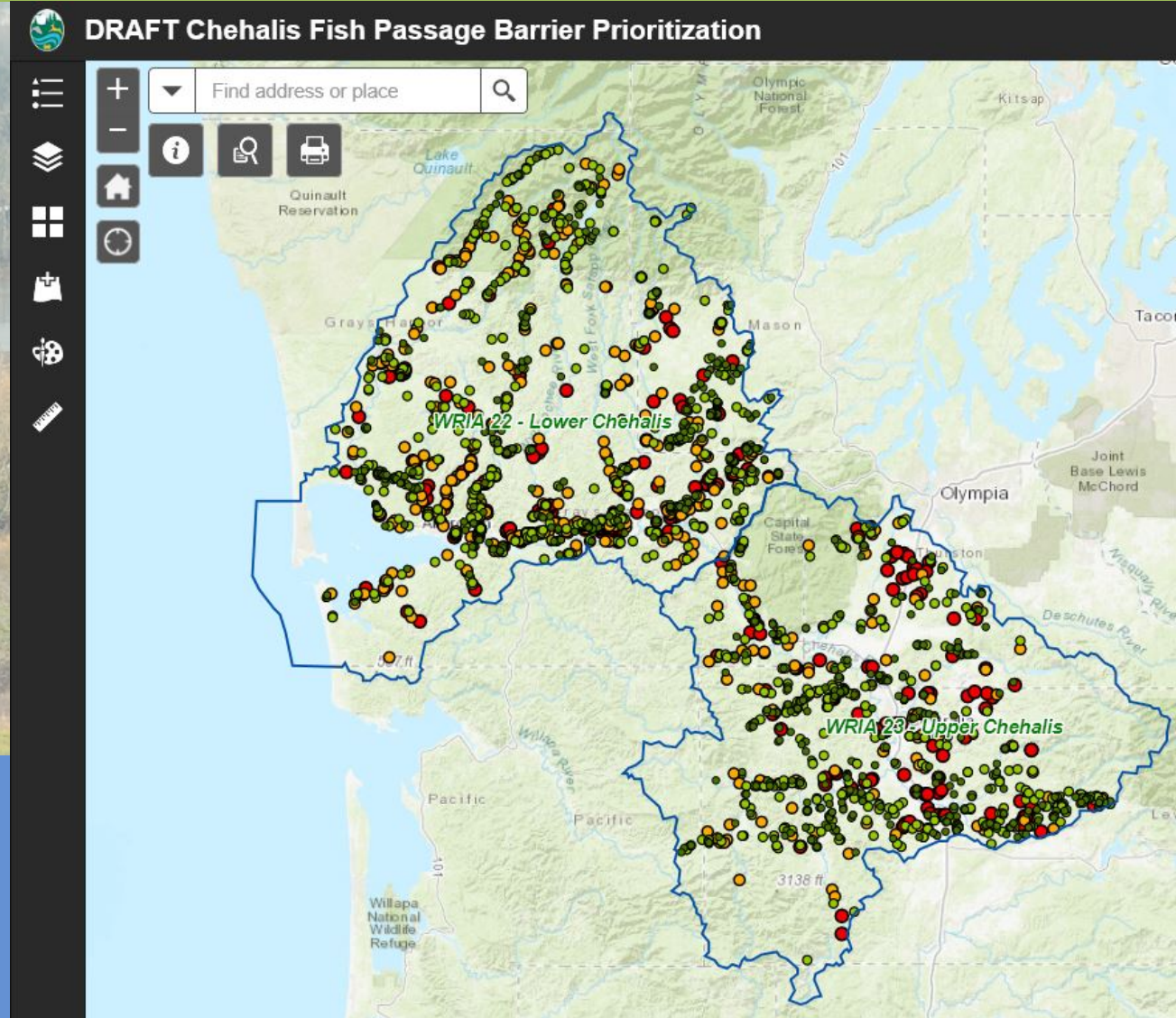


# Chehalis Fish Passage Barrier Prioritization



Chris Dwight





# Fish Passage Experience

- **WDFW**
  - Since the mid- 1980s WDFW has collected fish passage data.
  - 1991 Database was created and now has +50,000 sites.
- **Chris Dwight**
  - WDFW Fish Passage +7 years
  - Barrier Inventory & Habitat Surveys
  - Inventory Crew Supervisor
  - NRCS Project Manager / Scoping Biologist



