Technical Meetings

- 3 meetings
- 1 workshop (tentative)
- Timeline: Through April to get draft in place for review and community vetting
- Purpose of Meeting #1: Assess information collected to date and relevance to understanding Limiting Factors of LCR Watersheds. Review straw goals and objectives
- Meeting #2: Discuss draft approach to defining restoration strategy
  - Establish technical foundation for strategic action plan based on existing datasets. .
- Meeting #3: Match project opportunities to test strategy

TAC Meeting #3 Agenda

- Purpose of Meeting #3: Match Opportunities to Test Strategy

Proposed Agenda:

- Introductions
- Review Purpose of Meeting and Agenda
- Summary of Effort to Date
  - TAC Meeting Takeaways #1 and #2
  - SAP Updates since TAC Meeting #2-Cllimate Change Assessments
- LUNCH
- GIS Work Flow Model
- OWEB Proposal
- Next Steps/Review Process
- Adjourn

TAC Meeting #1 Takeaways

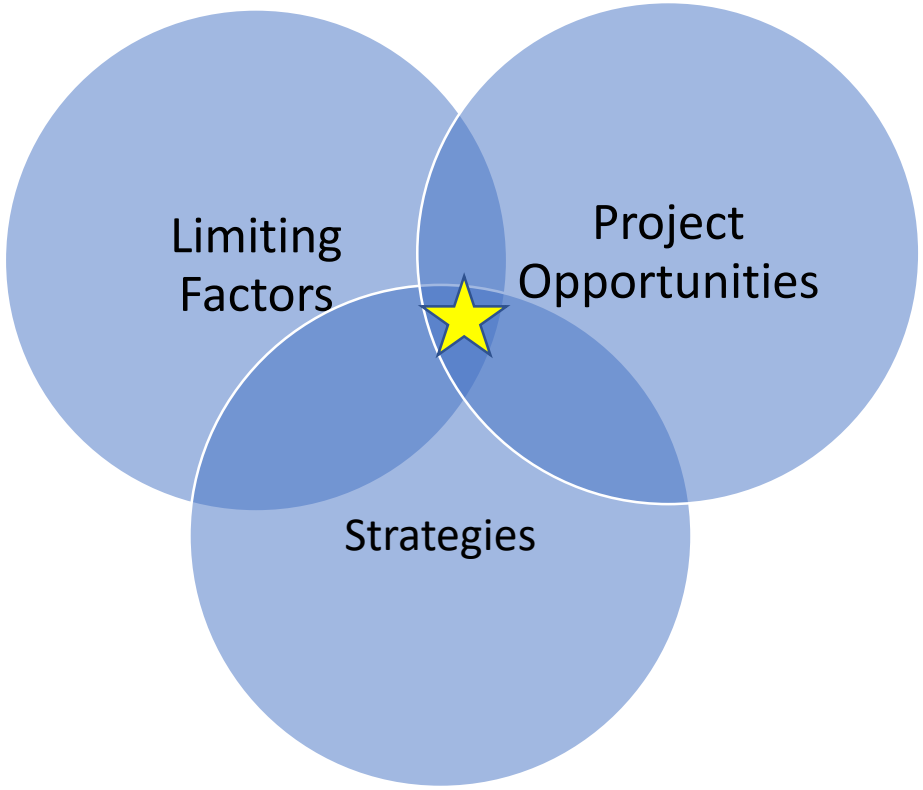
- Species Discussion
- Limiting Factors Application to LCR Watersheds
- Goals and Objectives
- Available Datasets

TAC Meeting #2 Takeaways

- LCRWC Geology and Relevance to Watershed Habitat Structure
- Continued Species Discussion
- Review of IP Maps
- Brainstorm Strategy and Review, Clatskanie River Floodplain Example

SAP Updates

- Subarea Delineations by Location, channel habitat type, size/shape
- Revised/added strategies
- Added sensitive species as appendices
- Climate change vulnerability and initial guidance for resiliency
- Developed a project opportunities GIS work flow model
- Revised approach for OWEB proposal
- Matched work flow outputs with project opportunities
- Basis for project selection criteria



INFORMATION INPUTS

SPATIAL OUTPUTS
(stream type, strategy, species)

Project/Reach Example
(RM 9 Clatskanie River)

Channel Habitat Types
LCRWC Watershed Assessment

Habitat Type Distribution, Floodplain/Side Channel Potential

- ❑ Floodplain/Side Channel
- ❑ LWD
- ❑ Riparian
- ❑ 2 species

Boswell Surveys

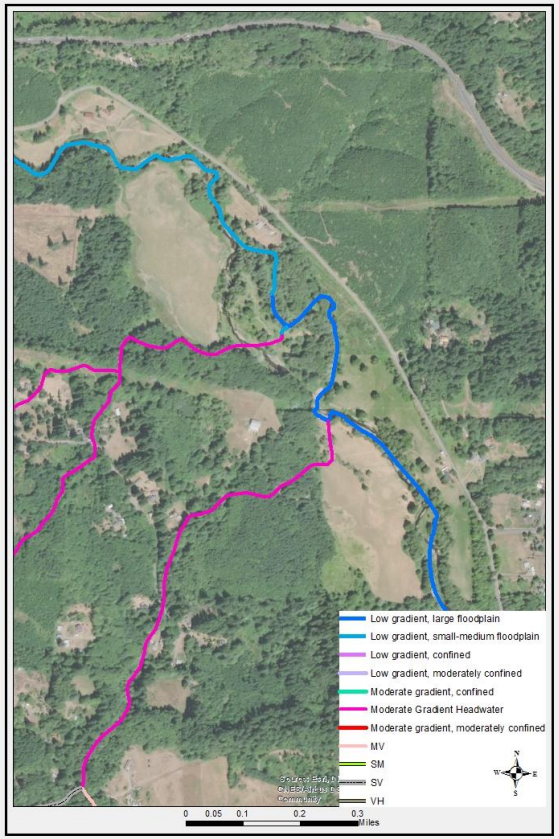
- Project Opportunities (i.e. LWD, Riparian)
- Valley Width Index
- Active Channel Width

