Managing Sediments in the Watershed: Bringing Dredged Material and Watershed Managers Together

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Lower Columbia River Estuary Partnership Restoration Prioritization Framework

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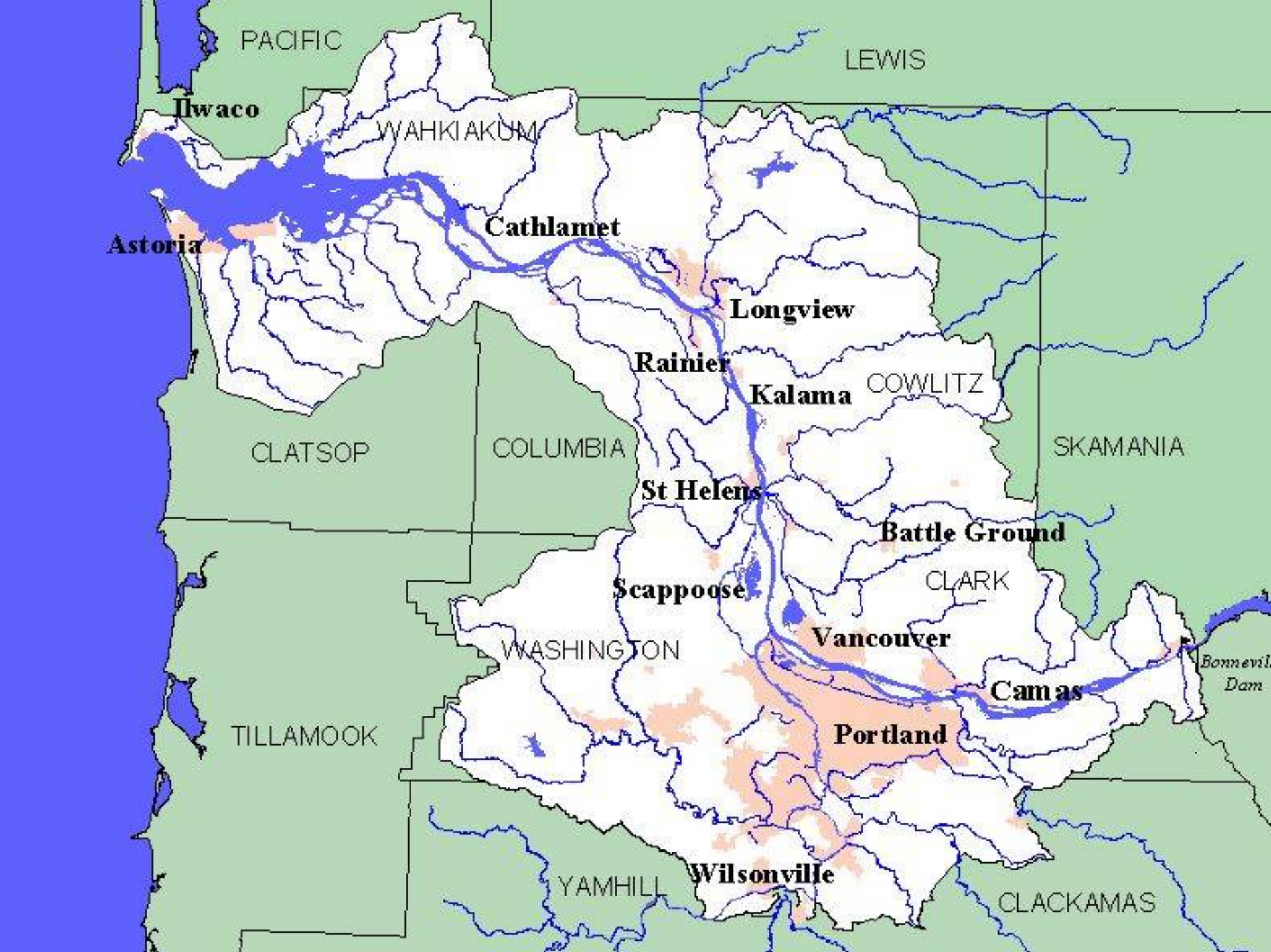
Lower Columbia River Estuary Partnership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LEWIS
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St Helens
Battle Ground
CLARK
Scappoose
Vancouver
WASHINGTON
Camas
Portland
TILLAMOOK
Wilsonville
YAMHILL
CLACKAMAS