# Chehalis Barrier Prioritization

## Project Objectives

- **Interactive Tool:** GIS online map and Excel based prioritization tool to guide grant funders and restoration practitioners to focus on the top ranking barriers that are in the top 10% to 33% of barriers.
  - User-friendly interactive map that includes 11 model metrics to guide the selection of projects.
  - Large dataset of ~4,500 sites and ~2,500 barriers
  - Update 2008 Culvert Prioritization





# Chehalis Barrier Prioritization

## Project Objectives

- **Collaborative Partnerships:** Interdisciplinary work group who developed the tool that is made up of restoration practitioners, local jurisdictions, state and federal agencies, and grant funders that include:
  - WDFW, USFWS, Lead Entity, Coast Salmon Partnership, Chehalis Tribe, Quinault Indian Nation, RFEG, Lewis CD, Pacific CD, Grays Harbor CD, Thurston CD, Lewis County, Thurston County, Trout Unlimited, and Aspect Consulting.
  - Build a Shared Vision: dedicated staff time, facilitator, meeting minutes, deadlines & funding

# Chehalis Barrier Prioritization

## Project Objectives

- **Science and Modeling:** Utilized best available science and coordination with other ASRP funded models and research. Used the same inputs to either focus on one species or multiple species of salmon to guide restoration.
- **Data Sharing**
  - WDFW Fish Passage Data
  - SWIFD Fish Distribution
  - WDFW Thermalscape
  - NOAA Life Cycle Inputs





# Updated Culvert Inventory

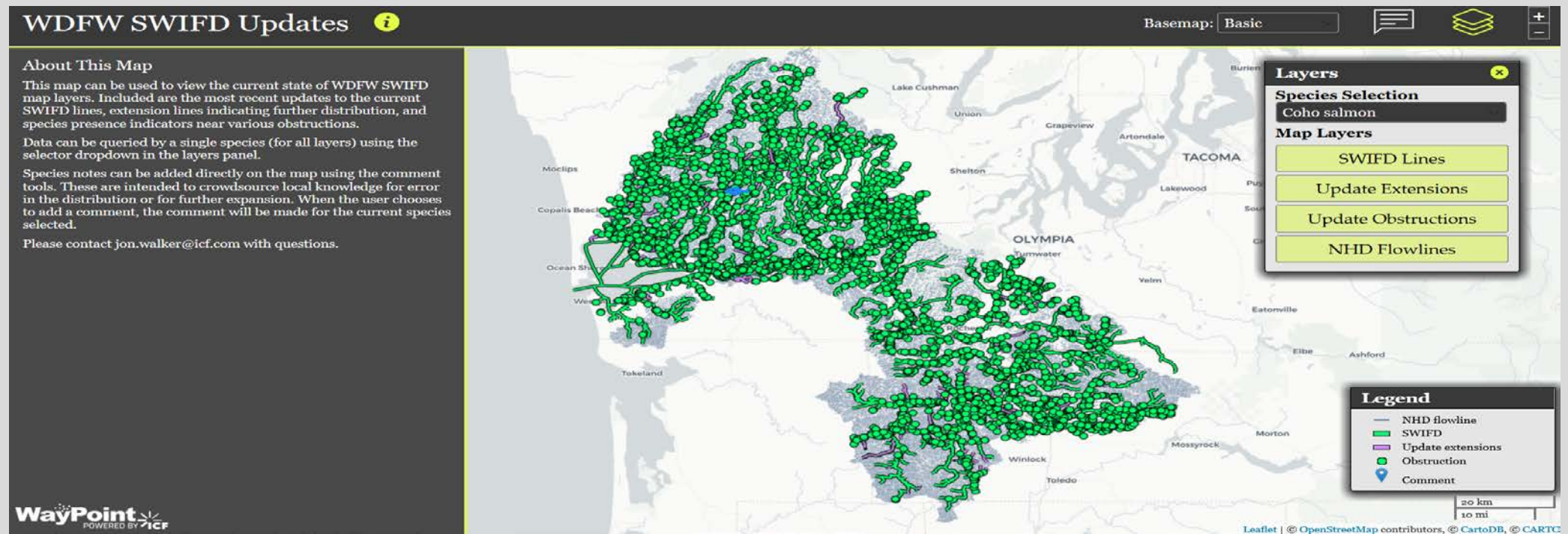
- **Robust Fish Passage Data:** Chehalis Basin WRIA 22 & 23 has the most complete and updated fish passage inventory in Washington.
  - 2+ years of dedicated WDFW field staff
  - Extensive barrier QA/QC
  - Duplicate sites FPDSI & RMAP