- ❑ Semi-Confined
- ❑ LWD
- ❑ Riparian
- ❑ 1 species

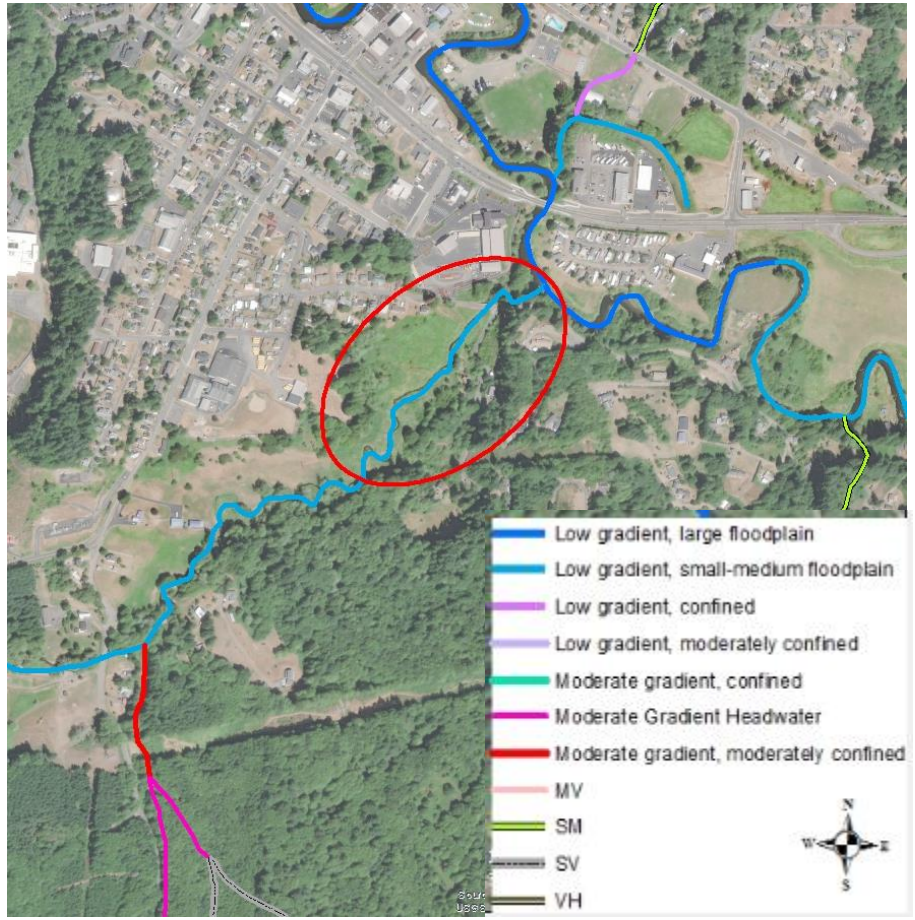
Intrinsic Potential

- Gradient
- Valley Constraint
- Discharge
- What Salmon Species

- ❑ Tidally-Influenced
- ❑ Habitat Diversity
- ❑ Rearing Capacity
- ❑ Increase Productivity
- ❑ Multi-rearing species

