

Thinking Restoration

An aerial photograph of a coastal watershed. A river flows from a forested inland area towards the ocean on the left. The river has several meanders and small islands. The surrounding land is covered in dense green forest, with some cleared areas visible. The ocean is a deep blue, and the coastline is visible on the left side of the image.

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Oregon State University

What Is Restoration?

“The goal of restoration is to re-establish
self-sustaining natural processes
among aquatic, riparian, and terrestrial
ecosystems.”

Guillermo Giannico

Examples of Natural Processes:

- Stream Network Connectivity
- Sediment Transport
- Large Wood Recruitment
- Riparian Zones

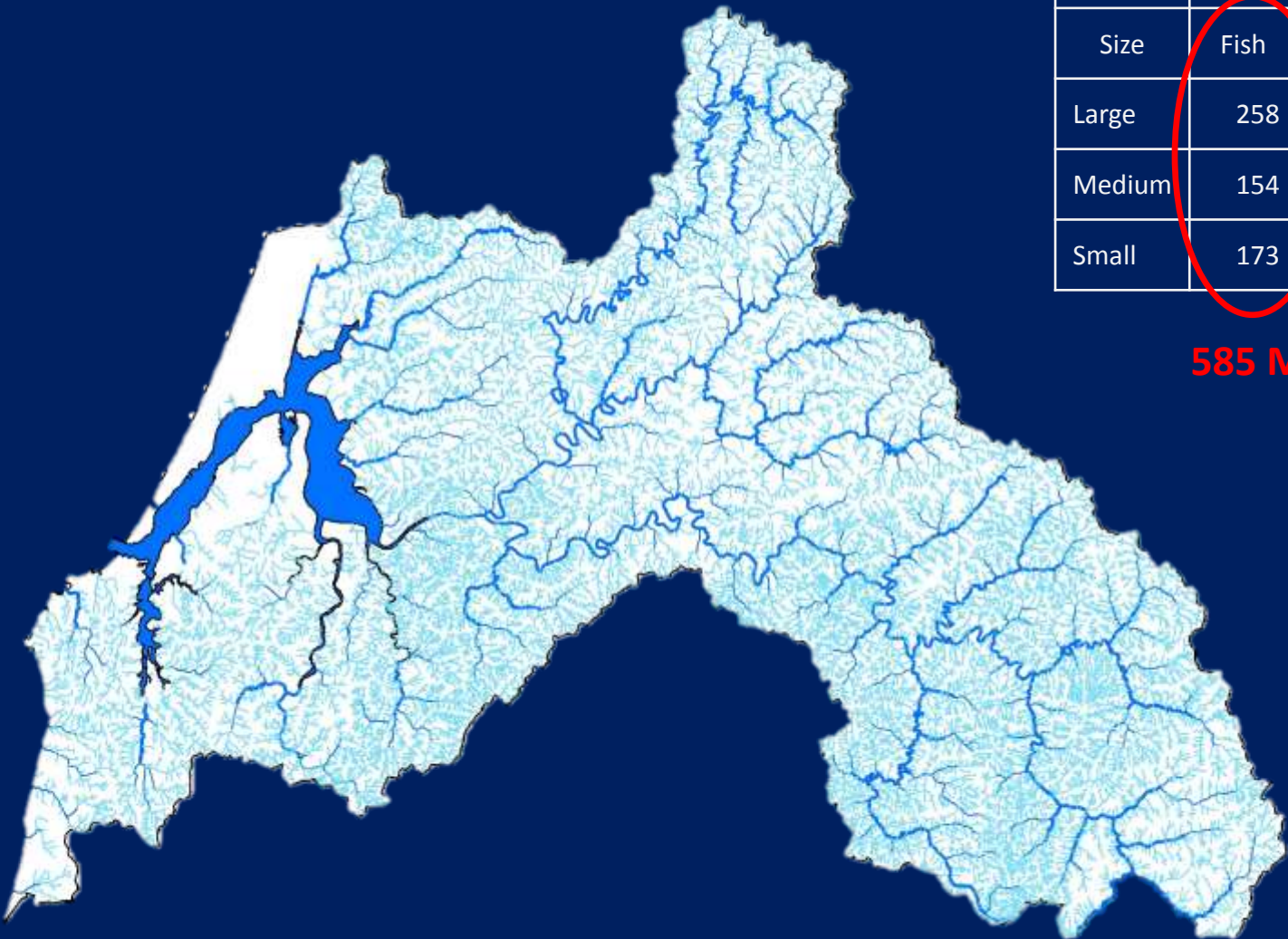
Stream Network

Characteristics of the 3,775 miles of Coos streams:

| Size | Perennial (mi.) | | | Other (mi.) | | |
|--------|-----------------|----------|---------|-------------|----------|---------|
| | Fish | Non-fish | Unknown | Fish | Non-fish | Unknown |
| Large | 258 | 2 | 0 | 48 | 0 | 0 |
| Medium | 154 | 23 | 4 | 51 | 7 | 1 |
| Small | 173 | 158 | 16 | 261 | 2,434 | 184 |