Lower Columbia River Estuary Partnership

Principle: **The health of the river will not significantly improve if new problems continually emerge even as old ones are addressed and solved.**

Mission: **The mission of the Lower Columbia River Estuary Partnership is to preserve and enhance the water quality of the estuary to support its biological and human communities.**

Lower Columbia River Problems

- **Available wetland habitat has decreased by as much as 75% from historical levels.**
- **Beneficial uses are impaired -- use of the river for fishing and shellfishing, wildlife and water sports is not supported.**
- **High levels of sediment contamination occur in vicinity of urban and industrial areas along the river; contamination in excess of reference levels does occur throughout lower Columbia. DDEs, PCBs, dioxins and furans, and PAHs are key toxics of concern.**
- **Bald eagle, osprey, and river otter are bioaccumulating contaminants at harmful levels. Water temperature and dissolved gas levels exceed levels that support fish.**

Management Plan
Objectives & Program Focus

- **Protect the ecosystem and species -**restoring 16,000 acres of wetlands and habitat by 2010 and promoting improvements in stormwater management.

Ecosystem health, Multi-species habitat, Recovery of Species, Stormwater

- **Reduce toxic and conventional pollution -**conducting long term monitoring and advocating to eliminate persistent bioaccumulative toxics, bring water bodies up to water quality standards, reduce hydrocarbon and heavy metal discharges and reduce bacterial contamination.

Long Term Monitoring

- **Provide information about the river to a range of audiences -**compiling and evaluating data, offering education programs for children and building public and private partners.

Kids for the Columbia, Volunteer Projects, Water Trail

Protect Ecosystem: Habitat Restoration Program

- Protect high-value floodplain habitat
- Develop strategic planning
- Convene stakeholders, foster partnerships
- Create and manage habitat restoration projects

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Conceptual Model for the Lower Columbia River

- Adapted from Bainbridge Island Nearshore Assessment
- Stressors are a proxy for ecosystem degradation
- Habitat structure and processes as well as ecosystem function are determined by controlling factors