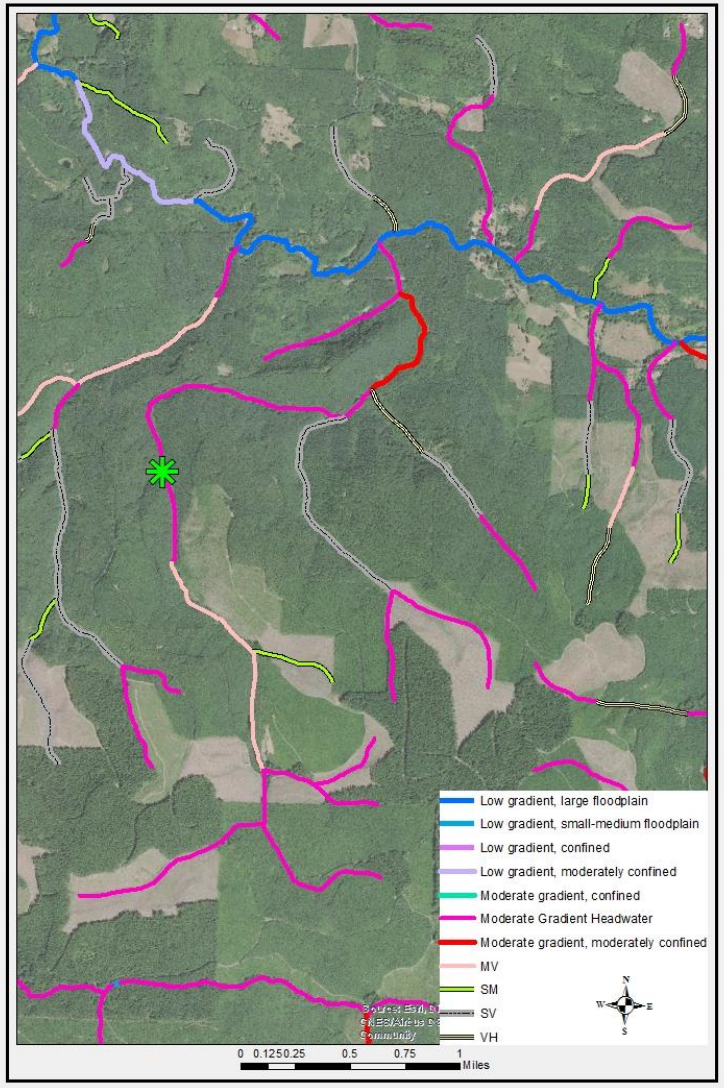


Conyers



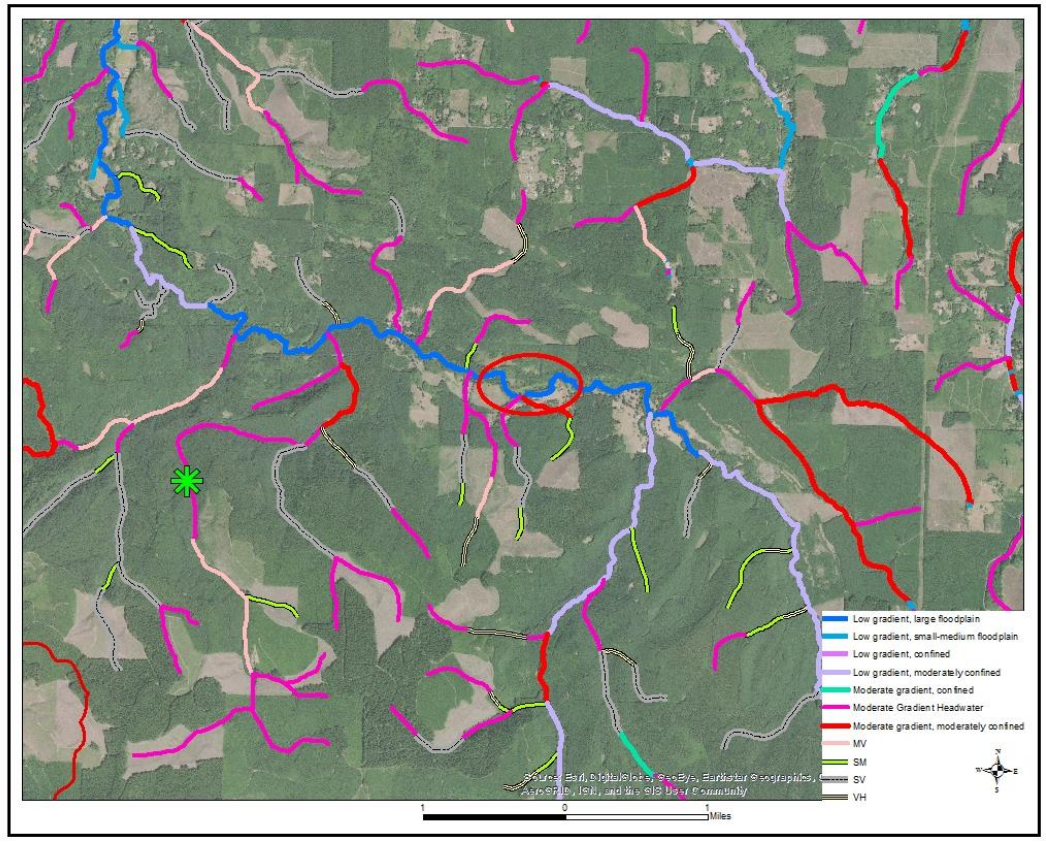
- Head of Tide
- High IP-Coho, Chinook
- Limiting Factors: Habitat Diversity Complexity
- Compliments Fish Barrier Removal

Page Creek



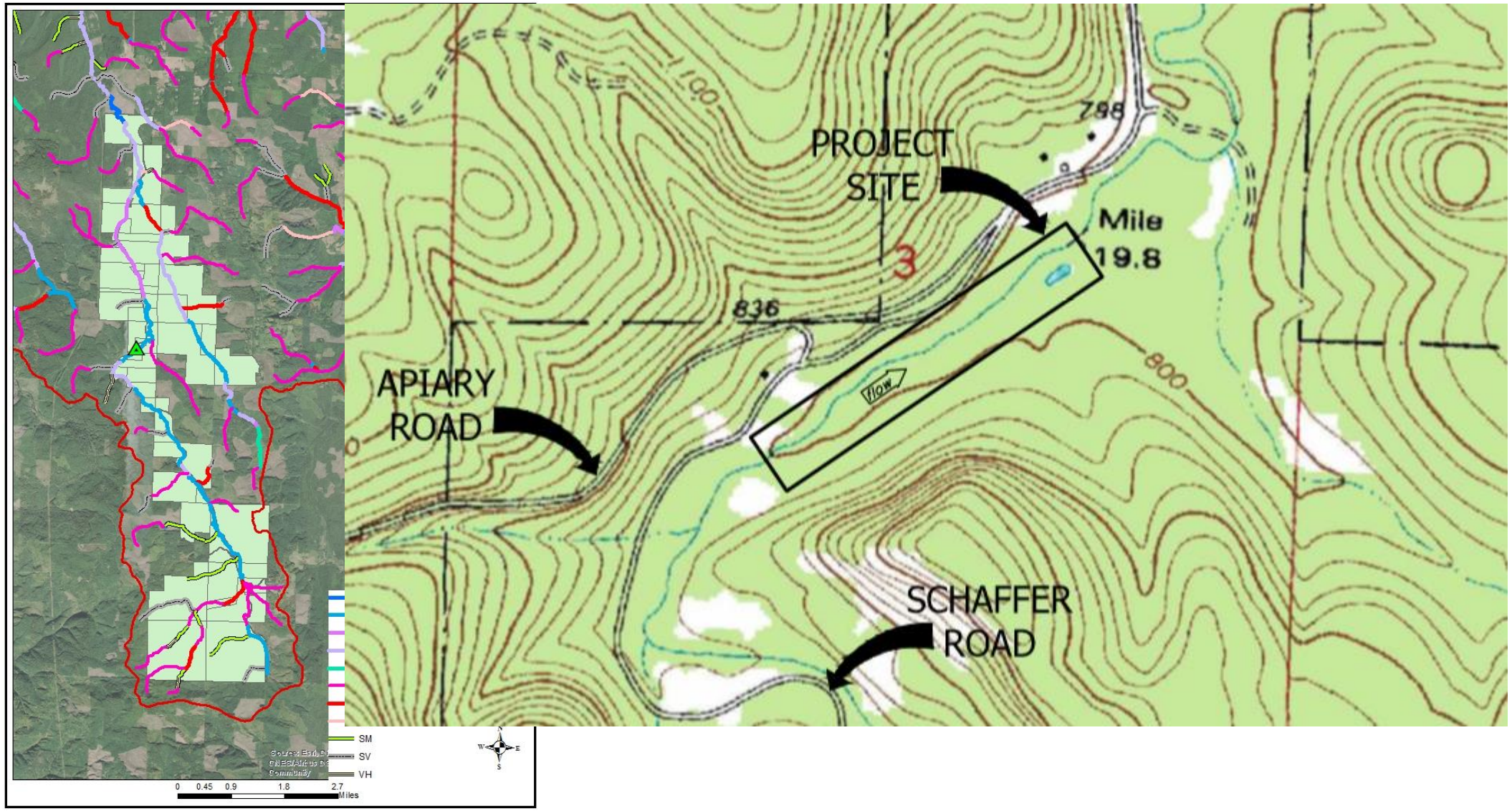
- Fish Barrier Removal
- High IP-Steelhead
- Limiting Factors: Habitat Diversity Complexity
- Compliments other Fish Barrier Removal project