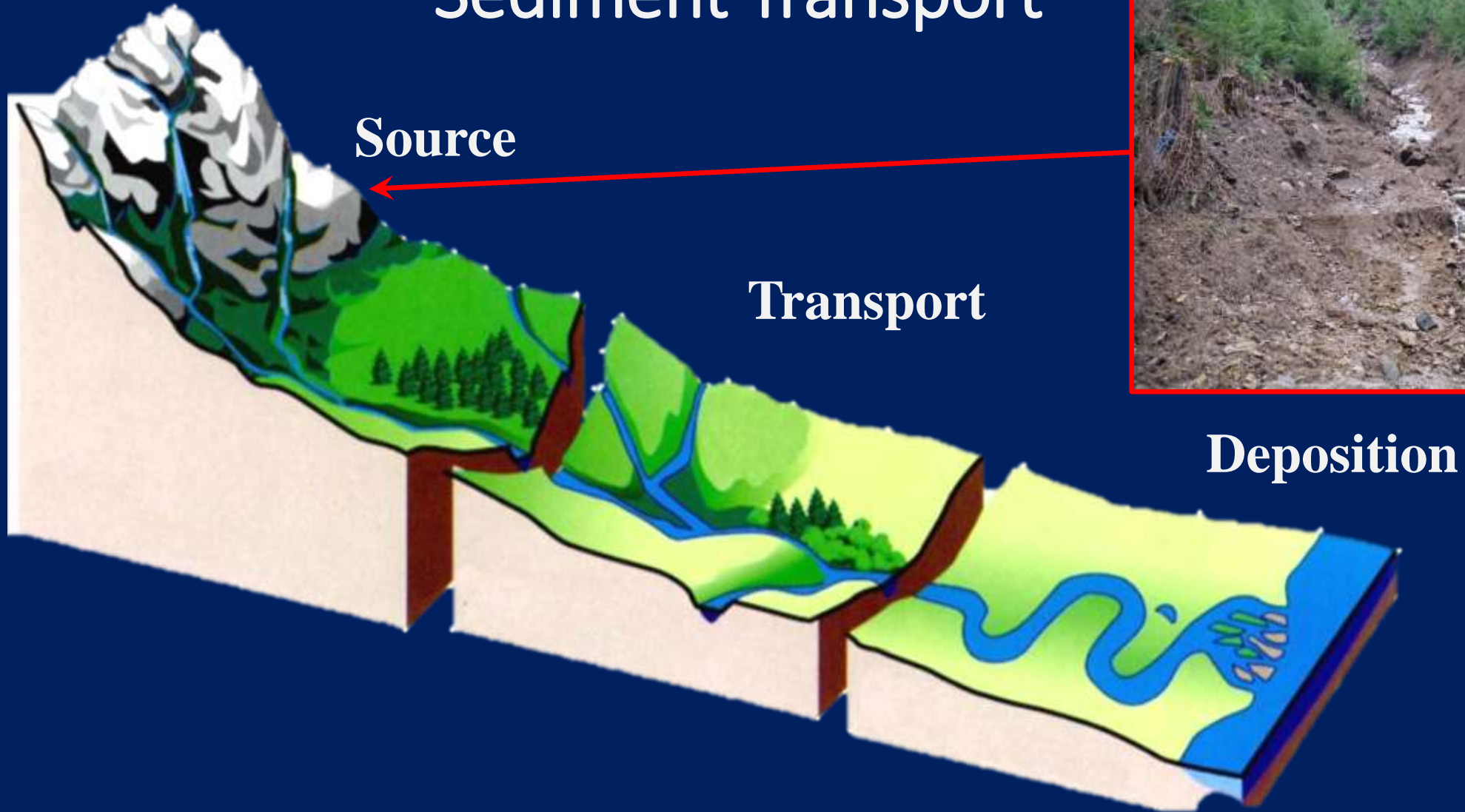
585 Miles

360 Miles

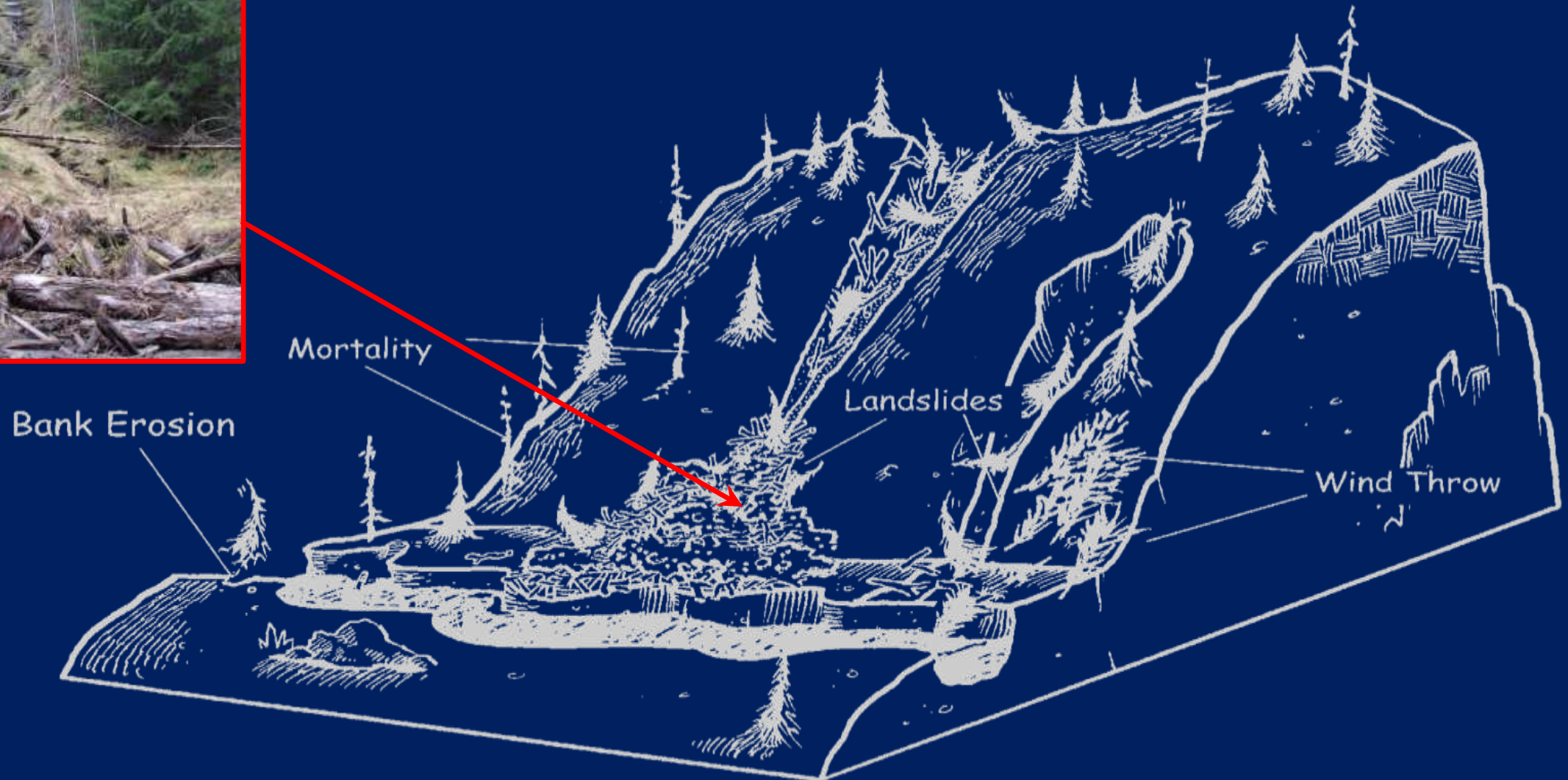


Connectivity is Key:
38% of streams with fish are not perennial!

