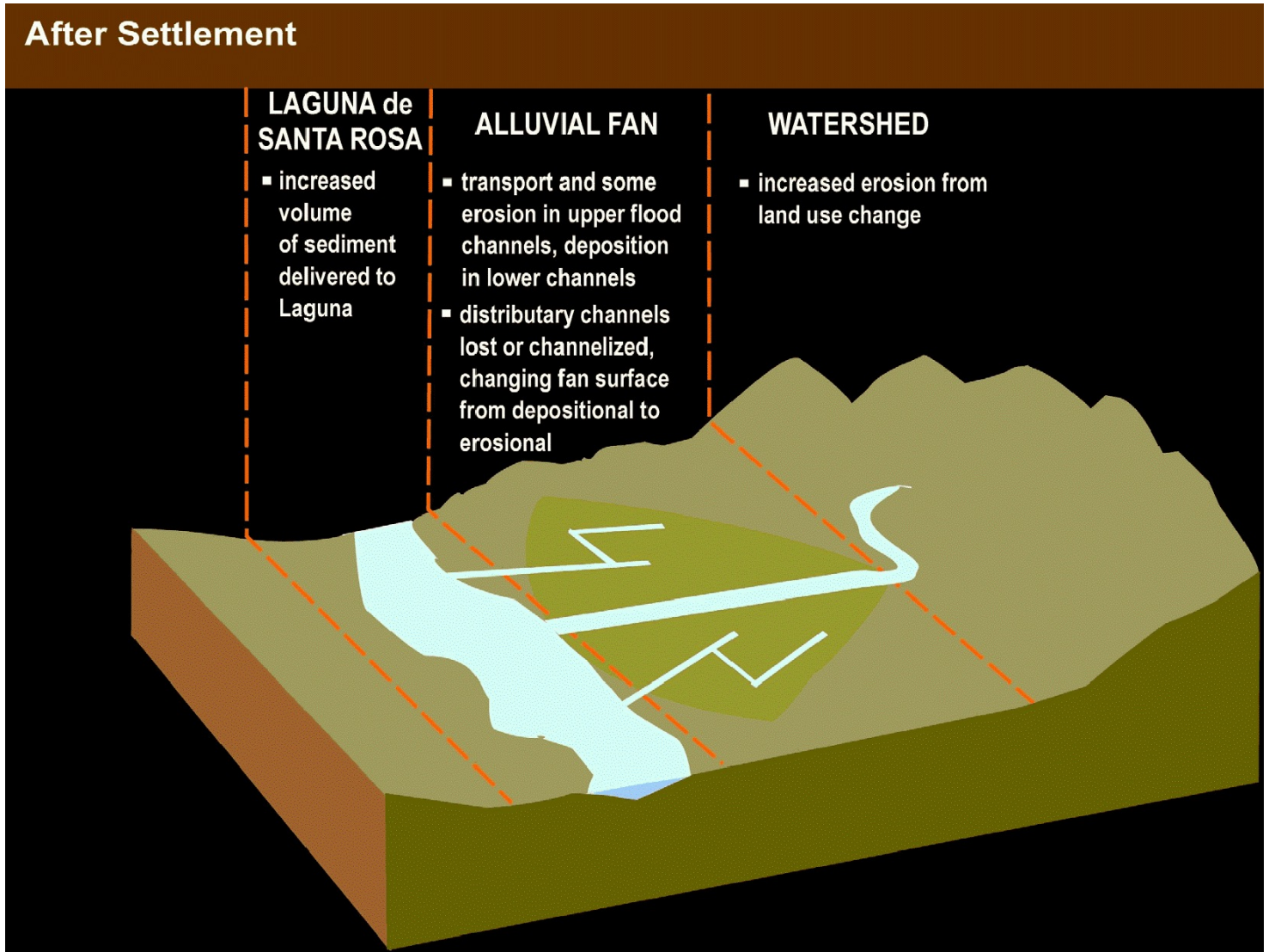
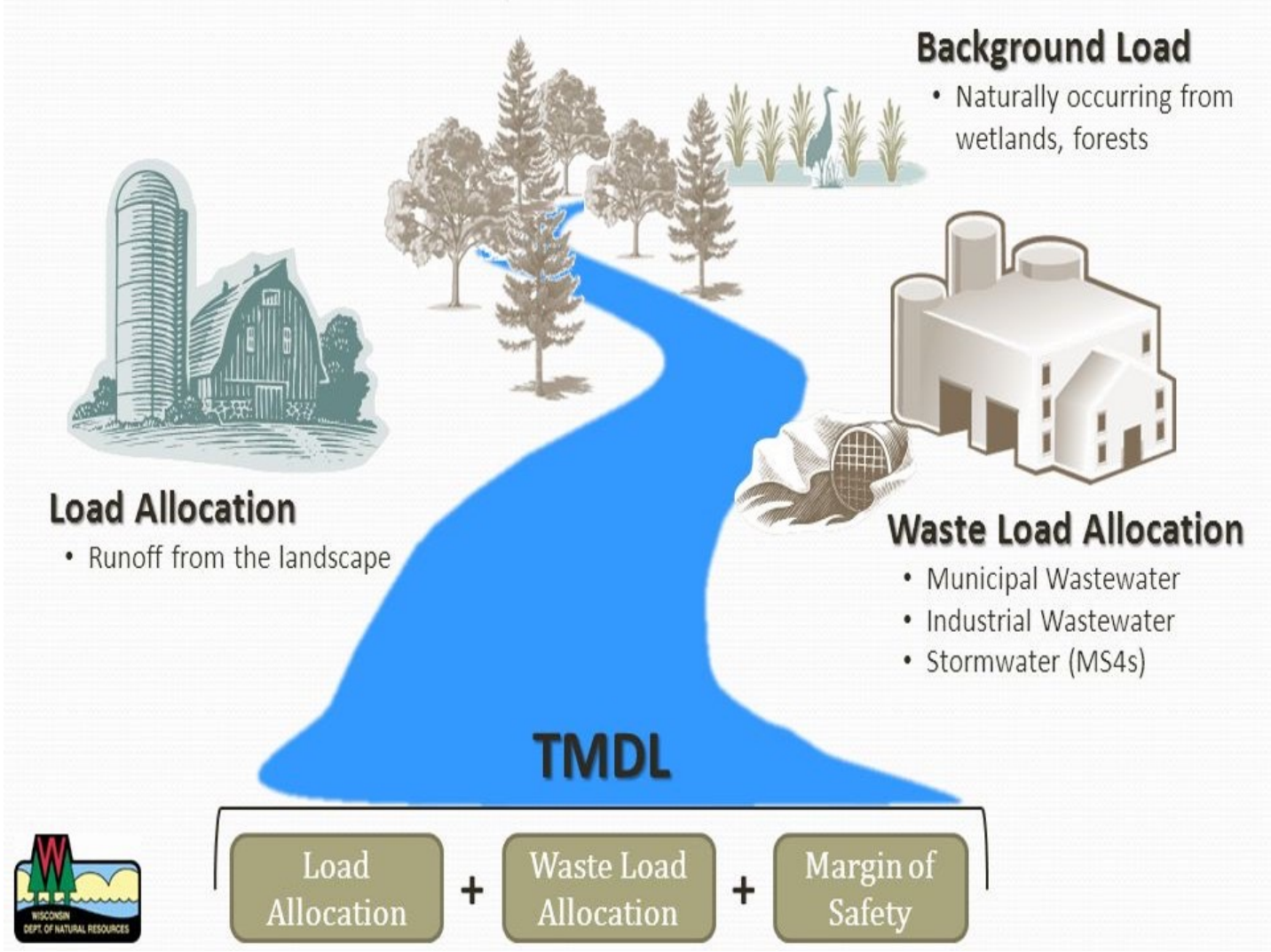