Reach 10 Project

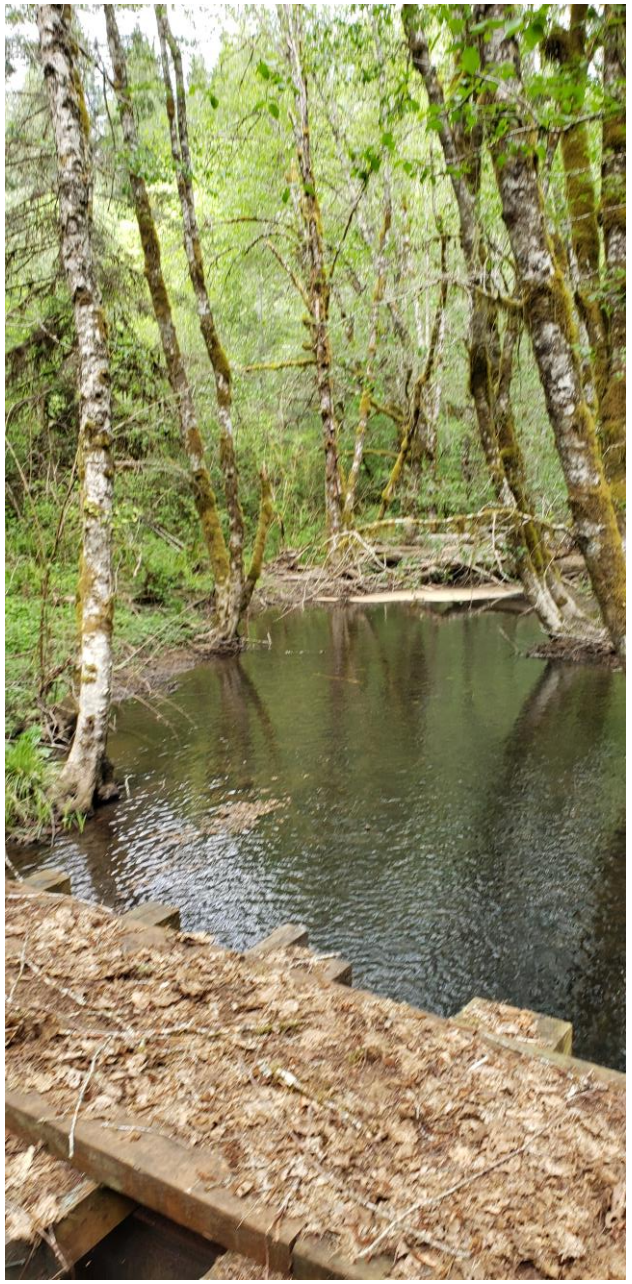


- LWD + Riparian
- Floodplain/Side Channel enhancement
- Limiting Factors: Habitat Diversity Complexity
- IP Potential Chinook, Coho + some steelhead