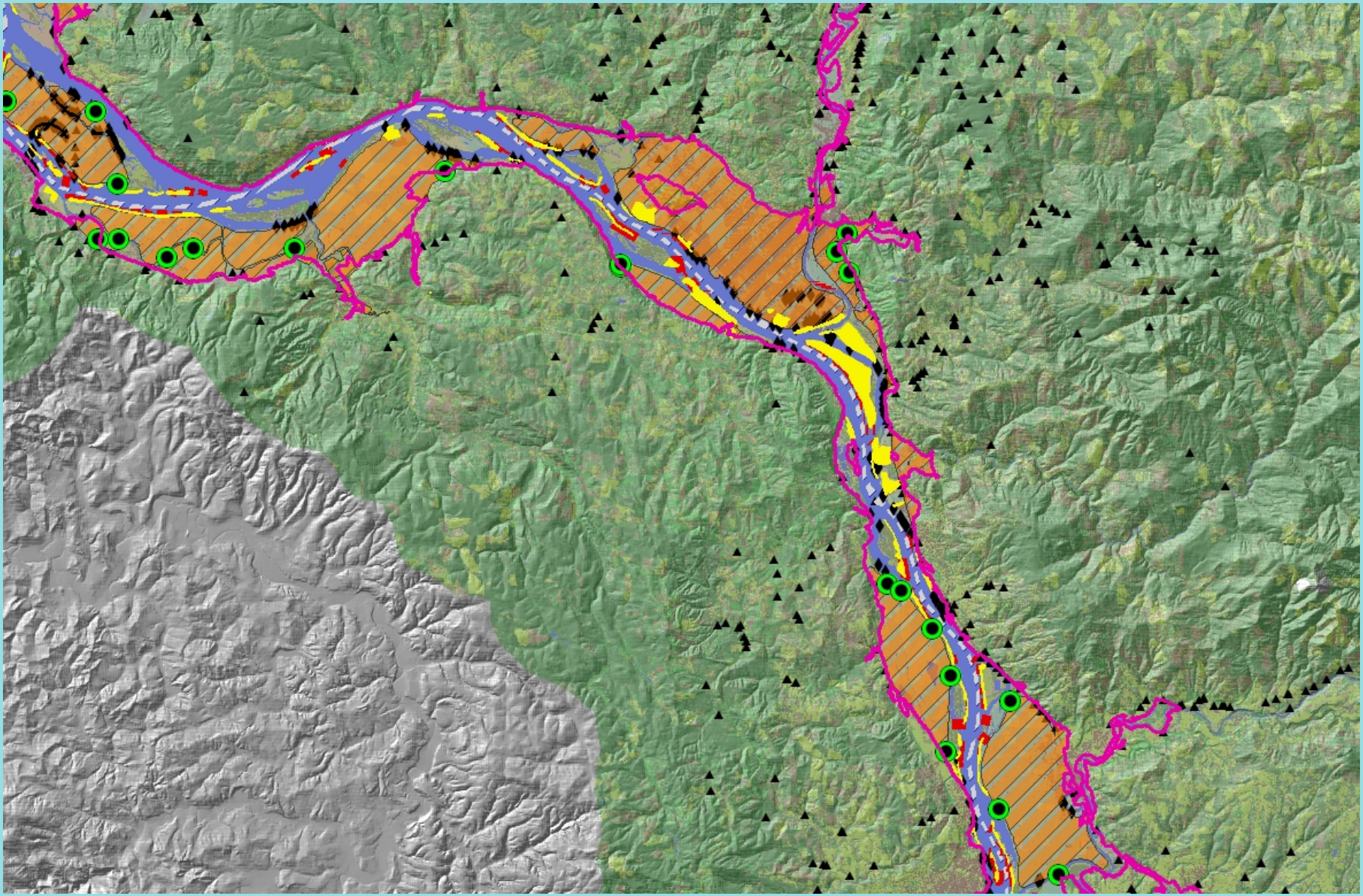
Controlling Factors

For each site, evaluate 9 controlling factors:

1. **Hydrology – River scale**
2. **Hydrology – Management area scale**
3. **Hydrology – Site scale**
4. **Sediment Quality**
5. **Water Quality**
6. **Light**
7. **Sediment Dynamics**
8. **Depth/Slope**
9. **Physical Disturbance**