Introduction

- Goal: Fishable & Swimmable
- Waterbody-pollutant pairs
  - Biostimulation
    - Temp, DO, Sed, Phosphorus
- Sets targets necessary to support Beneficial Uses
  - Wildlife, rare and threatened, recreation, drinking water, etc.
- Need to control all controllable contemporary sources
- Restoration essential in Laguna de Santa Rosa watershed



TMDL: Complementary Mechanisms

Reduce
Pollutant Sources

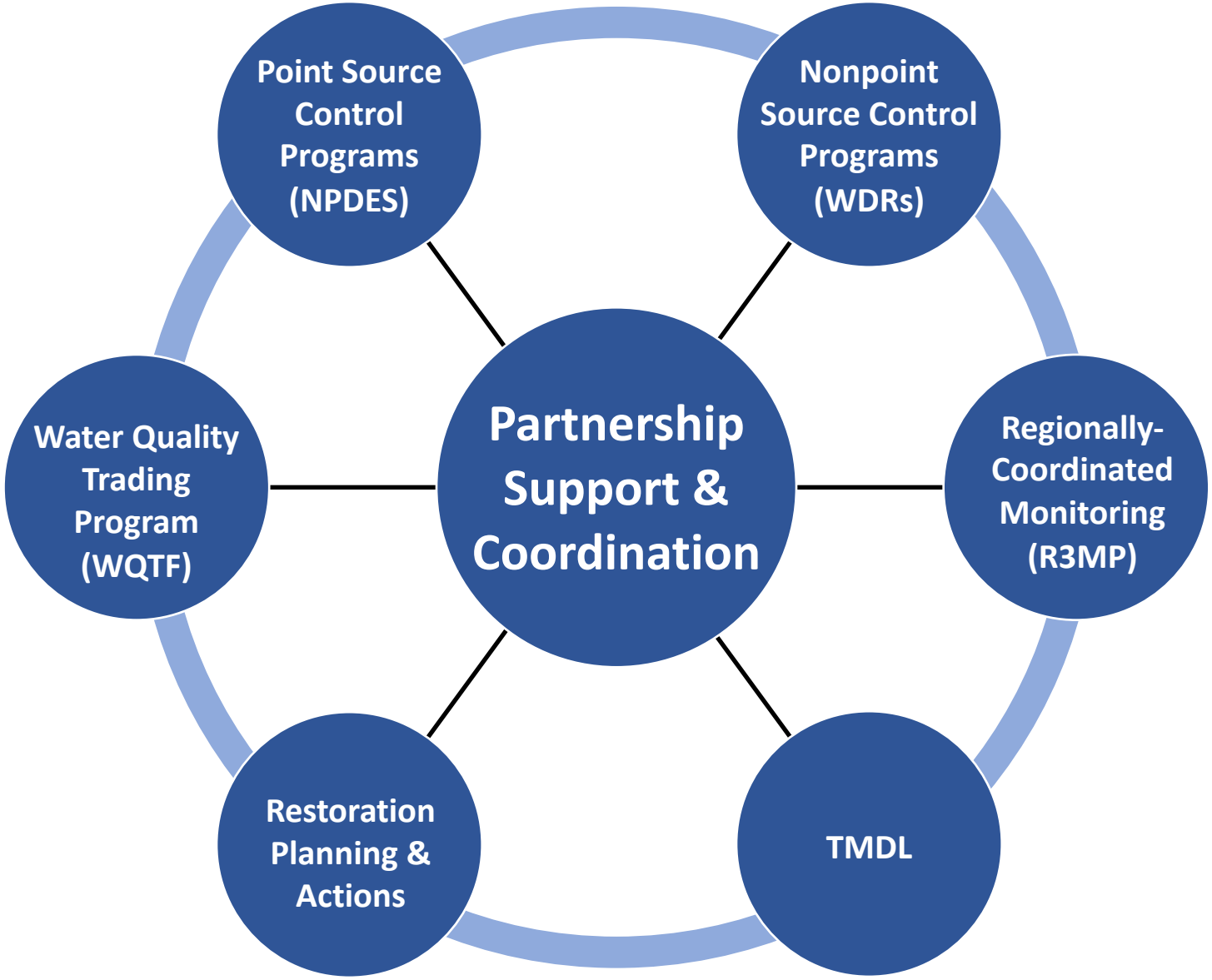
Diet

+

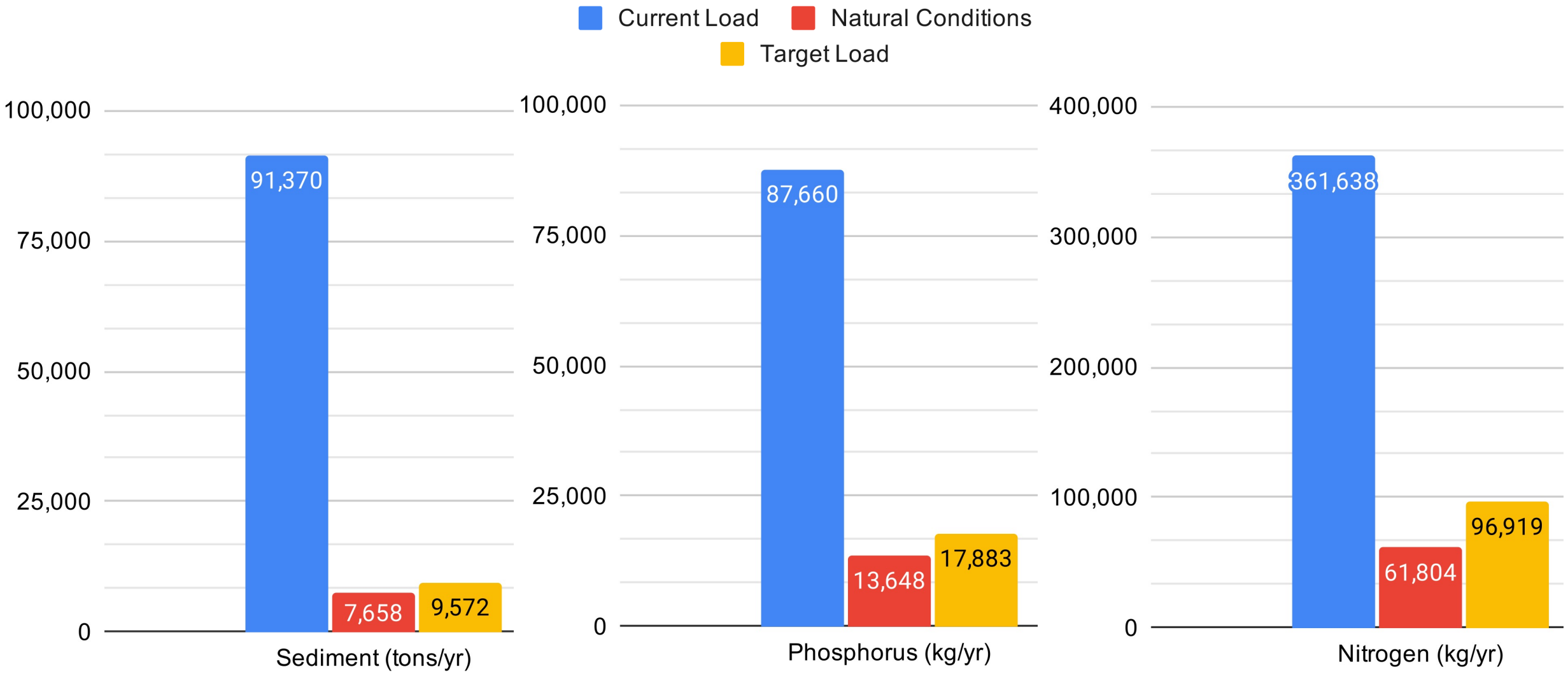
Increase
Assimilative Capacity

Exercise

Framework for Recovery & Reconciliation

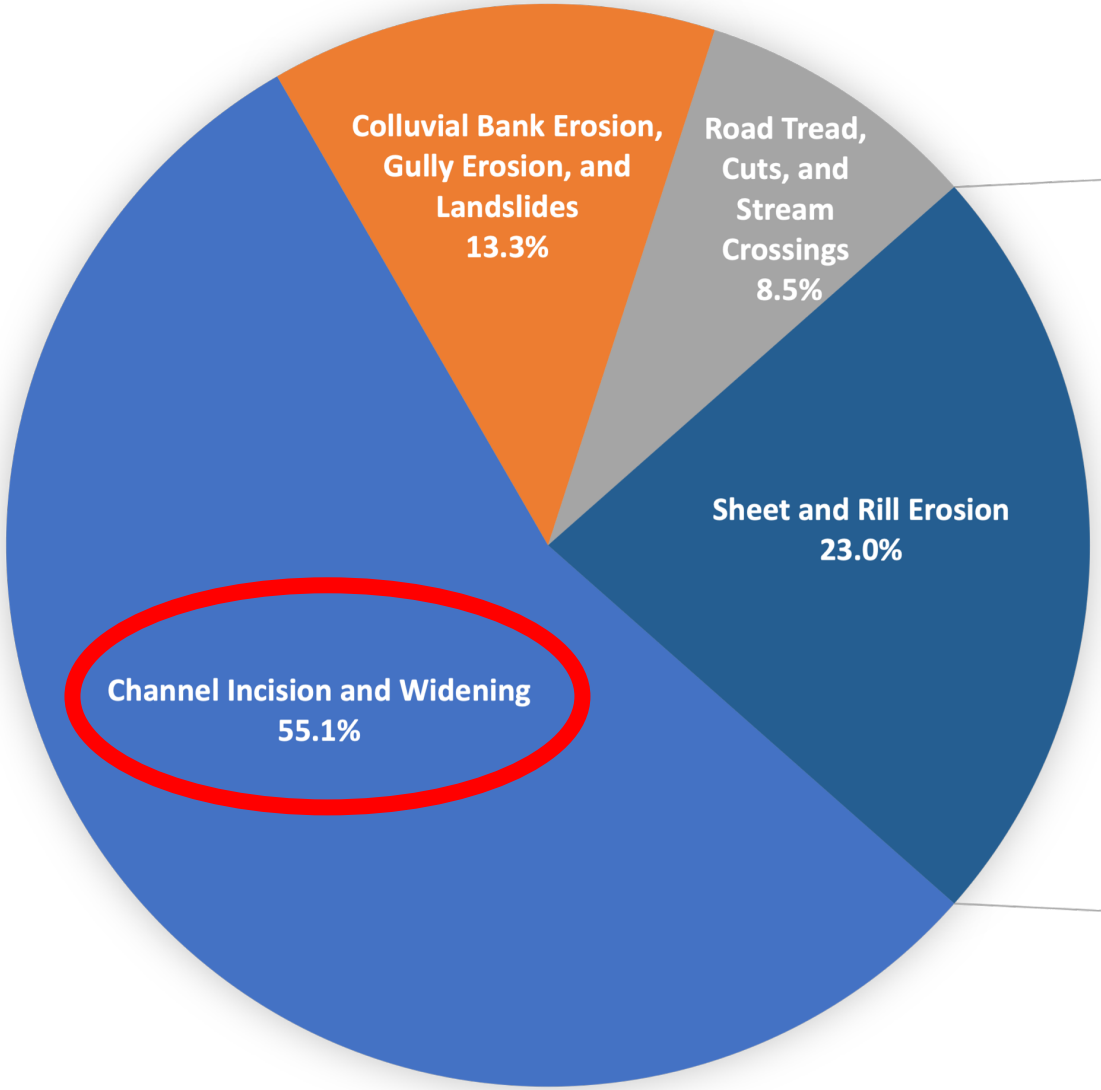


Load Targets for Salmonid Protection

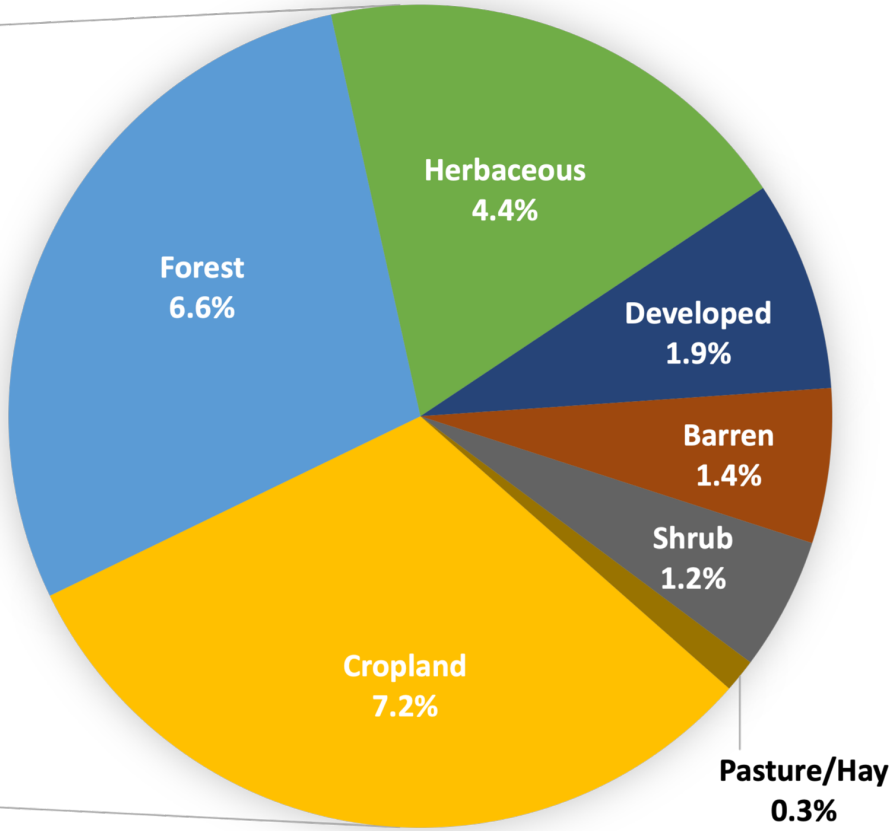


Sediment Sources

Total Watershed



Sheet and Rill Erosion



Proportional Responsibility for Channel Derived Sediment Loads