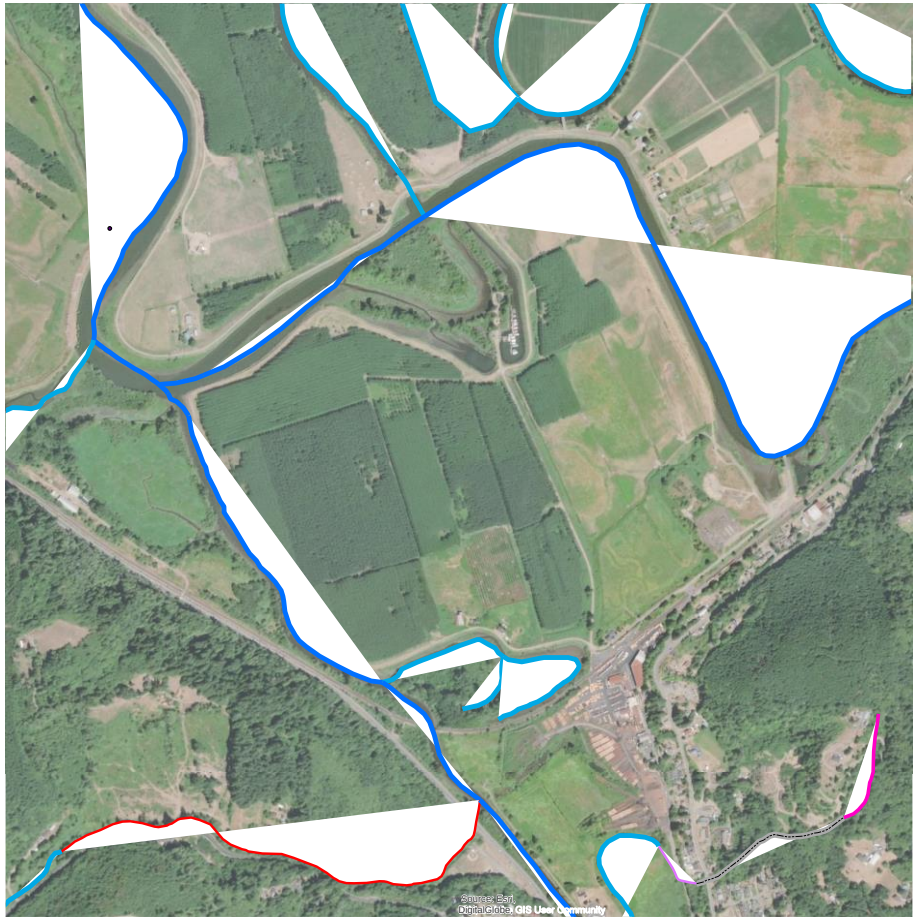
Kloppman LWD



Kloppman LWD

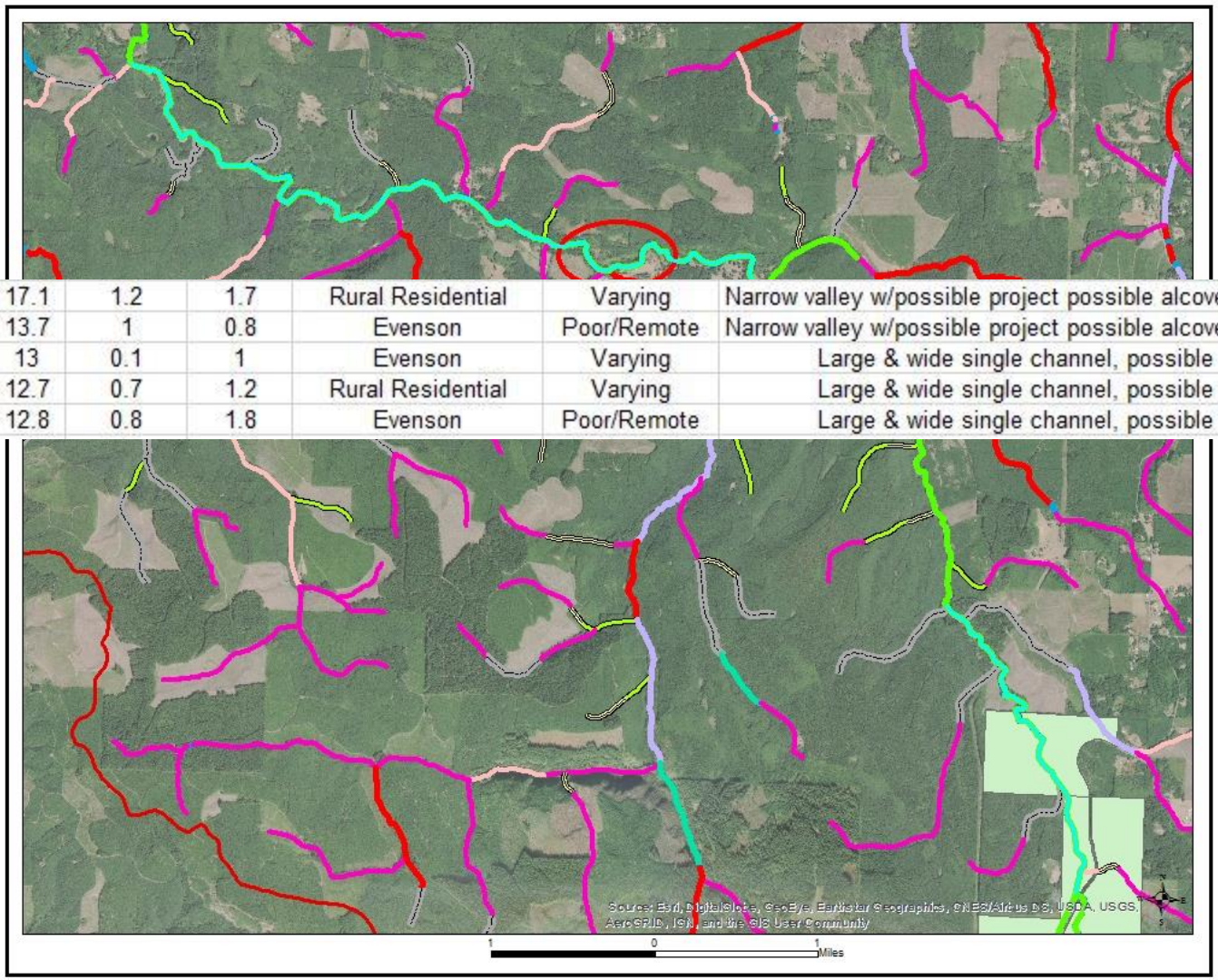


Estuary Project X



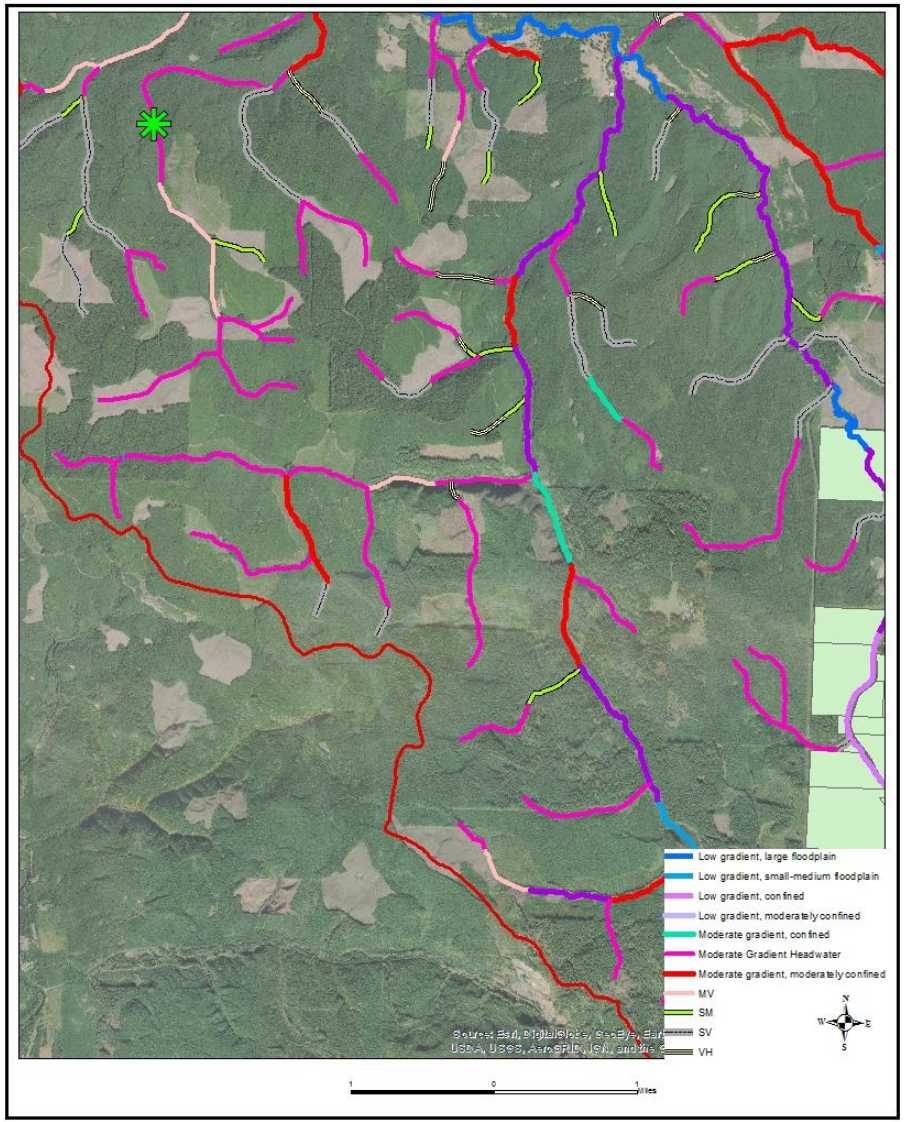
- Rearing capacity
- Productivity Boost
- Barrier removal