Sediment Transport

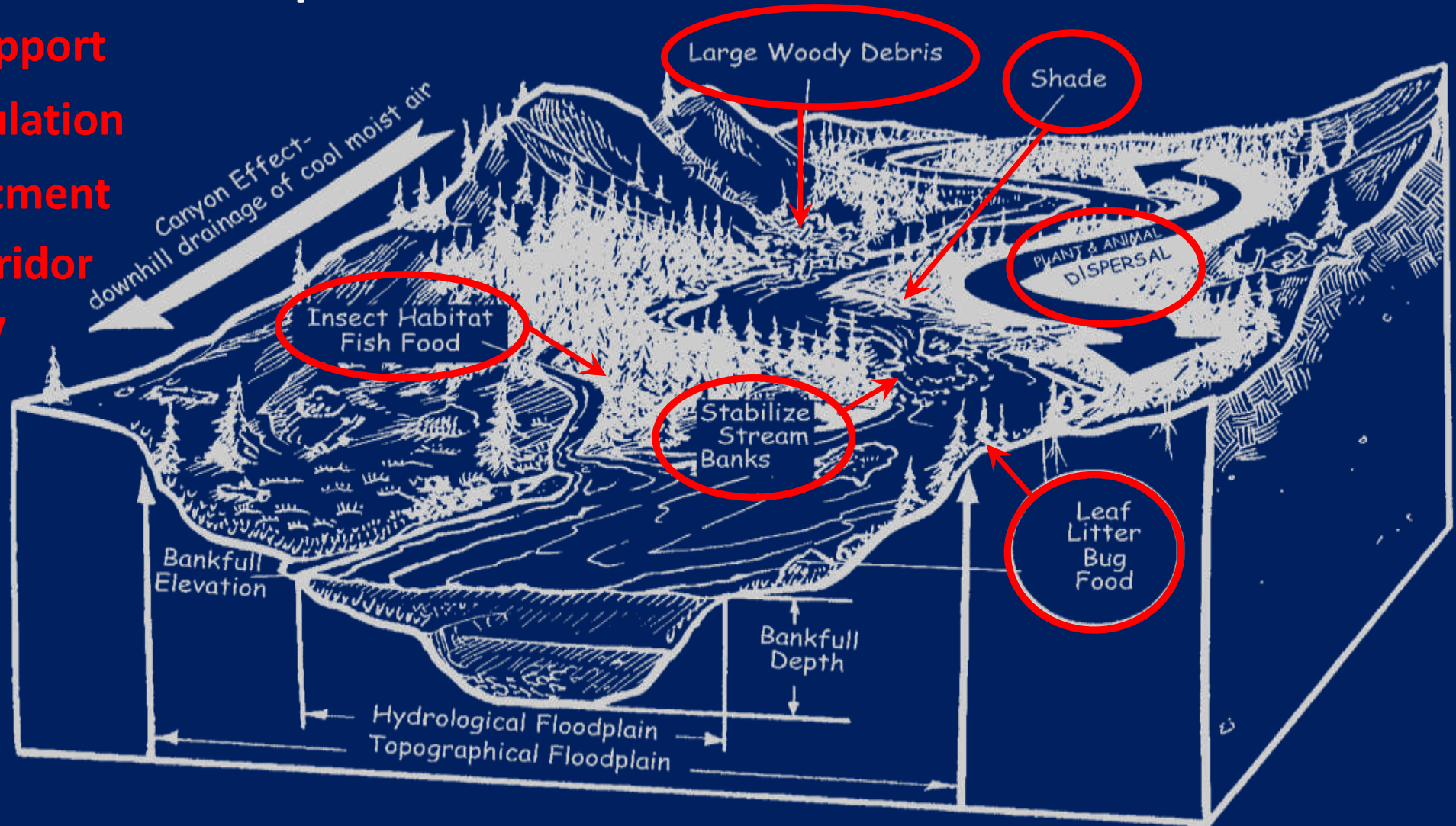


Large Wood Recruitment



Riparian Zone Processes

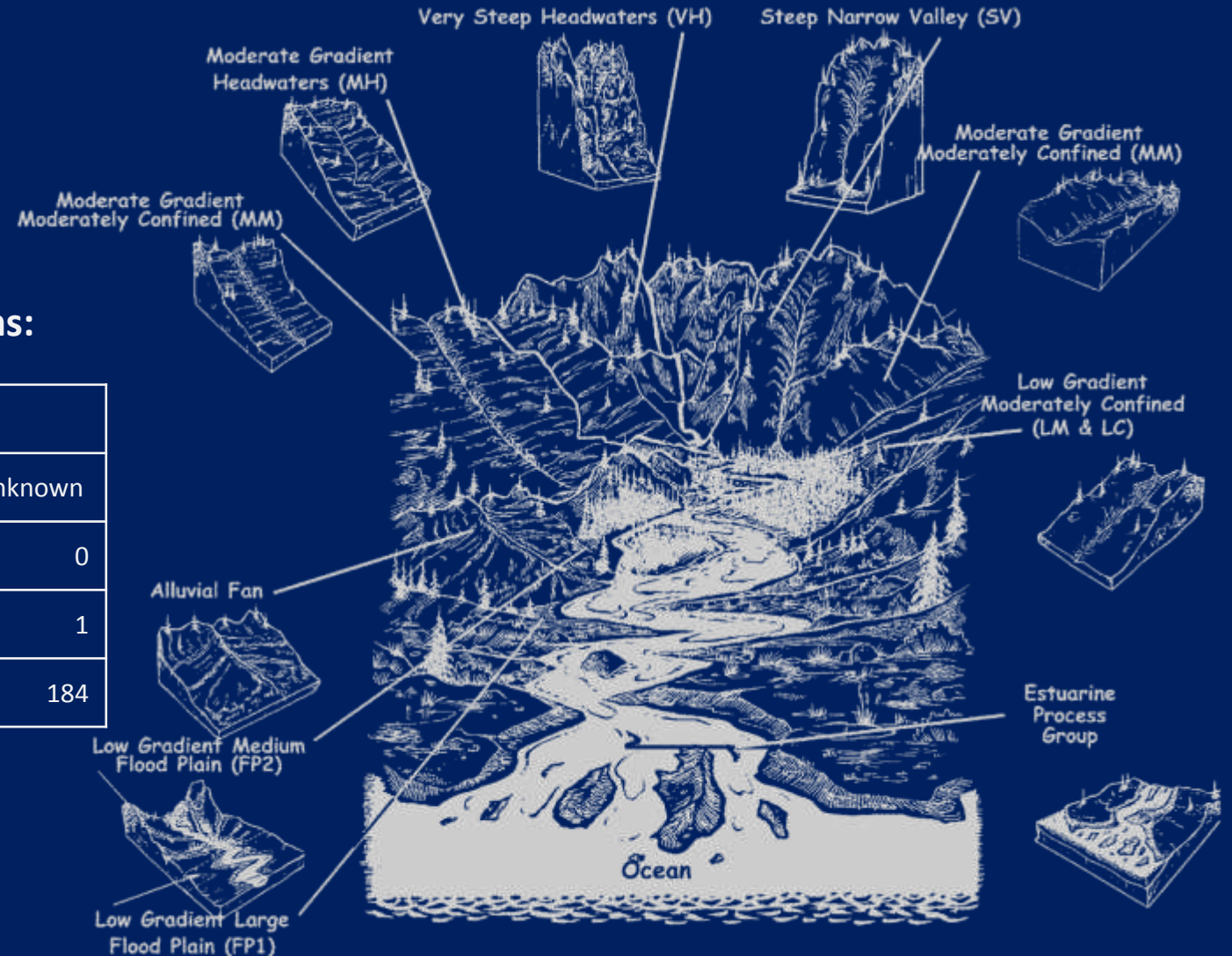
1. Food Web Support
2. Thermal Regulation
3. Wood Recruitment
4. Dispersal Corridor
5. Bank Stability



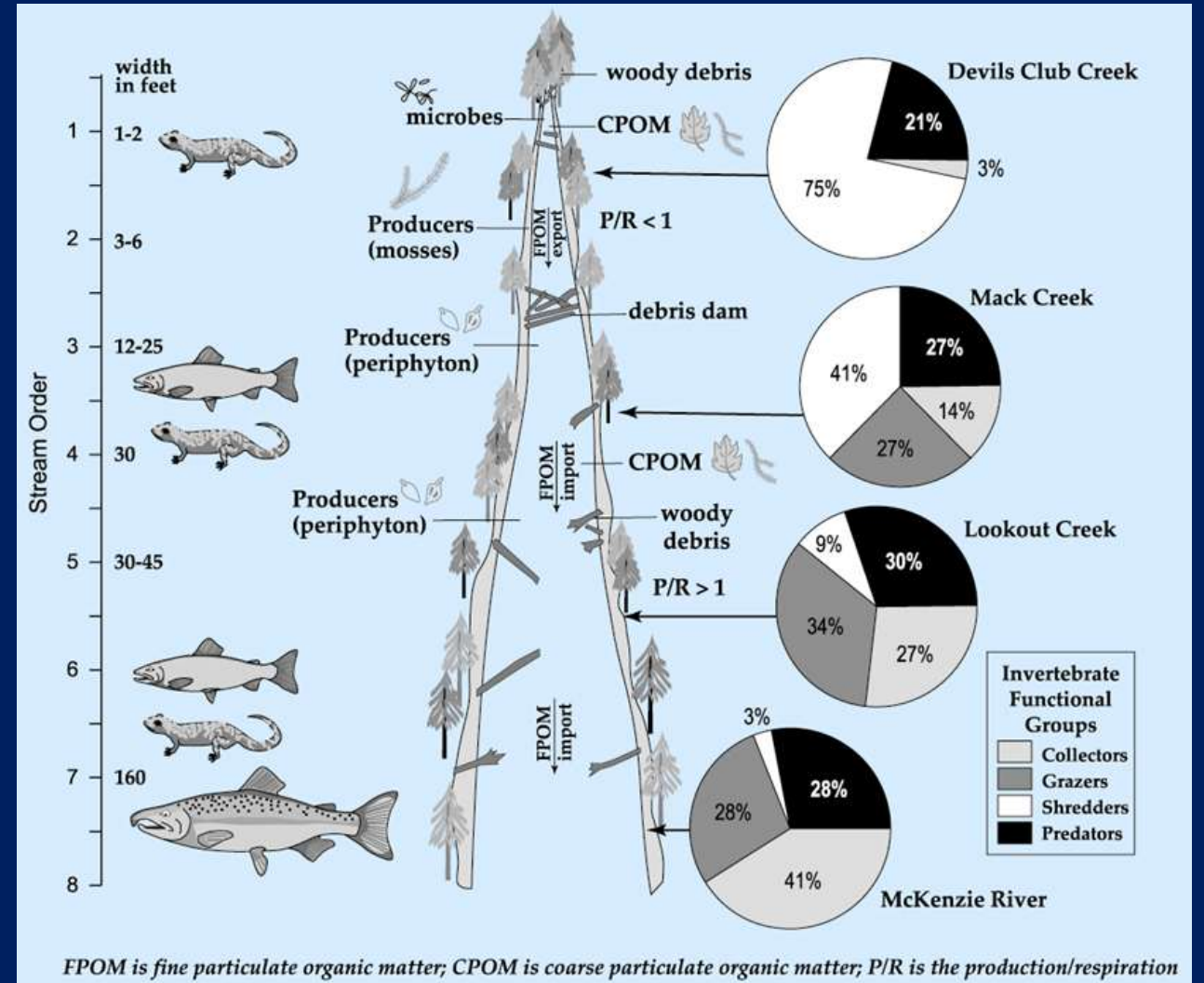
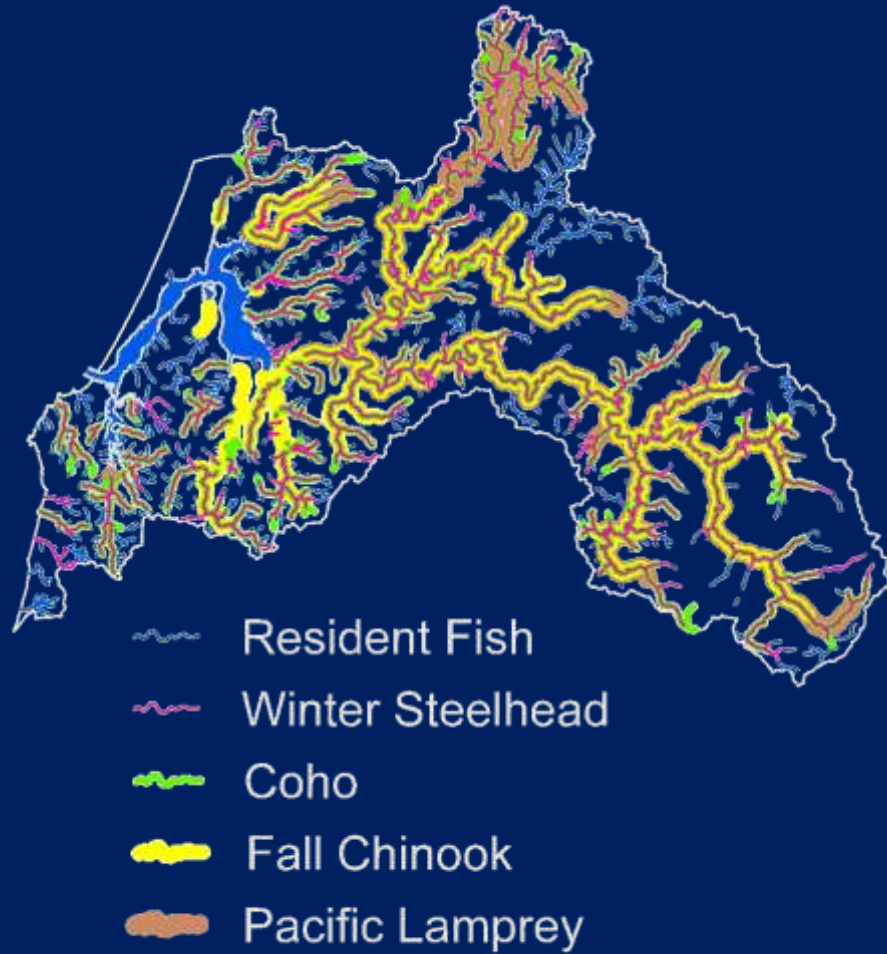
Diverse Channel Habitats