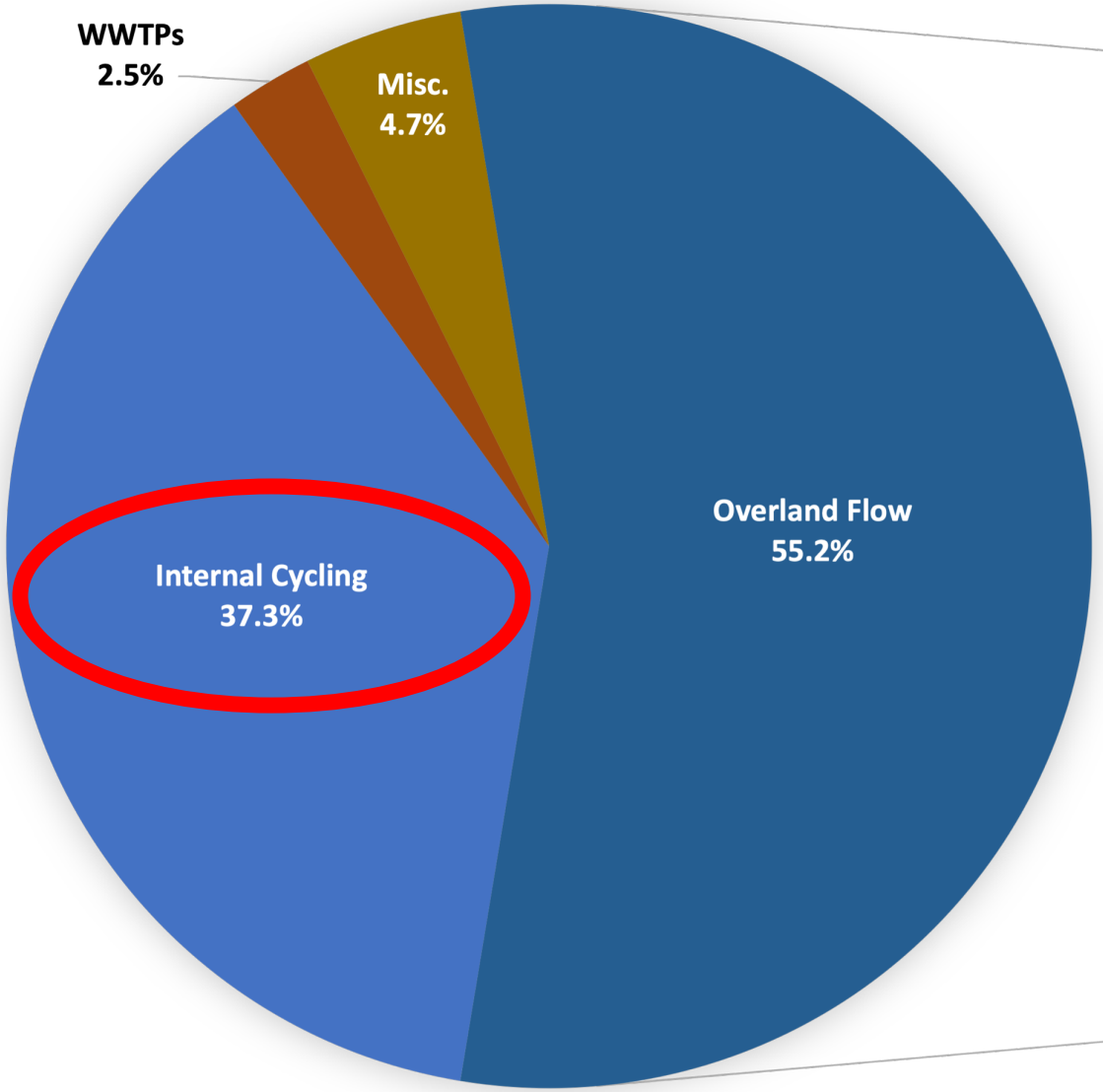
- Must assign channel-derived sediment loads (>55% total)
  - Ongoing, contemporary, anthropogenic loads
- Could assign proportional responsibility for channel-derived sediment loads
- Based on the additional runoff caused by land cover change above a background runoff rate (ΔQ)
  - Stream power, sediment transport capacity (STC)