Reaches 7,8,9, 10 and 13 Boswell, LWD Priorities



Clatskanie River	7	2.7	17.1	1.2	1.7	Rural Residential	Varying	Narrow valley w/possible project possible alcove development sites near end on lt
Clatskanie River	8	5.1	13.7	1	0.8	Evenson	Poor/Remote	Narrow valley w/possible project possible alcove development sites near end on rt
Clatskanie River	9	2.5	13	0.1	1	Evenson	Varying	Large & wide single channel, possible alcove development sites
Clatskanie River	10	7.1	12.7	0.7	1.2	Rural Residential	Varying	Large & wide single channel, possible alcove development sites
Clatskanie River	13	6.2	12.8	0.8	1.8	Evenson	Poor/Remote	Large & wide single channel, possible alcove development sites

Other Opportunities: Carcass Creek



- Low Gradient, Moderately Confined
- No survey data??
- Potential willing landowner

INFORMATION INPUTS

SPATIAL OUTPUTS
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Project/Reach Example
(RM 9 Clatskanie River)

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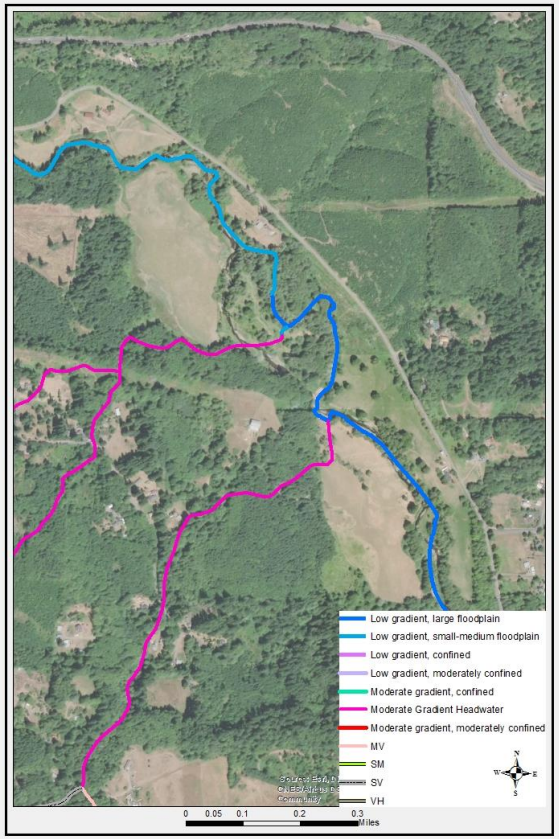


OWEB Grant:

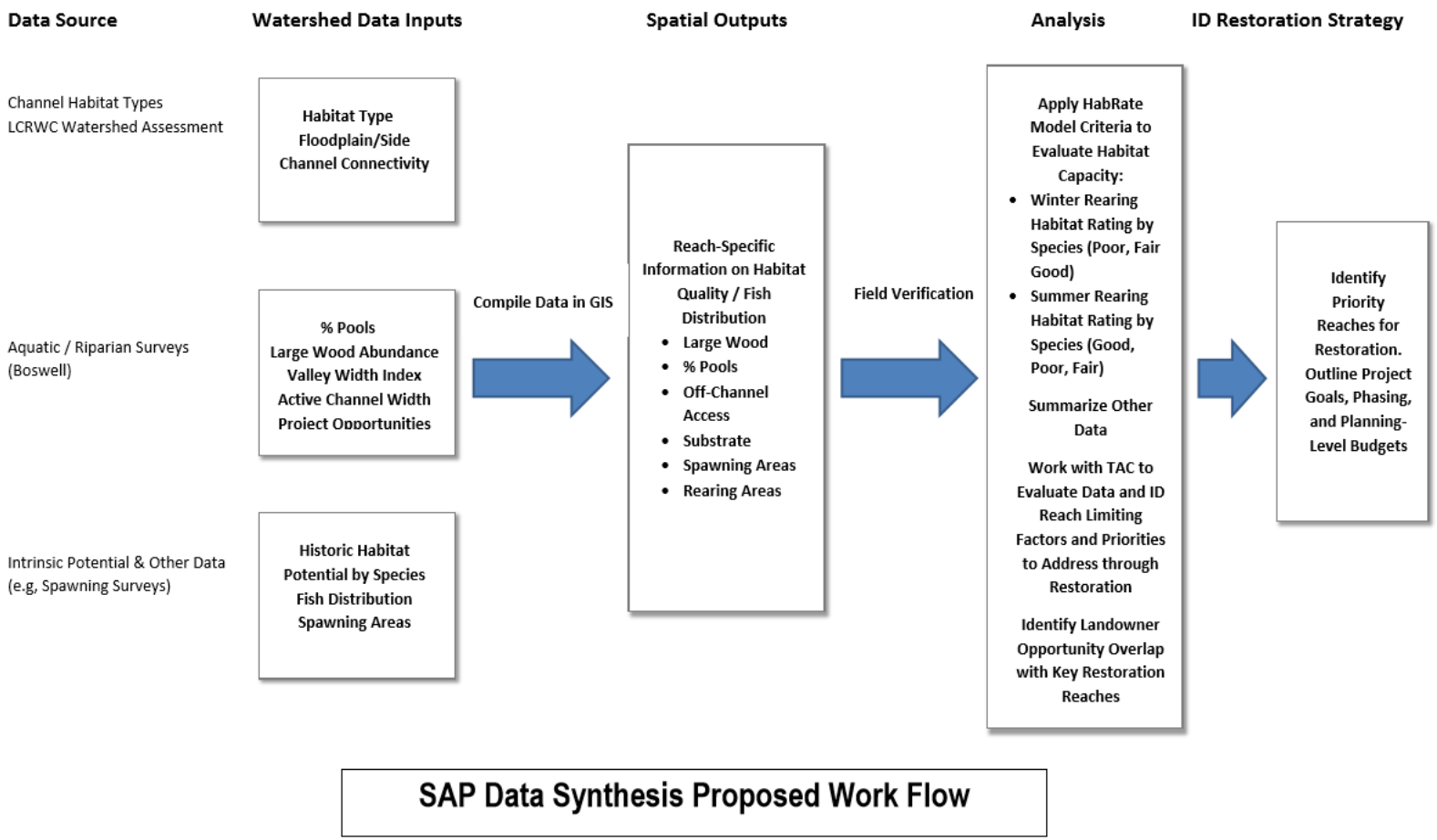
- More information is necessary to verify the utility of datasets used in the development of the draft SAP that underpin the strategies used to identify and address limiting factors broadly outlined in the Lower Columbia River Conservation and Recovery Plan.
- The proposed assessment will provide resources to identify existing gaps in stream habitat information and other data, target areas for additional field data collection, and evaluate the data to identify reach-specific limiting factors.