Characteristics of the 3,775 miles of Coos streams:

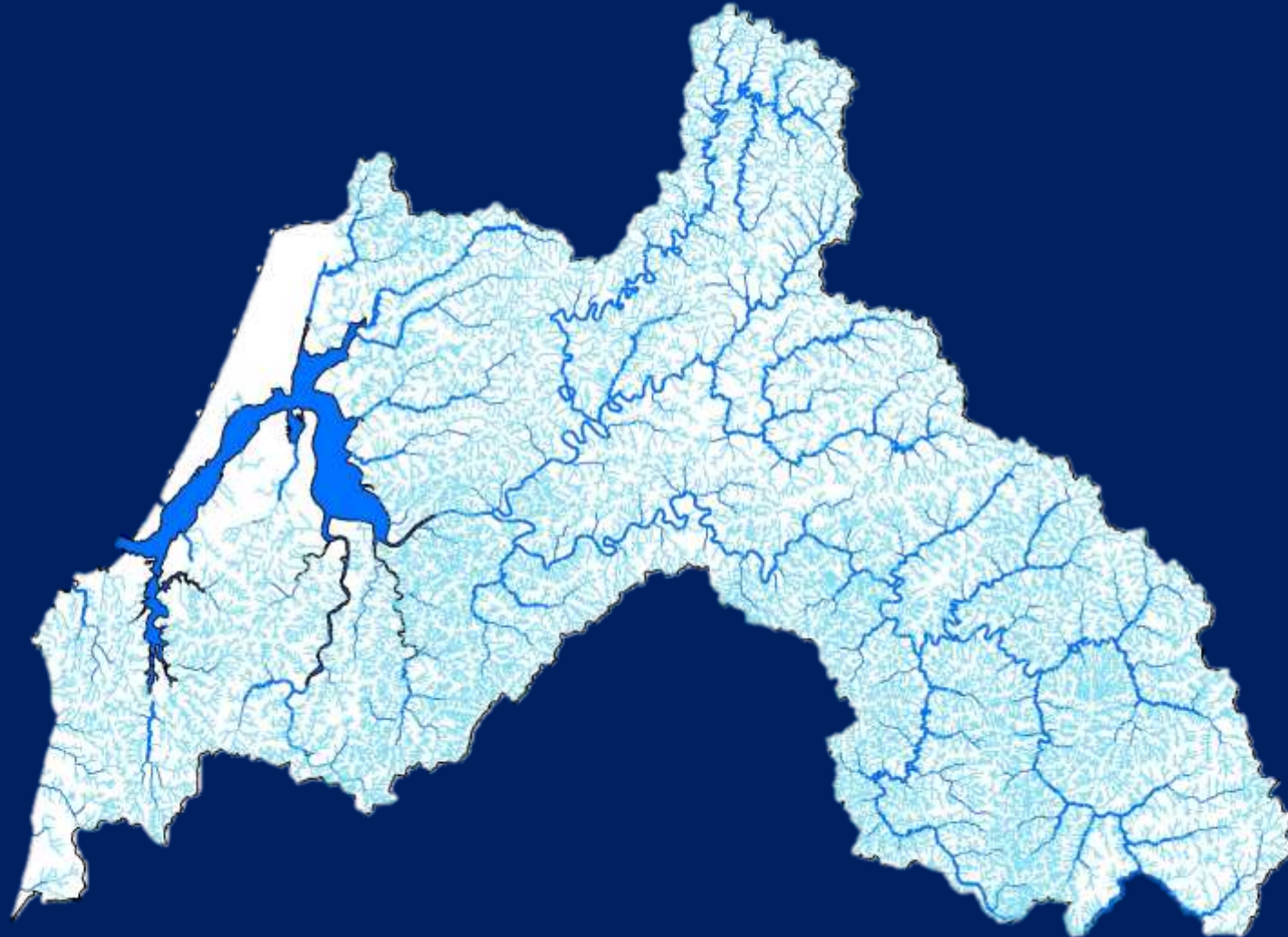
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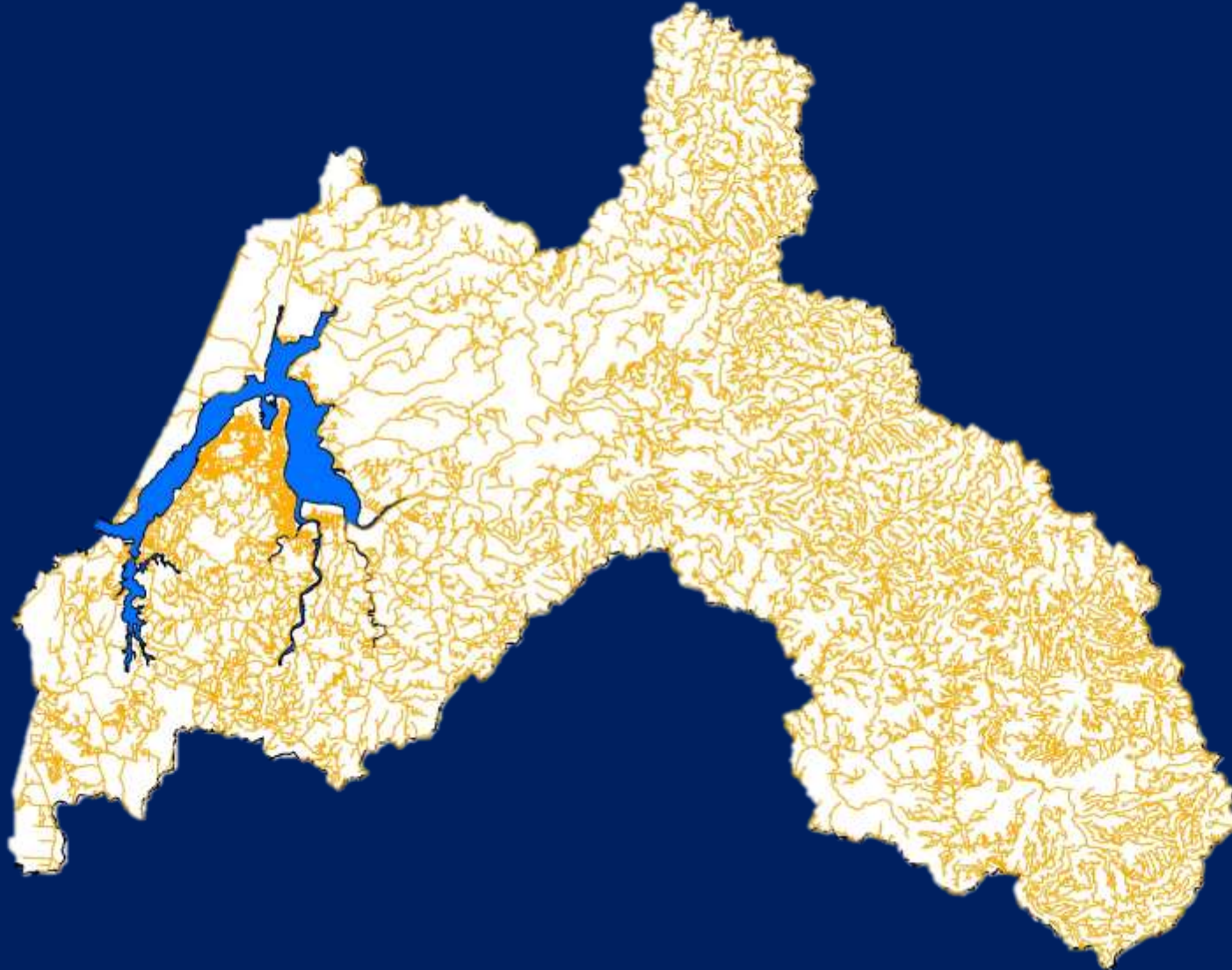
River Continuum Concept