# NHD and SWIFD Update

- **Updated Salmon Distribution:** Updated NHD & SWIFD fish distribution to add over 100 miles of salmon distribution within the basin.
  - Ecology completed ~ 300 NHD updates
  - SWIFD is essential to auto calculate habitat gain to end of fish use



Model Metrics			
Metric	Dataset	Proposed Scoring	Scoring Category
<u>Barrier Passability</u>	WDFW/RMAP barrier datasets	5 = 0% Passable	Barrier-specific
		3= 33% Passable	
		1= 67% Passable	
<u>Habitat Quantity</u>	SWIFD (currently draft dataset)	10= +7 miles	Species-specific
		9= 6-7 miles	
		8= 5-6 miles	
		7= 4-5 miles	
		6= 3-4 miles	
		5= 2-3 miles	
		4= 1.5-2 miles	
		3= 1-1.5 miles	
		2= .5-1 miles	
		1= .1-.5 miles	
		0= No habitat upstream	
<u>Intrinsic Habitat Quality</u>	IP	5= >0.8	Species-specific
		4= 0.6-0.8	
		3= 0.4-0.6	
		2= 0.2-0.4	
		1= <0.2	
<u>Number of Species Benefitting</u>	SWIFD (currently draft dataset)	5=5	Barrier-specific
		4=4	
		3=3	
		2=2	
		1=1	
		0=0	



Model Metrics			
Metric	Dataset	Proposed Scoring	Scoring Category
<u>Downstream Barriers</u>	WDFW/RMAP barrier datasets, NHD	5= No barriers downstream (100% connectivity)	Barrier-specific
		4= Only 67% passable barrier(s) downstream	
		3= One 33% Passable barrier downstream	
		1= multiple 33% passable barriers downstream	
		0=0% Passable barrier downstream	
<u>Upstream Barriers</u>	WDFW/RMAP barrier datasets, NHD	5= No barriers upstream (100% connectivity)	Barrier-specific
		3= One partial barrier upstream	
		2=multiple partial barriers upstream	
		1=0% Passable barrier(s) upstream	

Model Metrics					
Metric	Dataset	Proposed Scoring	Scoring Category		
<u>Road Density</u>	NOAA (NHD-based dataset)	5 = <0.5 mi/sq mi	Barrier-specific		
		4= 0.5-2 mi/sq mi			
		3= 2-5 mi/sq mi			
		2= 5-10 mi/sq mi			
		1= >10 mi/sq mi			
<u>Water Quality</u>	Ecology 303d listed impaired waterways	5=no 303d listing upstream	Barrier-specific		
		1= 303d listing upstream			
<u>Stream Temperature</u>	Chehalis Thermalscape Model	5= <12 deg C	Barrier-specific		
		4=12-14 deg C			
		3= 14-17 deg C			
		2= 17-21 deg C			
		1=21-26 deg C			
		0=>26 deg C			
<u>2040 Future Stream Temperature</u>	Chehalis Thermalscape Model	5= <12 deg C	Barrier-specific		
		4=12-14 deg C			
		3= 14-17 deg C			
		2= 17-21 deg C			
		1=21-26 deg C			
		0=>26 deg C			
<u>Canopy Cover - Opening Angle</u>	NOAA (NHD-based dataset)	TBD	Barrier-specific		