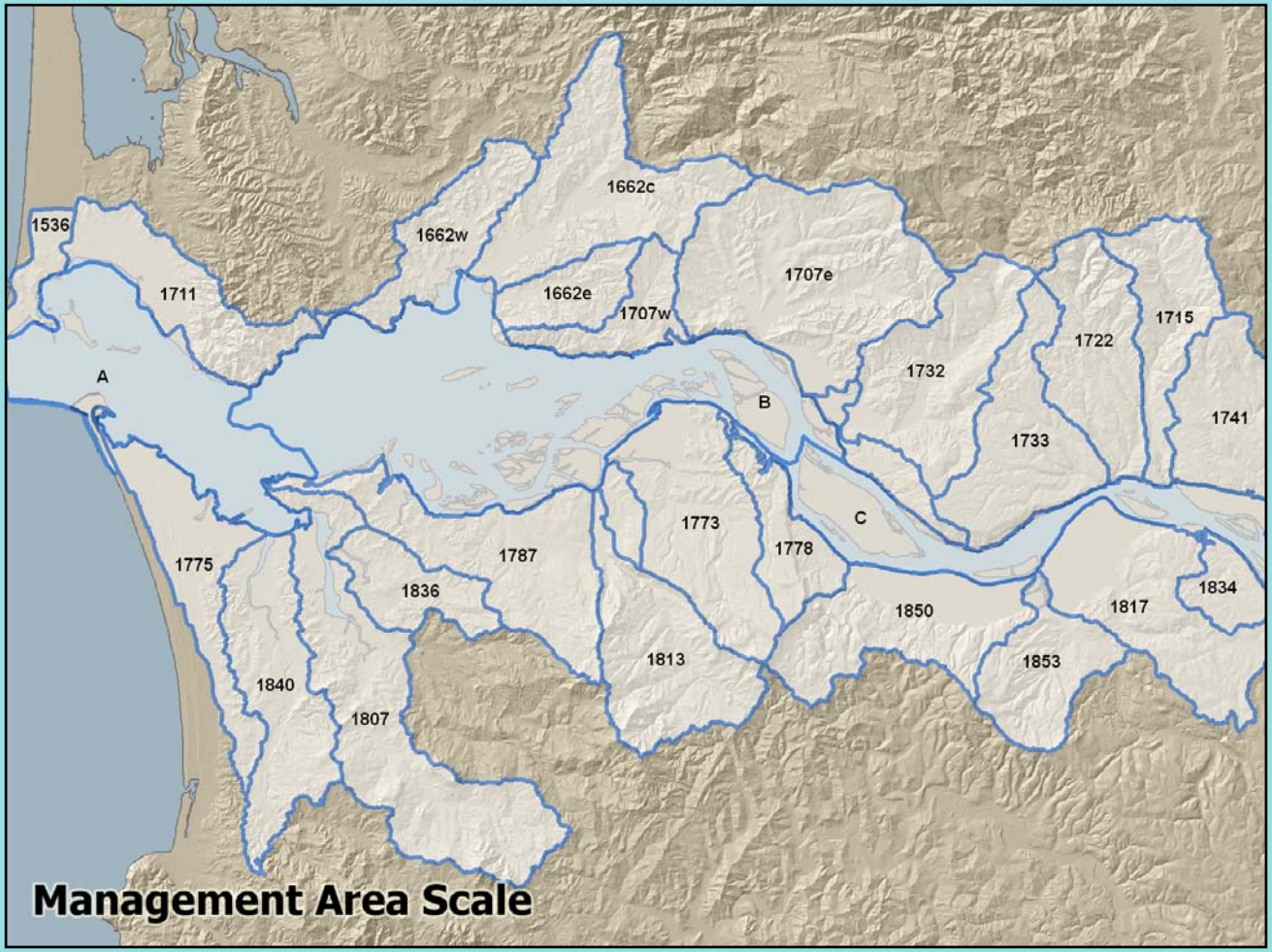
Primary Data Sources

- Diked areas
- Tide gates and other flow-restricting structures
- Land cover derived from classified Landsat
- Shoreline modifications (marinas, overwater structures, pile dikes)
- Toxics/contaminants (NPDES, SEDQUAL, DEQ)