Proportional Responsibility for Channel Derived Sediment Loads

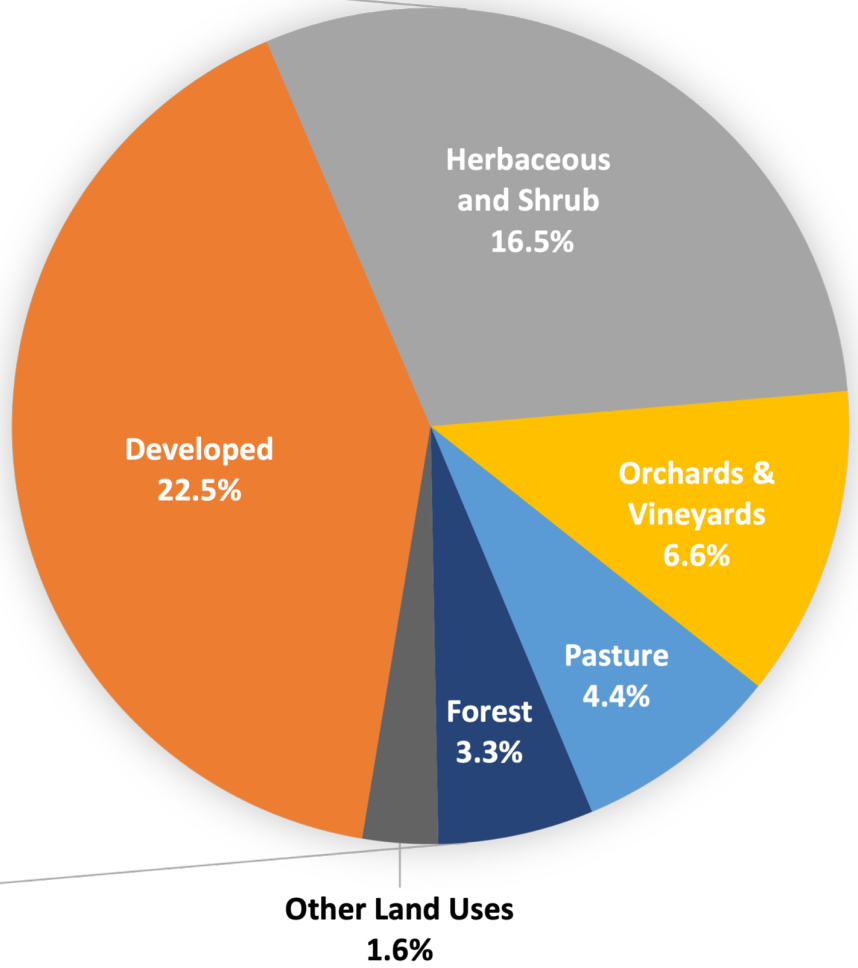
Proportional Responsibility for Channel Derived Sediment Loads

Phosphorus Sources

Total Watershed



Overland Flow



Surrogate Parameter

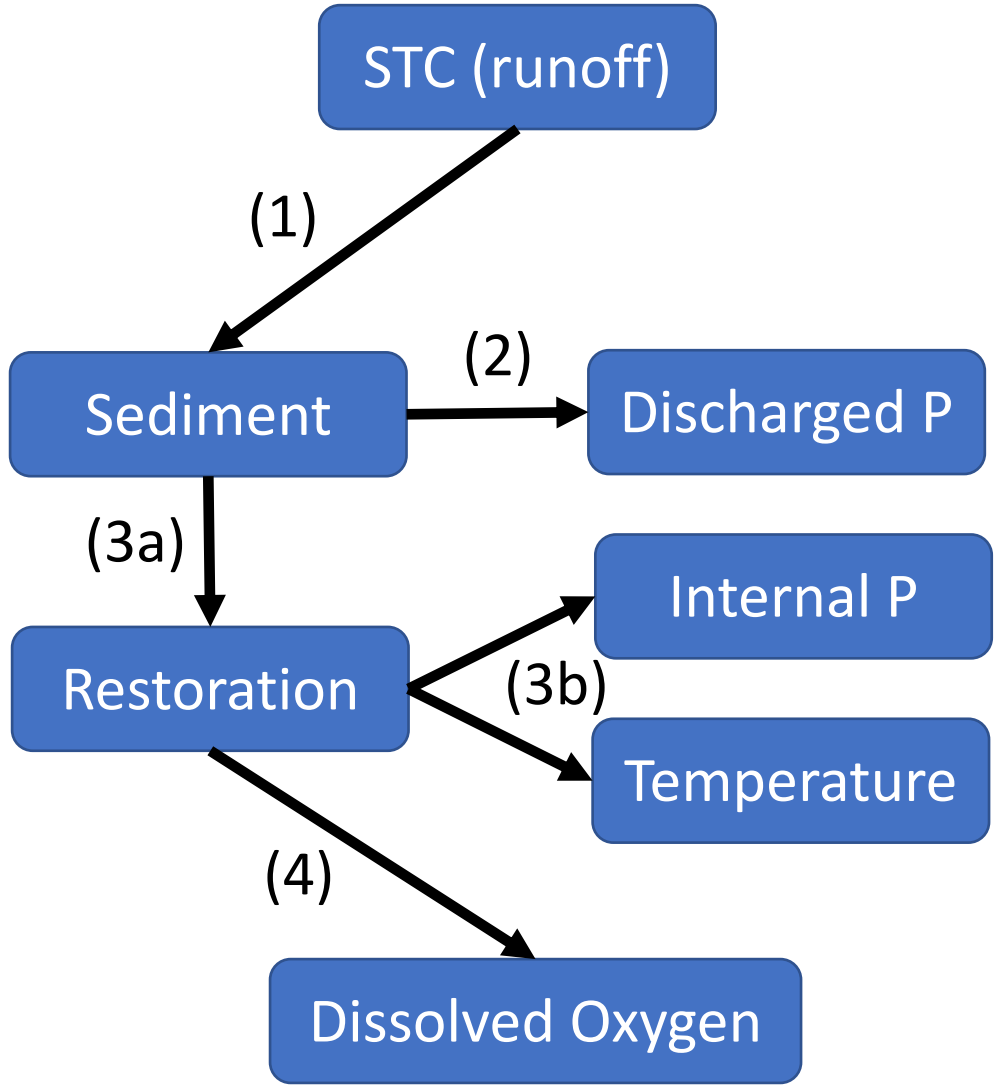
A surrogate parameter may be necessary because of the complexity of biostimulation and difficulty in monitoring discrete parameters in non-point source context.