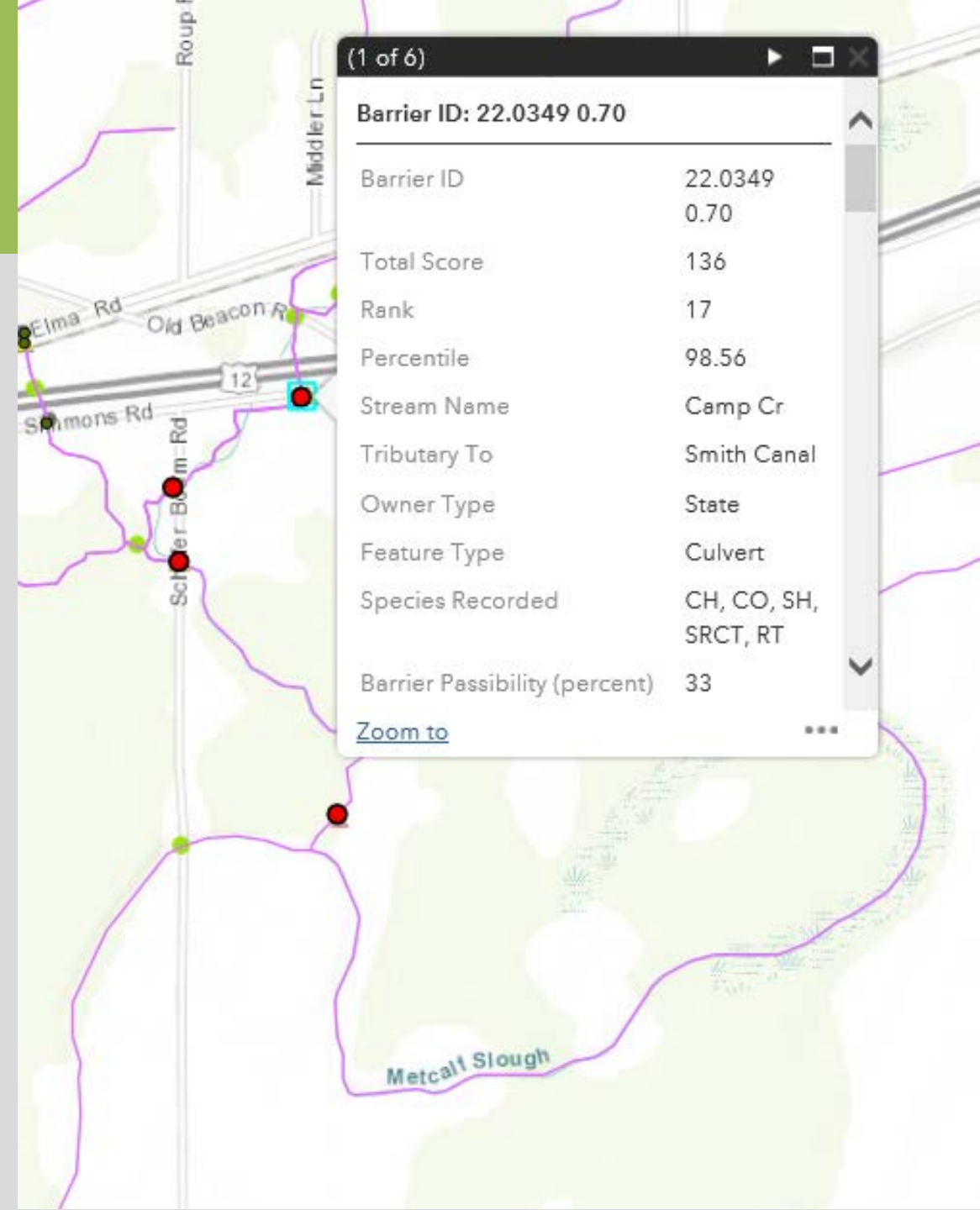


# Coordination

- **Centralized Data:** Interactive tool based on WDFW's fish passage database with live data that is updated with repairs and new inventory.
  - Map contains all of the underlying data and visually displaces the 11 model metric information.
- **Synergy:** Help guide and inform fish passage restoration within the Chehalis to communicate with upstream and downstream jurisdictions and landowners to coordinate barrier corrections.
  - State Injunction, ASRP, SRFB, FFFPP, USFWS, NRCS, FBRB, etc...

# Coordination

- **WSDOT Coordination:** Opportunity for project sponsors to focus on high-ranking sites that are upstream and downstream of WSDOT crossings.
  - **Example:** Model indicated high-ranking WSDOT site on Camp Creek, US 12.





# Coordination

- **Display 11 Metric Layers**
- **Query – Export Results**
- **WDFW Fish Passage Database**
- **Site Reports / Photos**
- **Barrier Corrections**
- **Check Habitat Gains**