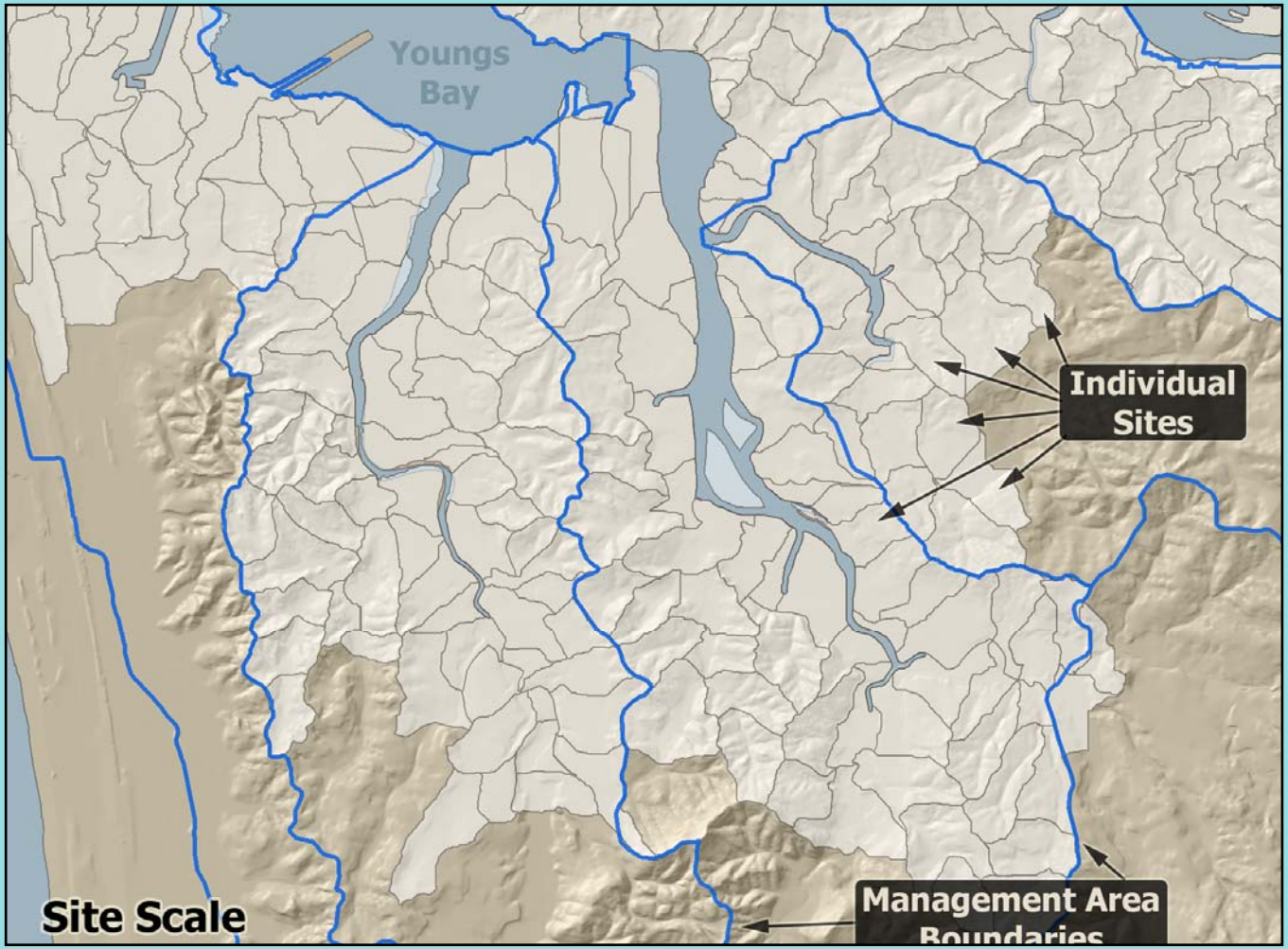
Scale

- Management Areas
  - Hydrologically-connected landscape
  - Defined by USGS level 6 HUC