- Additional information on stream habitat and reach-specific limiting factors will be incorporated into the SAP.

- Spatially-explicit information from this effort will overlaid with existing basemaps and new habitat assessment information to refine existing data sets.

- The new information will identify reach-specific limiting factors and contribute to a prioritized restoration strategy.

OWEB Grant:

- 
Data Source
Watershed Data Inputs
Spatial Outputs
Analysis
ID Restoration Strategy
Channel Habitat Types
LCRWC Watershed Assessment
Habitat Type
Floodplain/Side Channel Connectivity
Aquatic / Riparian Surveys
(Boswell)
% Pools
Large Wood Abundance
Valley Width Index
Active Channel Width
Project Opportunities
Compile Data in GIS
Reach-Specific Information on Habitat Quality / Fish Distribution
Large Wood
% Pools
Off-Channel Access
Substrate
Spawning Areas
Rearing Areas
Field Verification
Apply HabRate Model Criteria to Evaluate Habitat Capacity:
Winter Rearing Habitat Rating by Species (Poor, Fair Good)
Summer Rearing Habitat Rating by Species (Good, Poor, Fair)
Summarize Other Data
Work with TAC to Evaluate Data and ID Reach Limiting Factors and Priorities to Address through Restoration
Identify Landowner Opportunity Overlap with Key Restoration Reaches
Identify Priority Reaches for Restoration. Outline Project Goals, Phasing, and Planning-Level Budgets
Intrinsic Potential & Other Data
(e.g, Spawning Surveys)
Historic Habitat Potential by Species
Fish Distribution
Spawning Areas
SAP Data Synthesis Proposed Work Flow

Priority Criteria Categories

- # of Strategies
- # of Species
- High level of life history expression (i.e. Spawning + Rearing)
- Fit with stream habitat type, needs of reach, and geomorphic stability
- Synergistic Effect with completed project nearby
- Includes adaptation elements for Climate Change
- Level of Social Complexity (i.e. # of landowners)
- Community Benefit

Climate Change Vulnerability Summaries

SAP Climate Change Variables

-Coastal Storminess

-Sea Level Rise

-Temperature

1. Coastal Storminess

It is anticipated a number of watershed processes will be impacted by climate change. Increase storminess will change amplitude, timing, and overall hydrologic patterns. As a result, without adequate resiliency planning, community risk to flooding events will increase. Completed restoration project designed with certain flood profiles are also endanger of not attaining its goals. In general resiliency planning will need to take a broader view of a project and put it in the proper landscape context. Here are some general principles for developing adaptation strategies for a sustainable restoration project that also contributes to community resiliency to flooding.

- Examination of transitional areas from floodplain area to uplands to increase buffer areas during high flows
- Floodplain reconnection projects benefit for reducing excessive streambank erosion and channel migration
- Designing channel profiles with larger geometry to accommodate higher intensity flooding events

2. Sea Level Rise

Sea level rise predictions are readily available for community and resiliency planning in low elevation areas. This is especially relevant in the diked area of Clatskanie Bottoms where infrastructure is antiquated, and large extent of interior agricultural areas are experience substantial subsidence. Figure X represents a range of predictions of sea level rise regionally for the Astoria area.