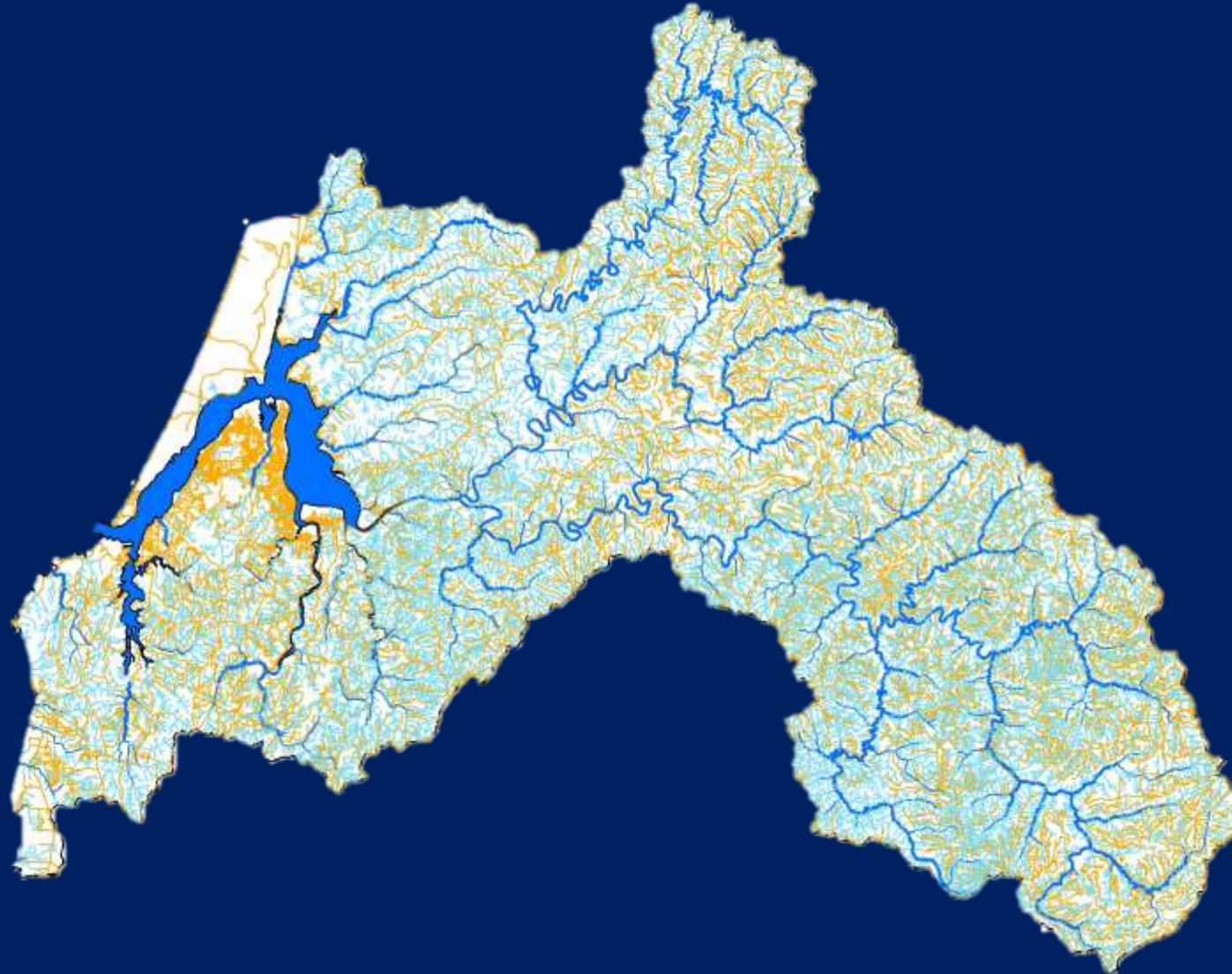
Connectivity Conundrum



Coos Road Network



Roads in Relation to Streams

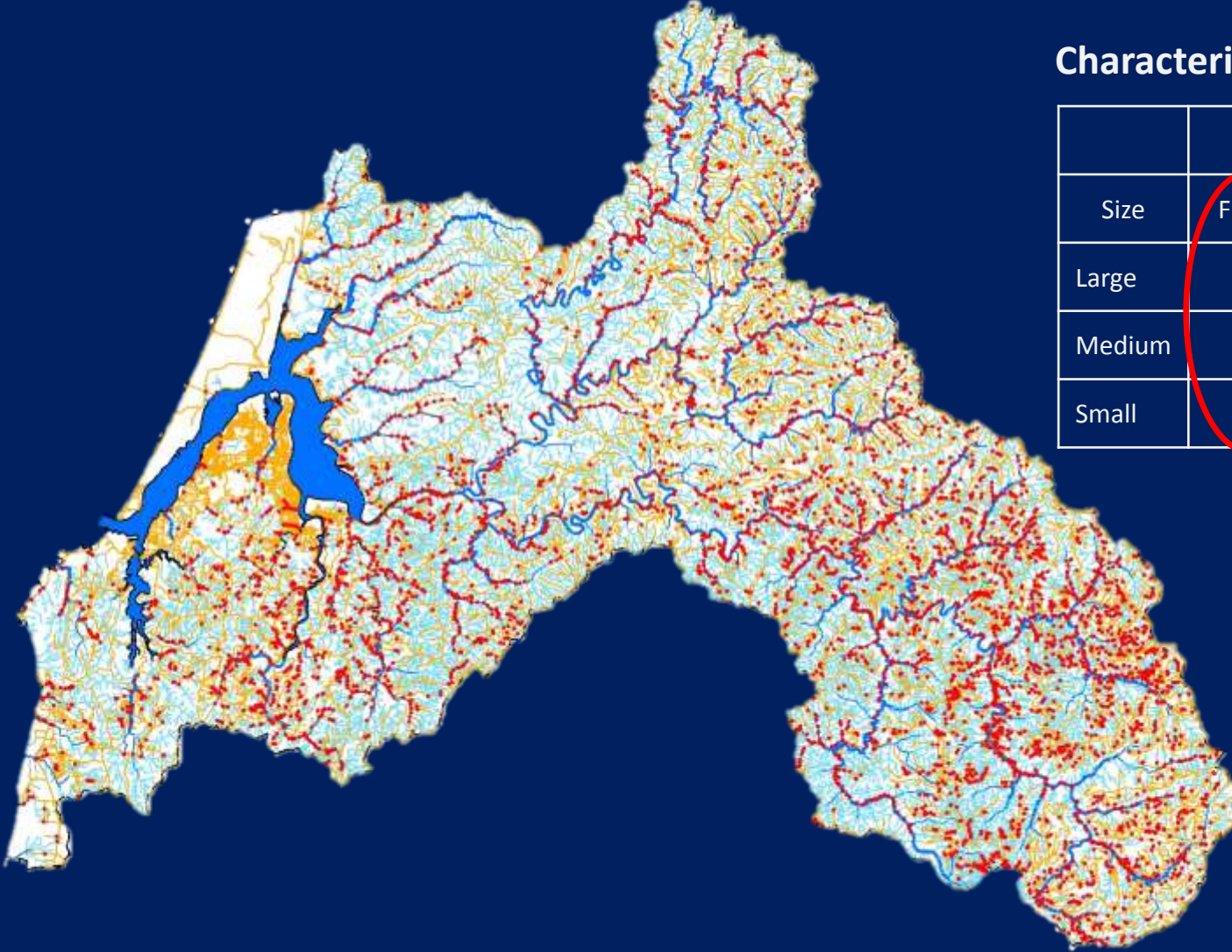


Stream Crossings

Characteristics of the 5,705 road- stream crossings:

| Size | Perennial (#) | | | Other (#) | | |
|--------|---------------|----------|---------|-----------|----------|---------|
| | Fish | Non-fish | Unknown | Fish | Non-fish | Unknown |
| Large | 149 | 1 | 0 | 35 | 0 | 0 |
| Medium | 184 | 12 | 3 | 40 | 5 | 0 |
| Small | 230 | 138 | 19 | 406 | 4,282 | 201 |