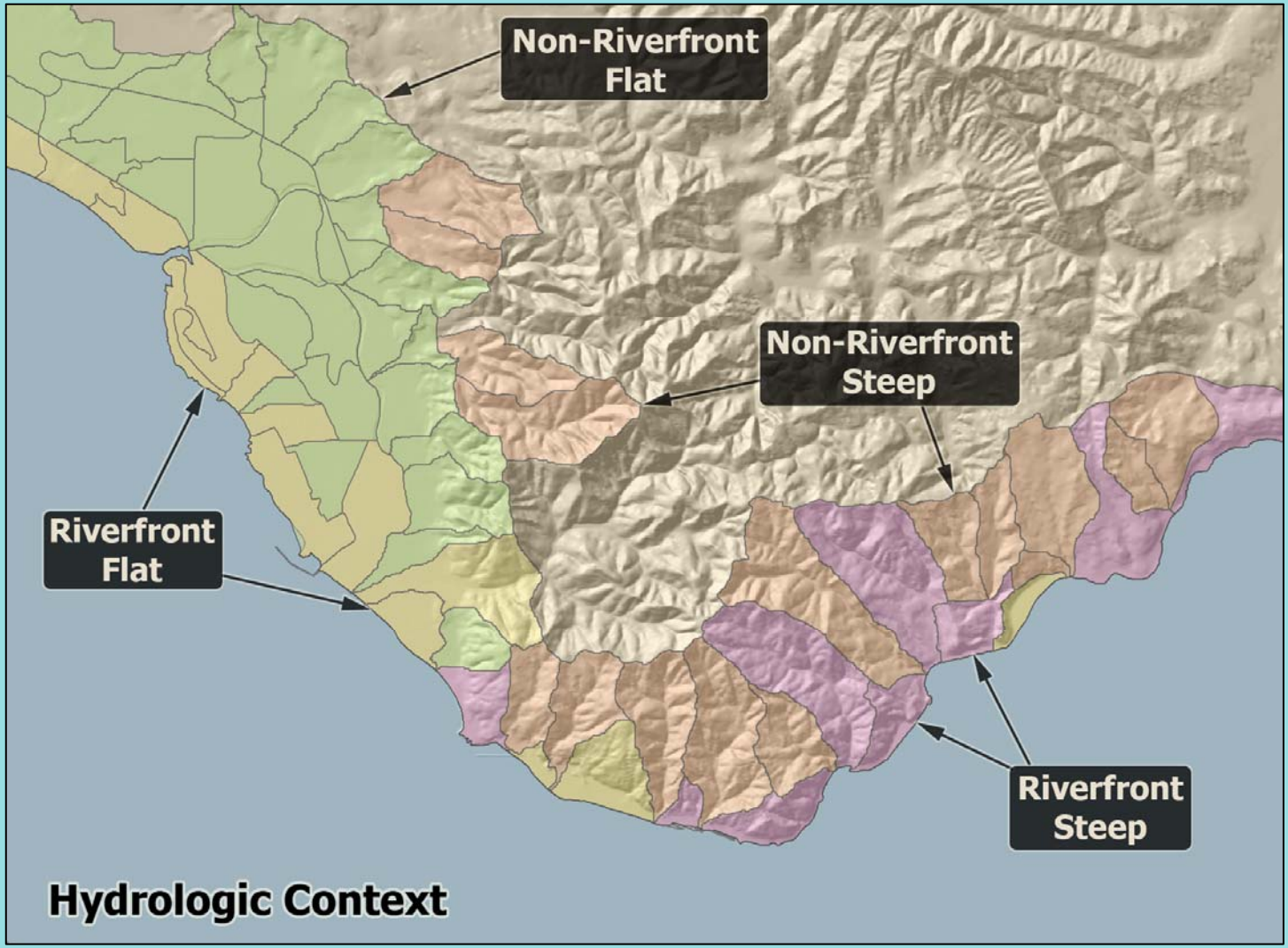
Scale

- Sites
  - Defined by hydrologic boundaries
  - Limited to floodplain



Hydrologic Context