1. Controlling sediment transport capacity (STC) leads to control of sediment
2. Controlling sediment leads to the control of discharged Phosphorus

3a. Crediting projects using the surrogate parameter encourages restoration

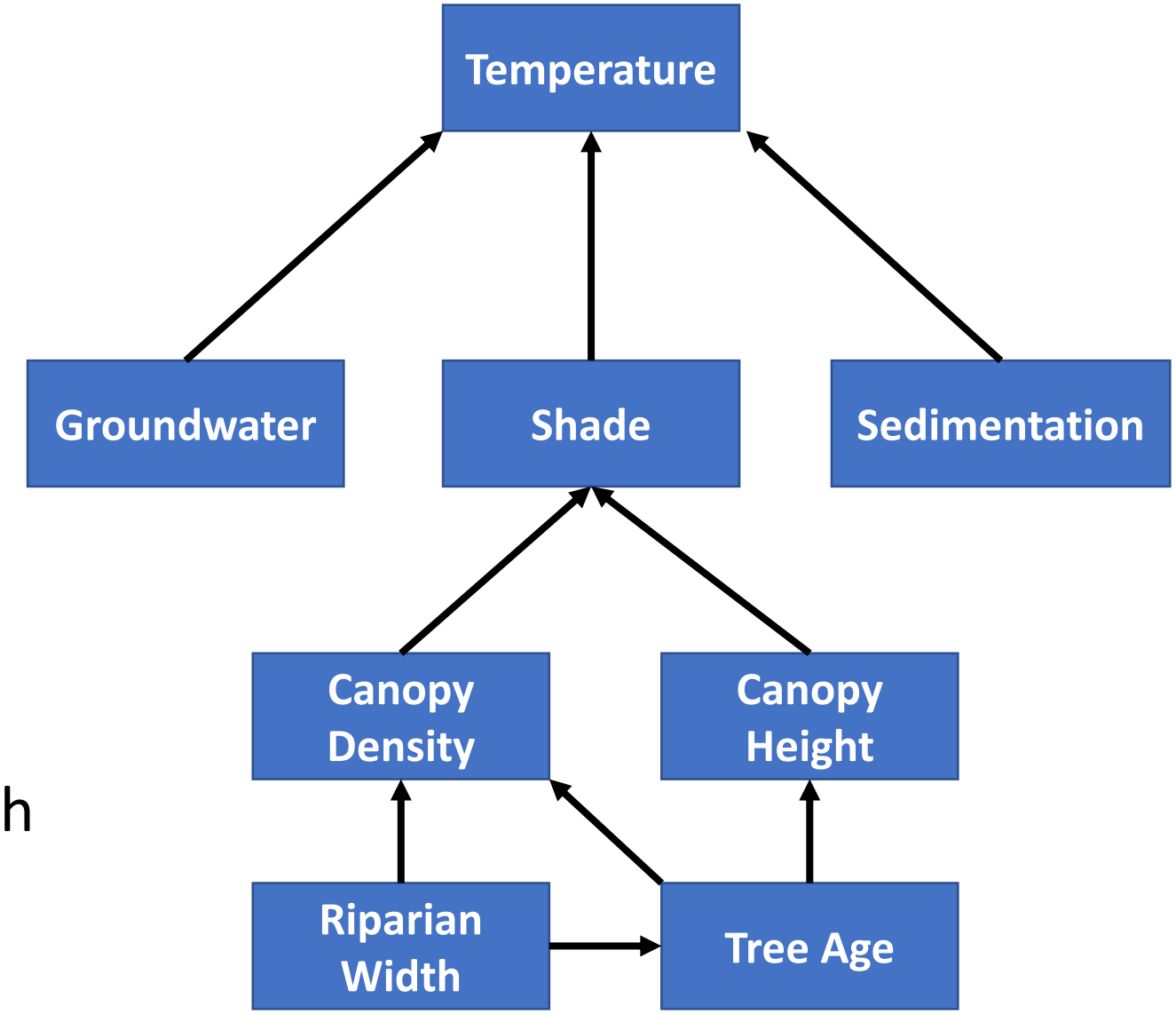
3b. Restoration controls temperature and internal cycling of Phosphorus