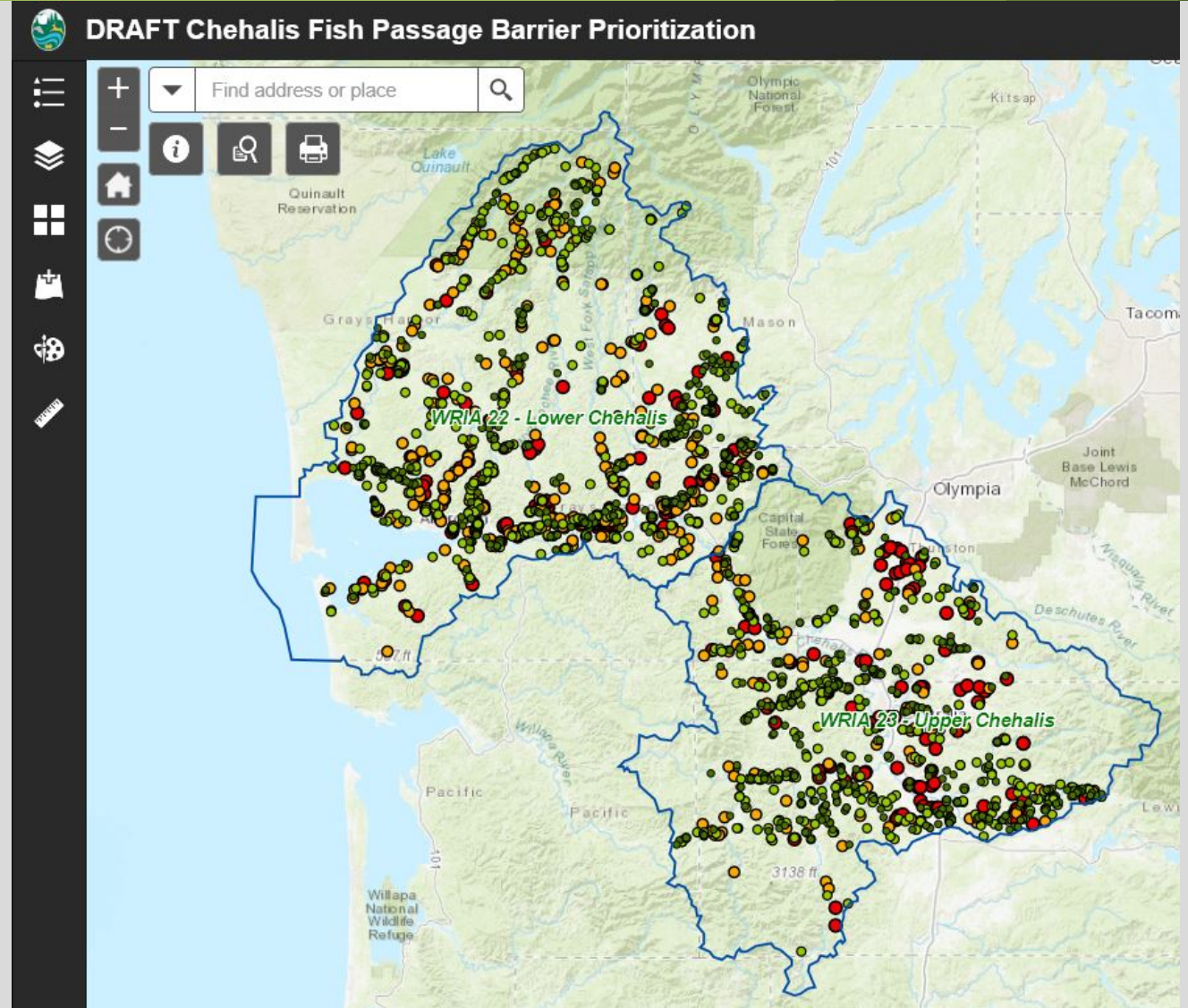
Current Images



Upstream Chinook Habitat (miles)	0.00
Upstream Coho Habitat (miles)	6.27
Upstream Steelhead Habitat (miles)	5.53
Upstream Chum Habitat (miles)	2.78
Upstream Cutthroat Habitat (miles)	6.27
Number Species Benefitting	4
Number of Downstream Barriers	3
Downstream Barrier Minimum Percent Passible	33
Number of Upstream Barriers	11
Upstream Barrier Minimum Percent Passible	33
Road Density (mi/sqmi)	5.23
Water Quality 303d Listing	
Stream Temperature (Mean August degC)	16.33
Future (2040) Stream Temperature (Mean August degC)	17.48
Canopy Cover (percent)	
Chinook Habitat Quality (Avg IP score)	
Coho Habitat Quality (Avg IP score)	0.66
Steelhead Habitat Quality (Avg IP score)	0.28
Chinook Score	0
Steelhead Score	27
Coho Score	29
Searun Cutthroat Score	30
Chum Score	15
Non Species Specific Score	35

# Barrier Ownership

- **Private: 914**
- **County: 677**
- **State: 187**
- **Federal: 181**
- **City: 109**
- **Tribal: 1**





# Leading the Way

- **Project Selection:** Help inform state and local jurisdiction how their priority projects align with basin wide priority crossings.
- **New Prioritization:** Model for more scientifically sound and cost-effective approaches to prioritize limited public investment dollars.
  - Several watersheds groups in Washington use this model as a template.



# Questions / Contact Information

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Chehalis Fish Passage Barrier Prioritization:

<https://dev-geodataservices.wdfw.wa.gov/hp/ChehalisPrioritization/index.html>