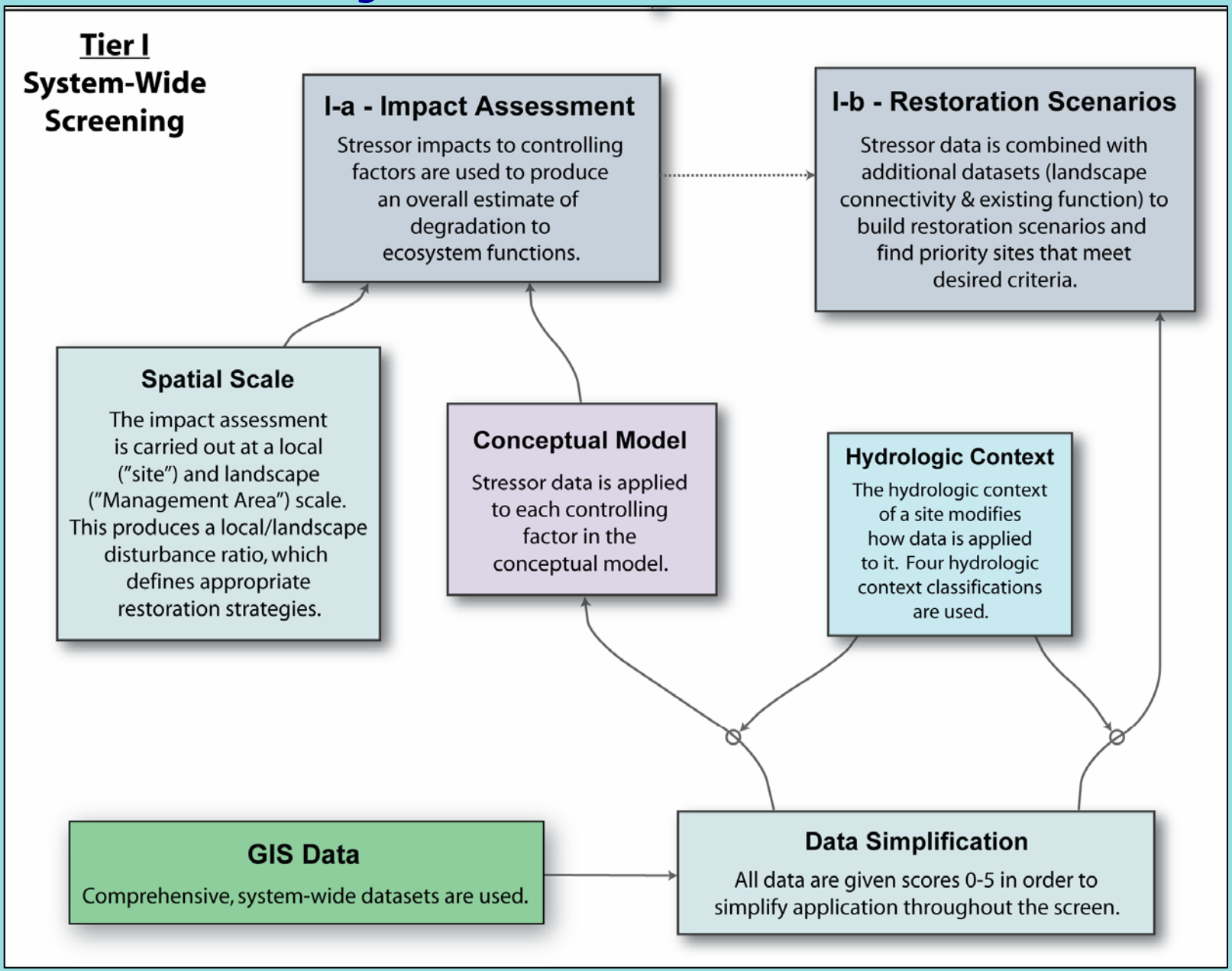
- Refines Conceptual Framework for Predicting Impacts
- Provides Some Historical Context (Goal Setting)