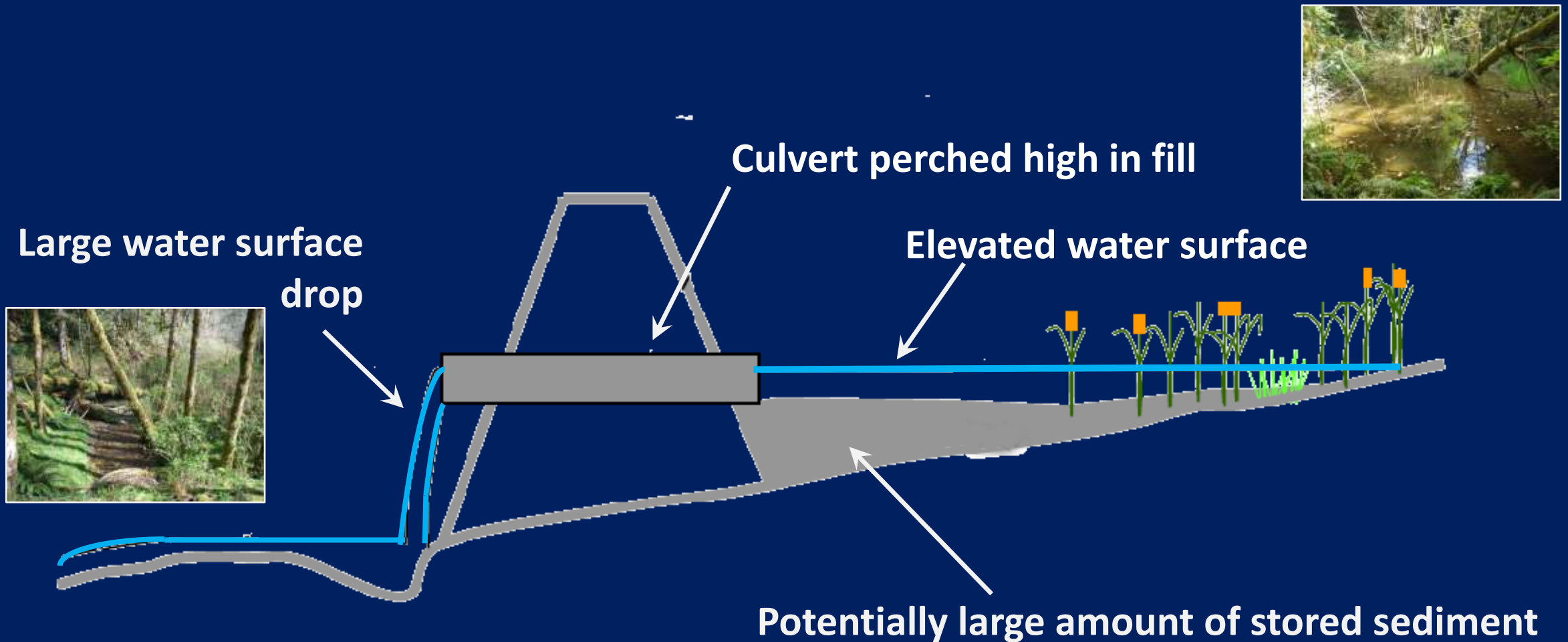
1. Fish Crossings = 1,044
2. Non-fish Crossings = 4,661



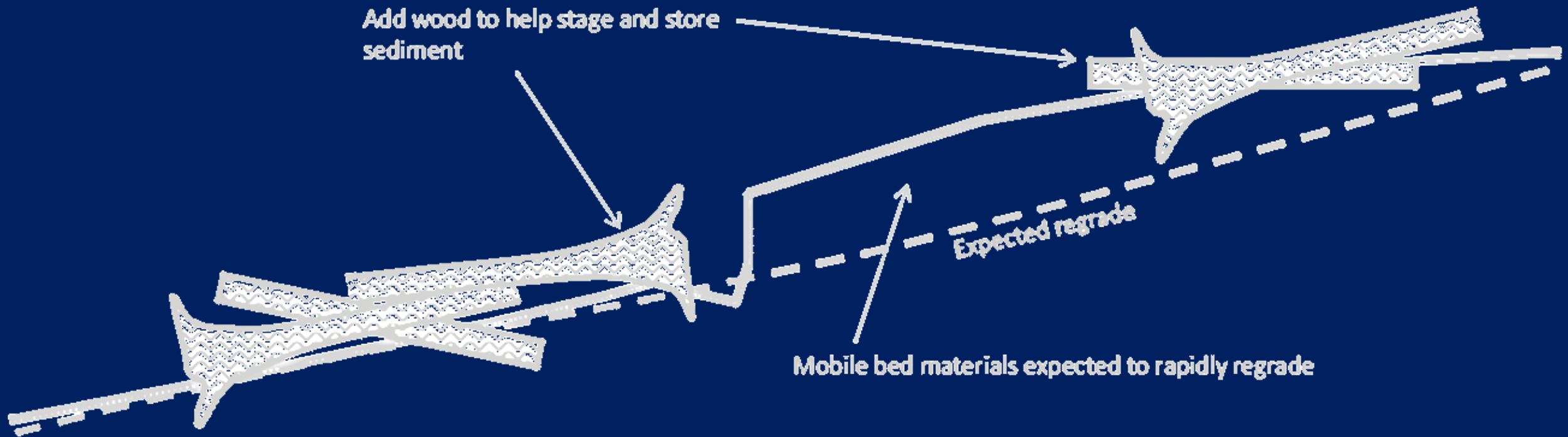
Landowner/Manager Objective



Typical Perched Culvert Situation



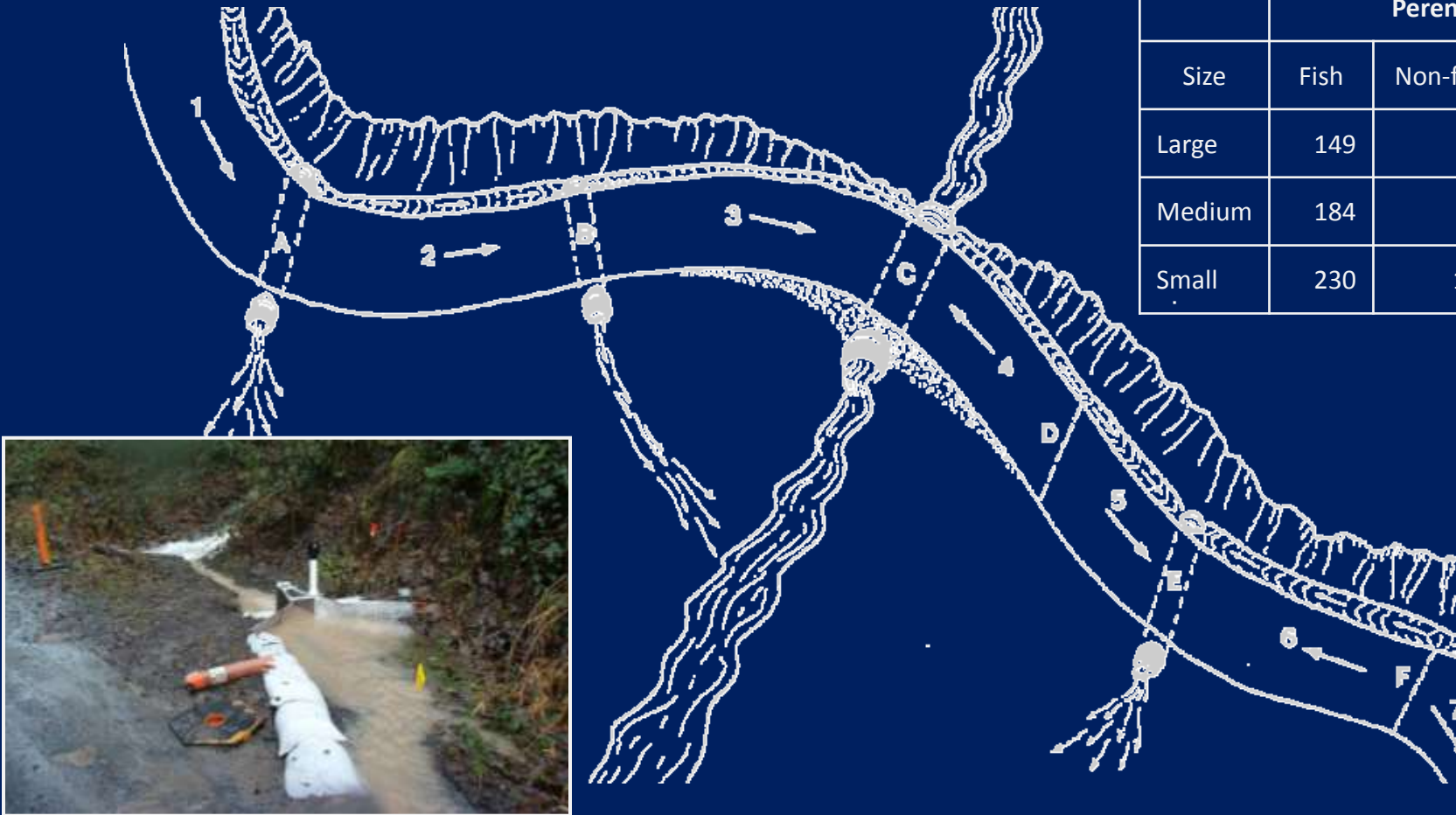
Longitudinal Profile



Beyond Fish Passage

Characteristics of the 5,705 road- stream crossings:

| | Perennial (#) | | | Other (#) | | |
|--------|---------------|----------|---------|-----------|----------|---------|
| Size | Fish | Non-fish | Unknown | Fish | Non-fish | Unknown |
| Large | 149 | 1 | 0 | 35 | 0 | 0 |
| Medium | 184 | 12 | 3 | 40 | 5 | 0 |
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Questions?