4. Controlling the above and encouraging restoration addresses DO conditions



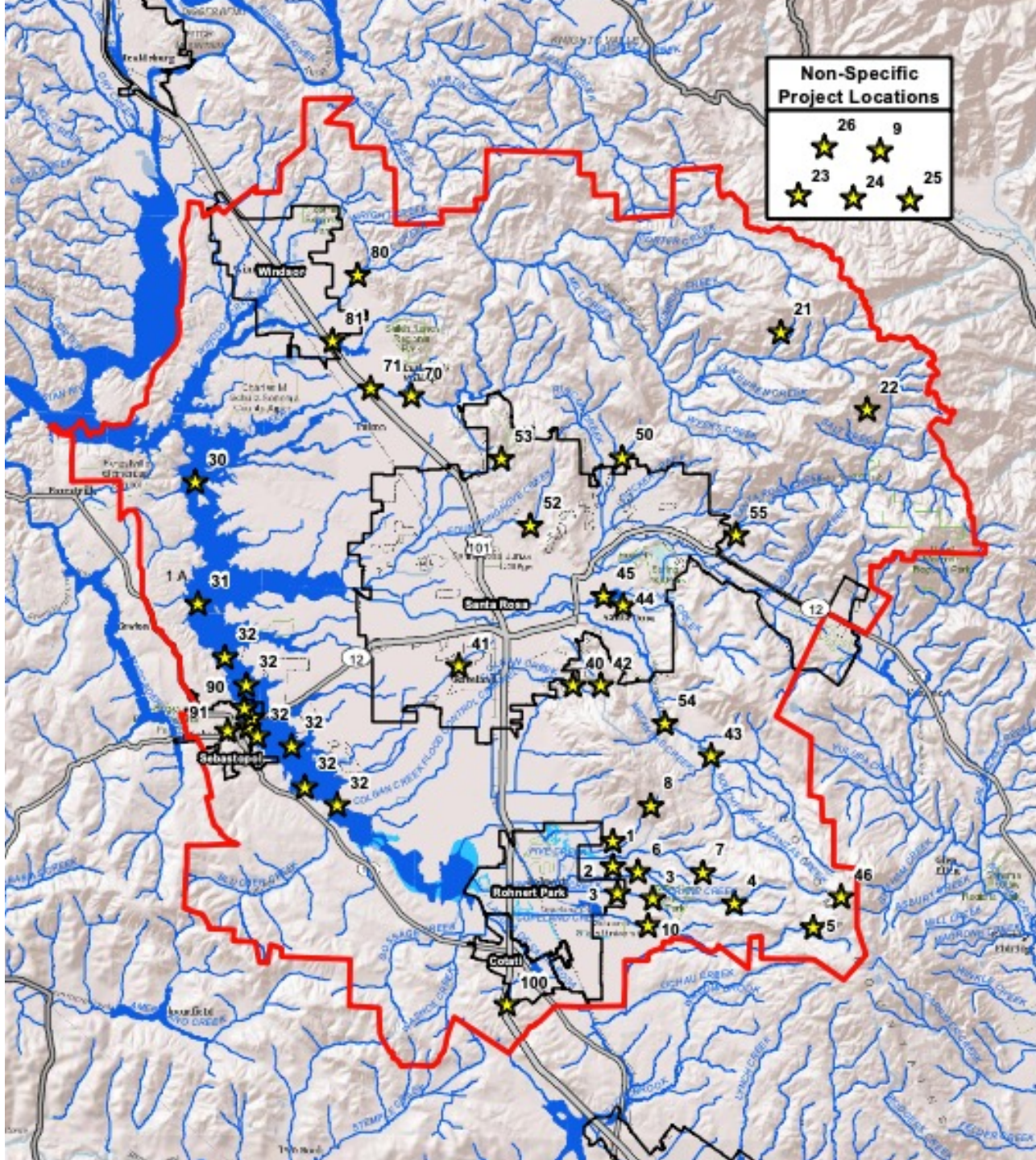
Temperature

- Implement Temperature Policy
- “Site potential effective shade”
  - Riparian shade is the primary controllable factor
  - Also want to:
    - Encourage cool groundwater (GSA)
    - Implement groundwater protection strategy (RB1)
    - Reduce sedimentation (TMDL)
- Encourage increased shade through restoration
- Riparian setbacks could be part of solution – Riparian Corridors



Action Plan

- Direction to develop a watershed-wide reconciliation plan framework, including:
  - Sonoma Water Vision
  - TetraTech's watershed opportunities map
  - GHD's watershed opportunities map
  - Hydrologic model, compare futures
- Won't prescribe specific projects
- Will encourage restoration through:
  - Permits
  - Water quality trading and/or offsets
  - Creative use of partnerships and multiple agency authorities
- Would ideally be stewarded by a formal, watershed-wide collaborative or agency with funding