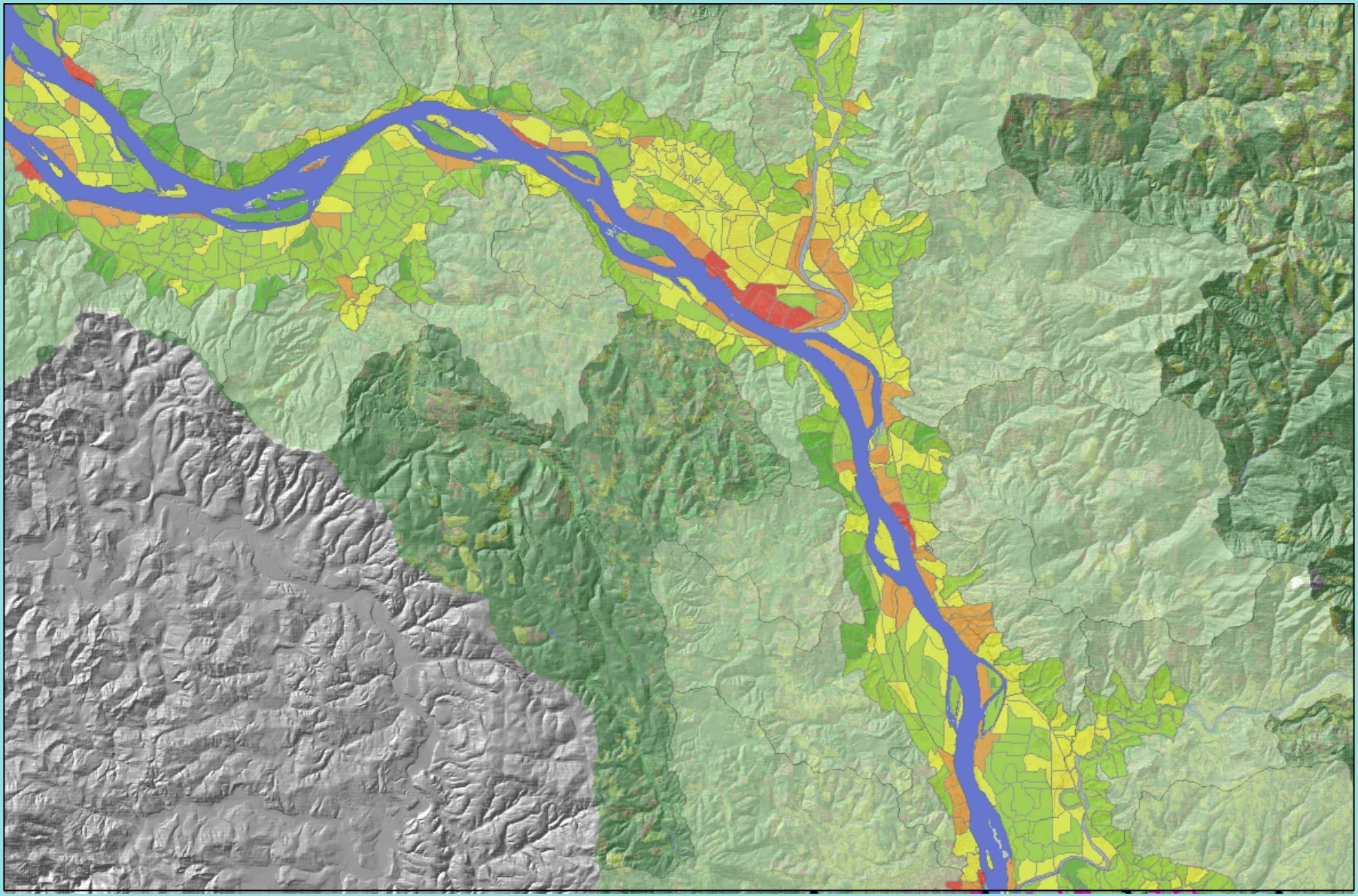


Assessment Principles

- Design an initial screening tool that highlights potential restoration sites
- Broad ecosystem focus
- General assumption: alteration of physical landscape often results in a change in nearshore ecological functions.
- Index is a guide for prioritizing future actions by scientists and managers with intimate knowledge of local ecosystems

Tier 1 – System-wide Screening





Strategies applied to sites based on level of disturbance

High Site Disturbance	**A** Restore Enhance Create	**B** Enhance Create Restore	**C** Enhance Create
Moderate Site Disturbance	**D** Enhance Restore Preserve	**E** Conserve Enhance Create Restore	**F** Enhance Create Restore
Low Site Disturbance	**G** Conserve Preserve	**H** Conserve Enhance Restore	**I** Enhance
	Low Management Area Disturbance	**Moderate Management Area Disturbance**	**High Management Area Disturbance**

Restoration Scenarios

- Allows the user to "build" scenarios using the existing data, in order to answer specific questions (e.g., "where are the most appropriate areas for restoration action *x*?")

- Every dataset can be weighted to derive an overall priority score for each site

- Each restoration strategy is derived from best professional judgment for scoring stressors at each site or management level

Summary Points

- Planning and Visualization Tool
- Develop Targeted Restoration Strategies
- Better understand system-wide disturbances
- Increase effectiveness of restoration money
- Move away from opportunistic restoration project selection

Full Report Available Online:

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http://www.lcrep.org/habitat_strategy.htm