Hillslope Processes



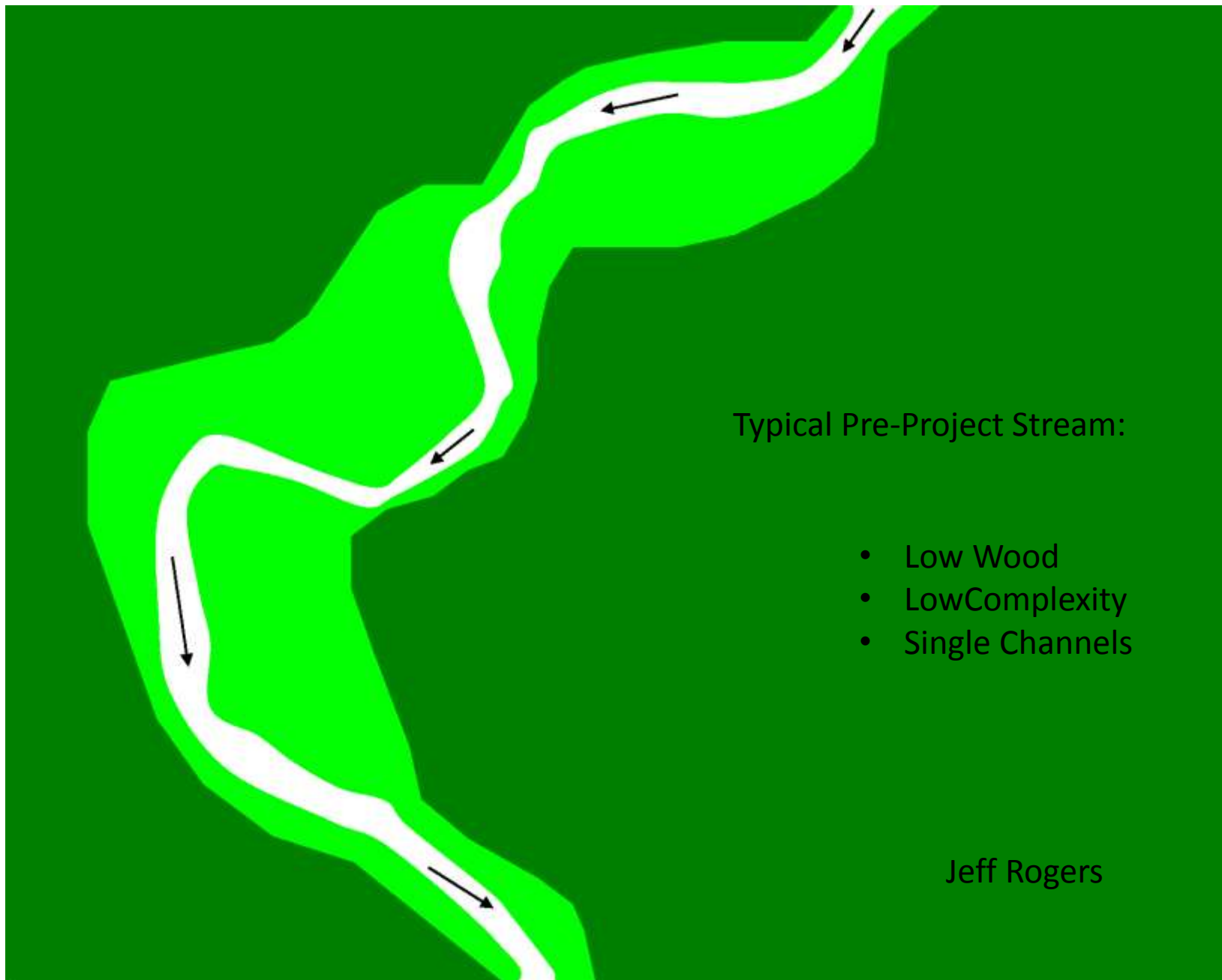
Habitat Restoration

Short Term:
Replicate habitat features no longer being created by natural processes.



Long Term:
Restore natural processes that create habitat diversity necessary for salmonids..