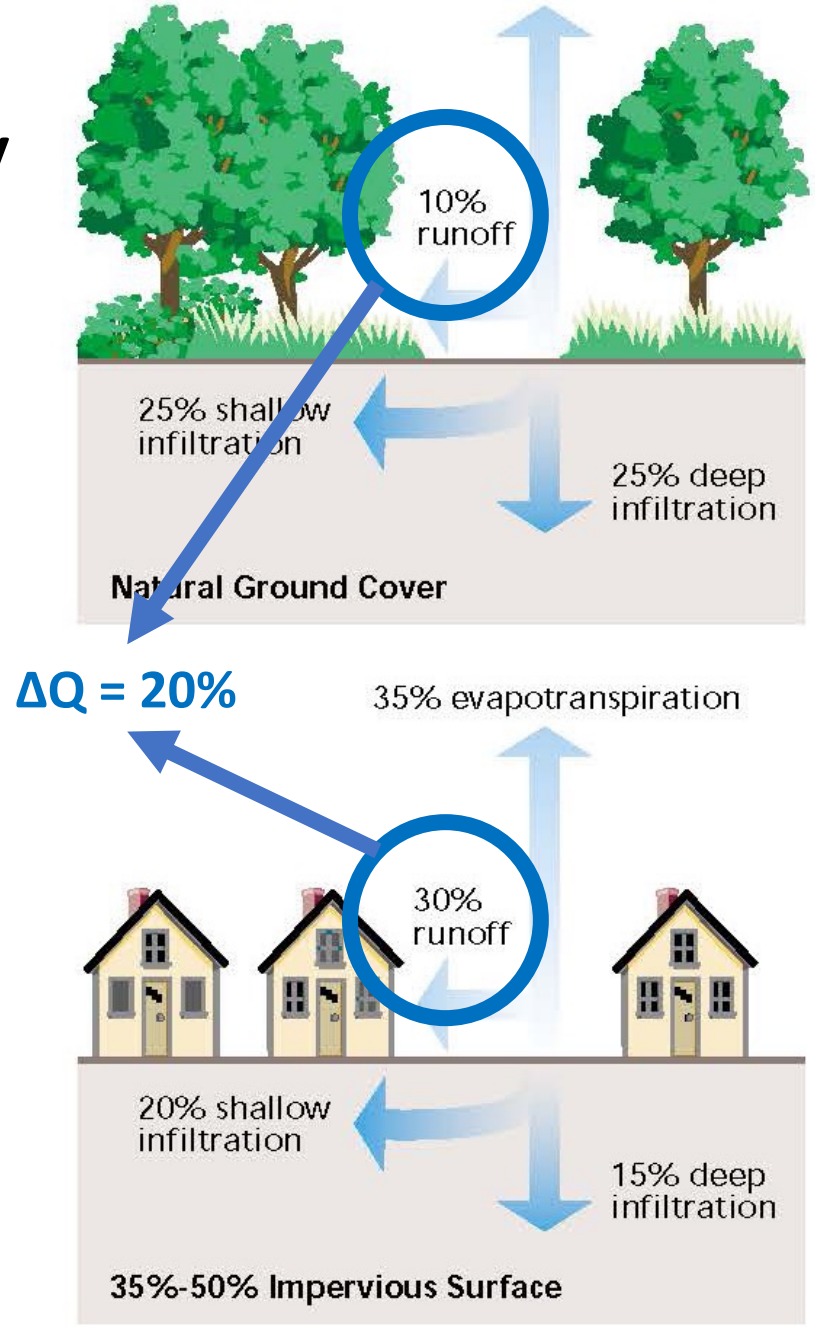


TMDL Project Timeline through 2022

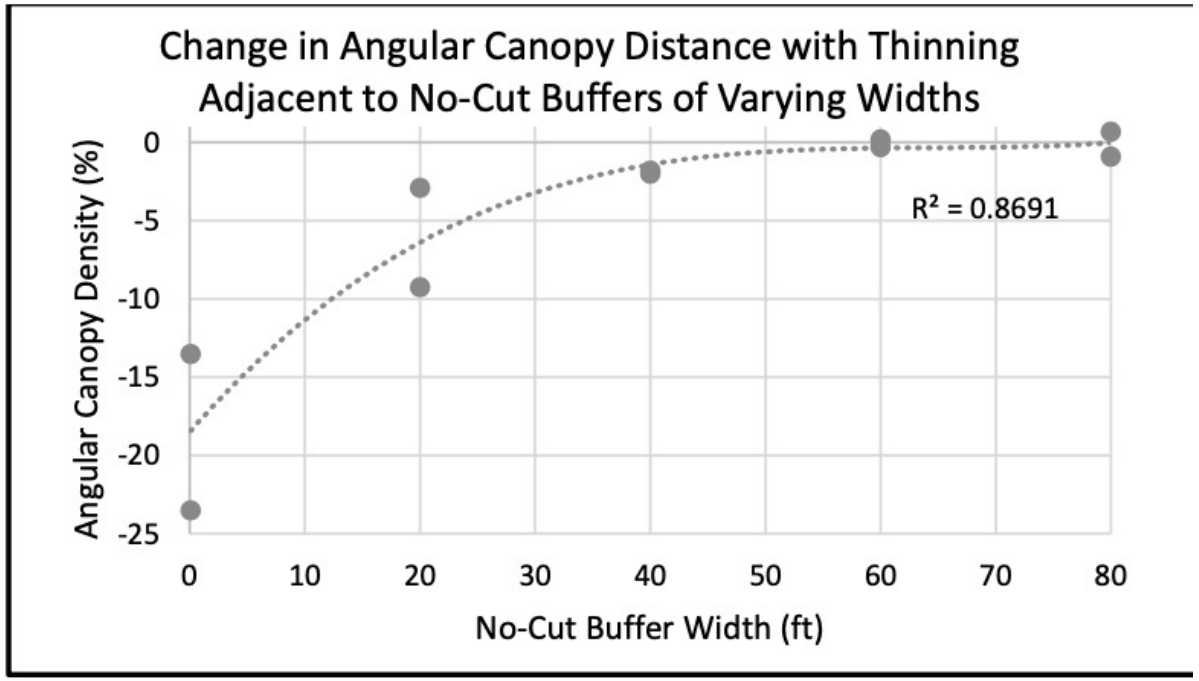
Date	Milestone/Deliverable
Oct. ‘21	Finalize Load Allocations
Dec. ‘21	Public Workshop
Mar. ‘22	Draft Staff Report into Peer Review
June ‘22	Respond to Peer Review
Fall ‘22	Revise Staff Report
Winter ‘22	Draft for Public Comment

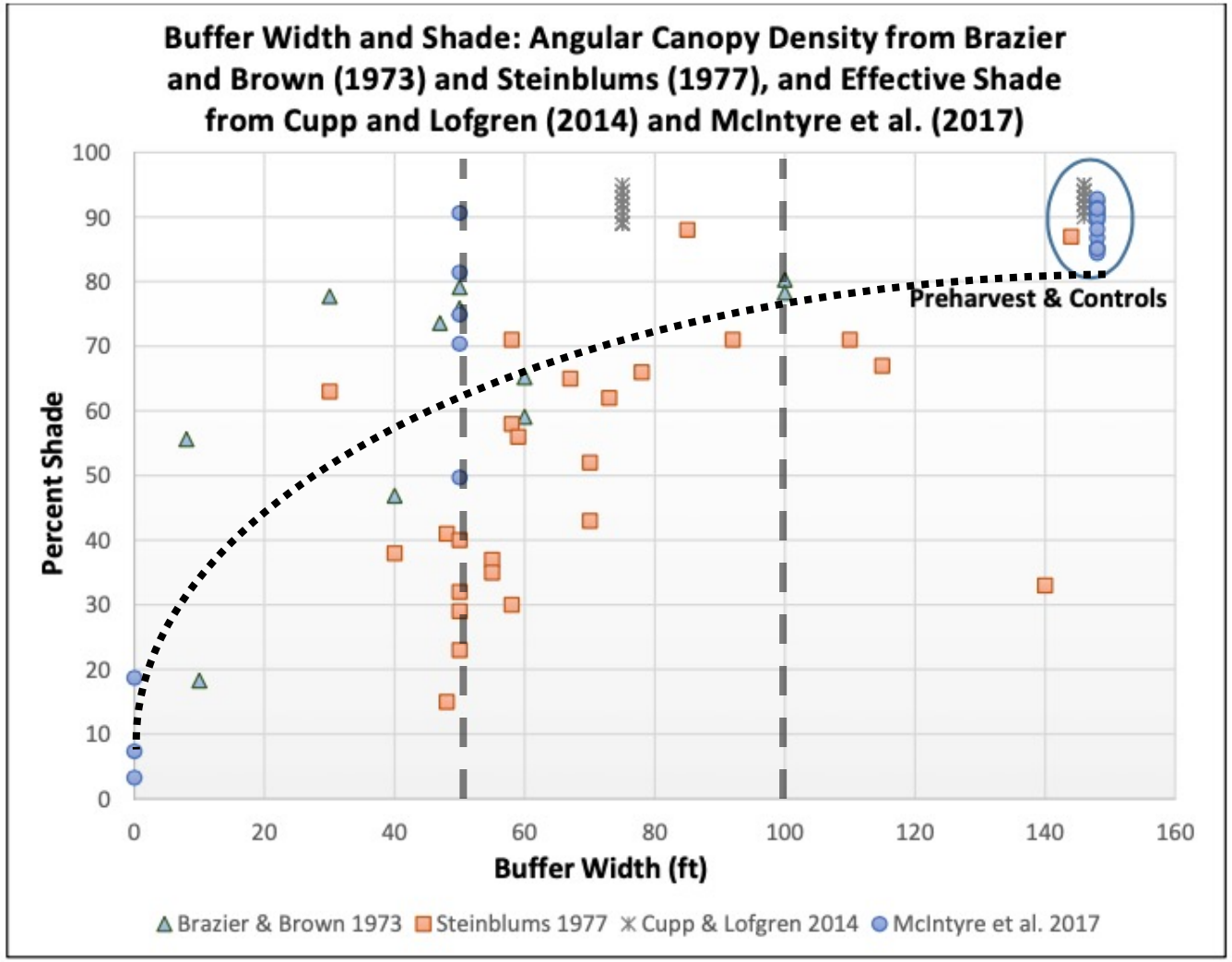
Proportional Responsibility

- Evaluate natural condition runoff for watershed
- Evaluate current condition runoff for watershed
- Difference between these two numbers (ΔQ) is the total responsibility to assign
- Determine percentage of ΔQ that each individual entity is responsible for
- Multiply that percentage by the total channel-derived sediment load in tons/yr



Riparian Shade





Nitrogen Budget

Total Watershed