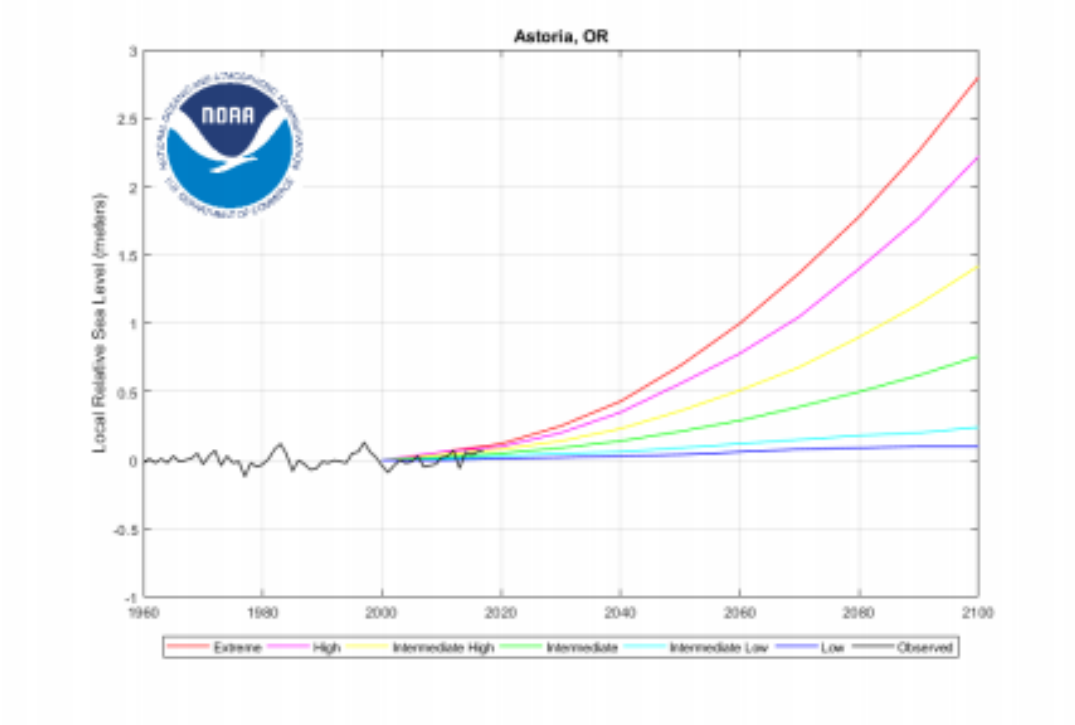


Figure 5: Sea Level Rise Predictions-Astoria, Oregon

Sea Level Rise Adaptation Guidance

-Broaden scope of project area to examine upslope transitional areas as buffers as marshes migrate upslope from sea level rise

-Factor in cost of importing material to mitigate for subsided area and jump-start marsh development patterns

-Experiment with designing levees at gradual slopes (i.e. horizonal levees) to emulate natural levee forms and soften impacts from sea level rise.

3. Stream Temperature

Stream temperature is a primary indicator of watershed health. Cold water dependent species who experience elevated temperature lose their swimming, foraging capacity, and overall ability to survive. It also shifts food web patterns and associated biota of health streams. Figure X is a snapshot of predicted stream temperature changes to lower reaches of the Clatskanie river showing high levels (>17 degrees, Centigrade) during month of August. This has direct implications to any restoration activities locally and upstream. Many of the strategies identified above can have a direct benefit to lowering temperature levels. For resiliency planning purposes, additional resources may be necessary to off-set impacts for this climate change variable.

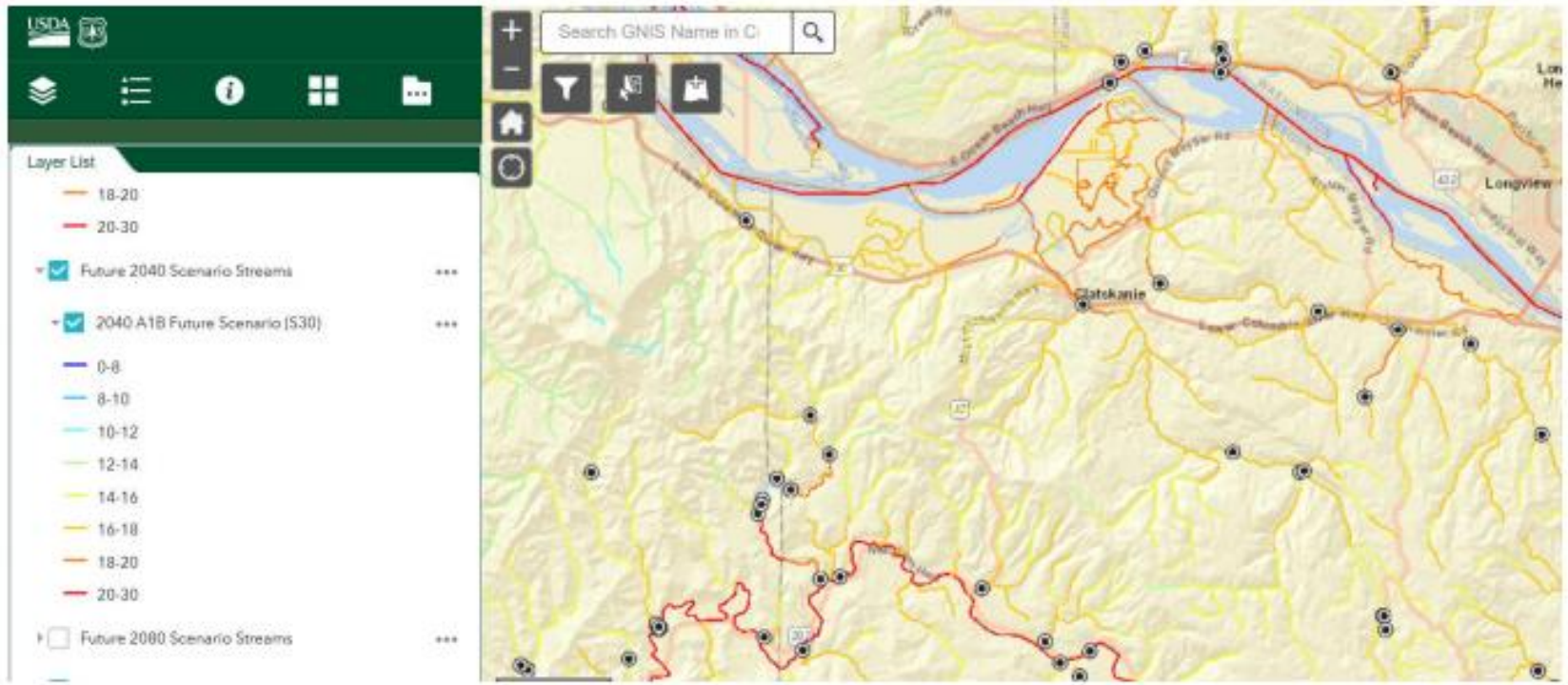


Figure 6: Temperature Prediction, Lower Clatskanie River