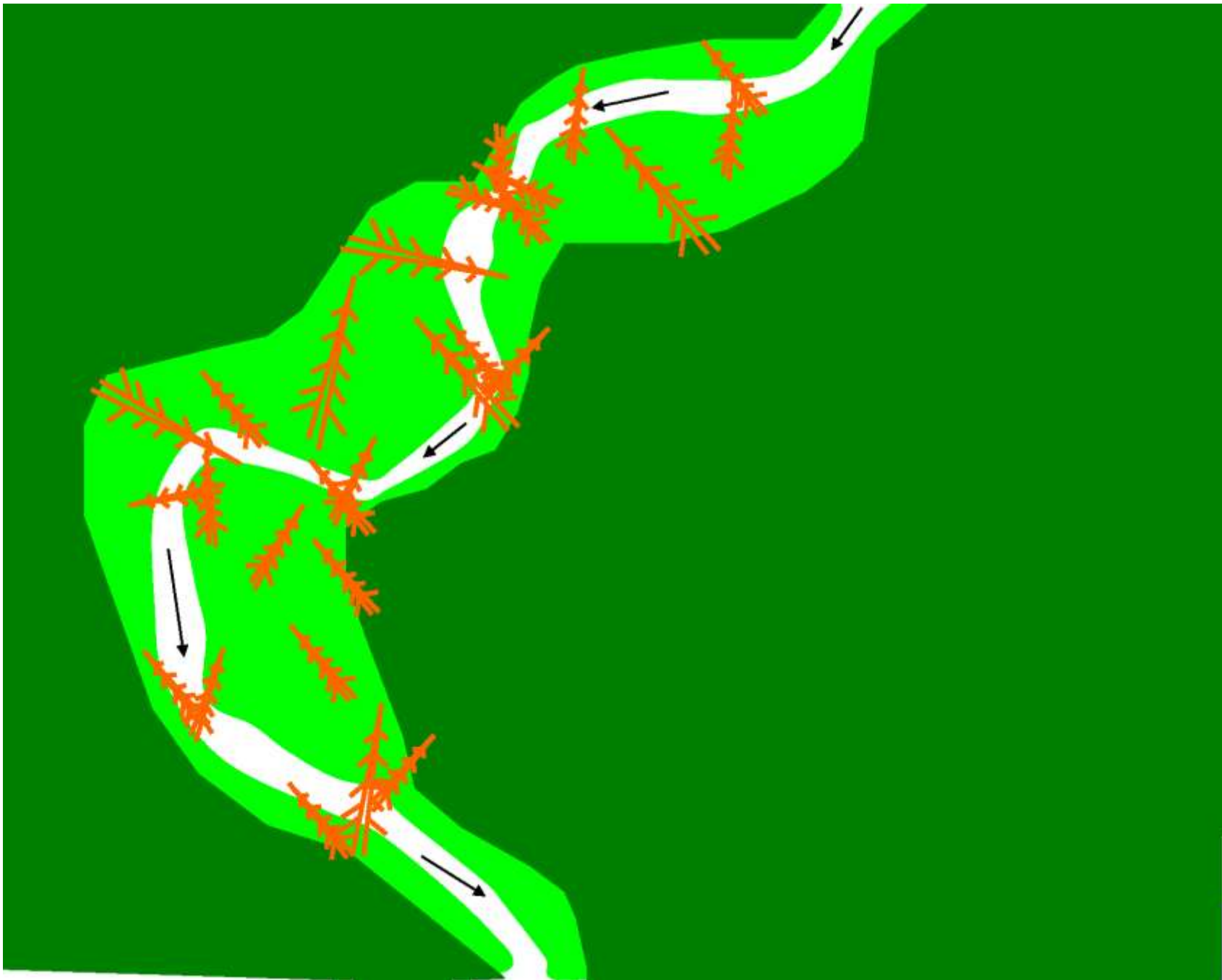
Jeff Rogers



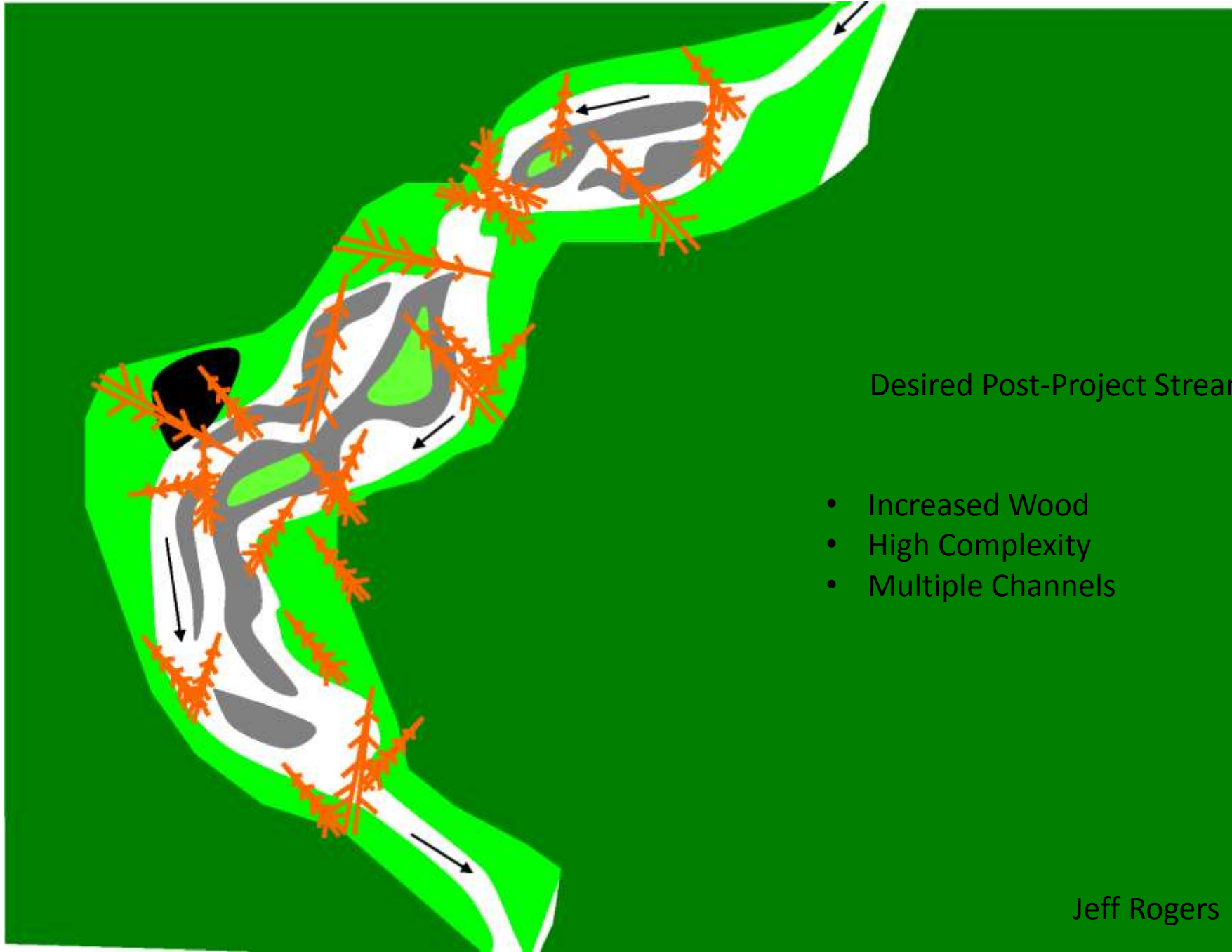
Typical Pre-Project Stream:

- Low Wood
- LowComplexity
- Single Channels

Jeff Rogers



Jeff Rogers



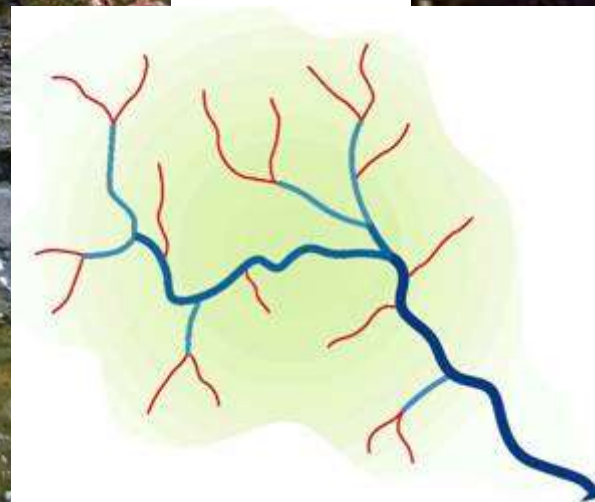
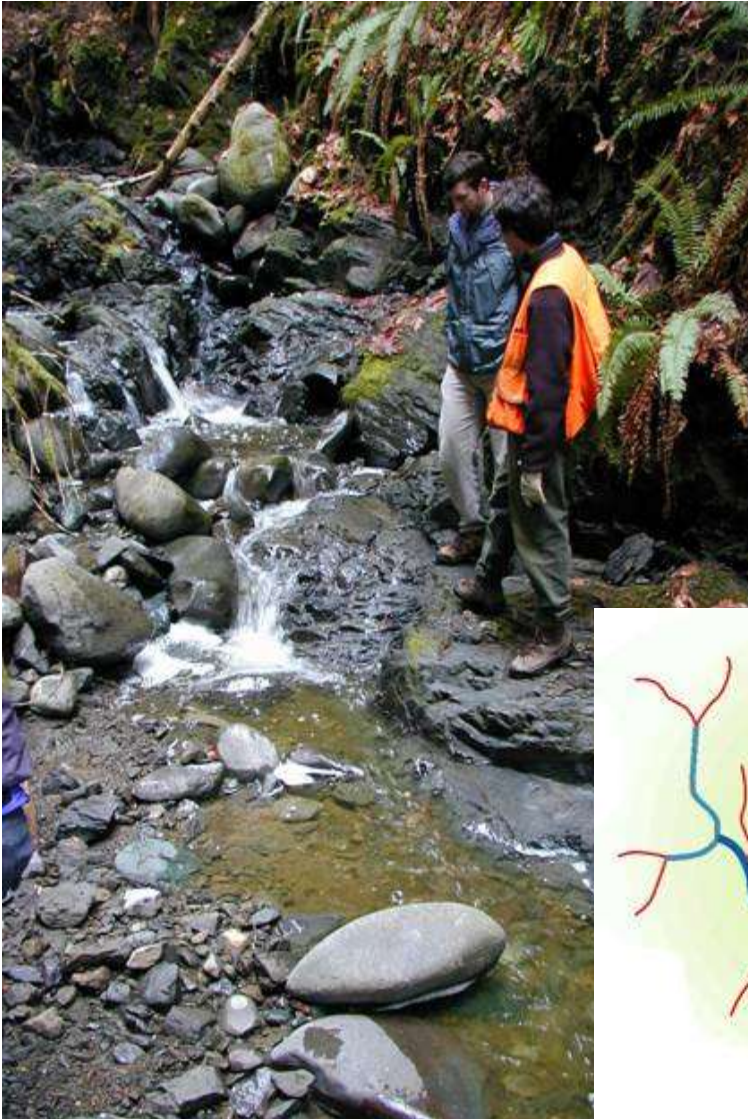
Desired Post-Project Stream:

- Increased Wood
- High Complexity
- Multiple Channels

Jeff Rogers

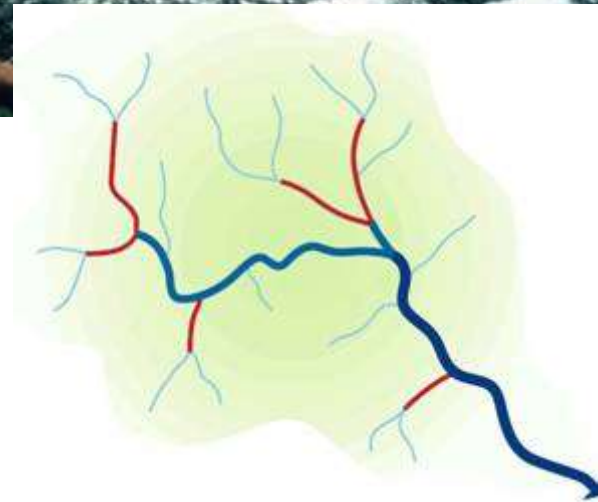
Steep slope, V-shaped channels

Source reaches



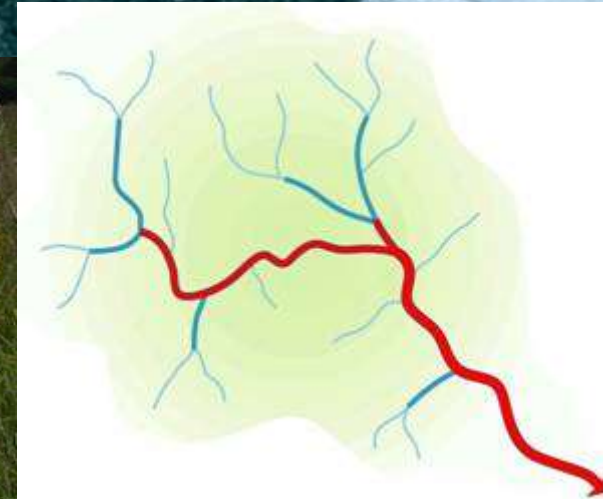
Moderate gradient, step pools

Transport reaches



Low gradient, meandering, broad floodplain, sediment storage

Depositional reaches



Floras Creek, Oregon



Evolving Forest Management Practices

- Road design & location
- Drainage & stream crossings

