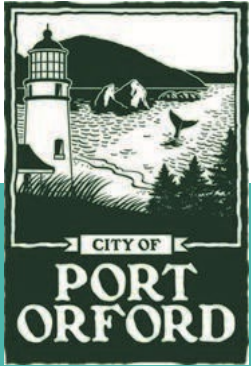


Source Water Protection in the North Fork Hubbard Creek Watershed



The City of Port Orford's journey to ensure a resilient drinking water source for their community

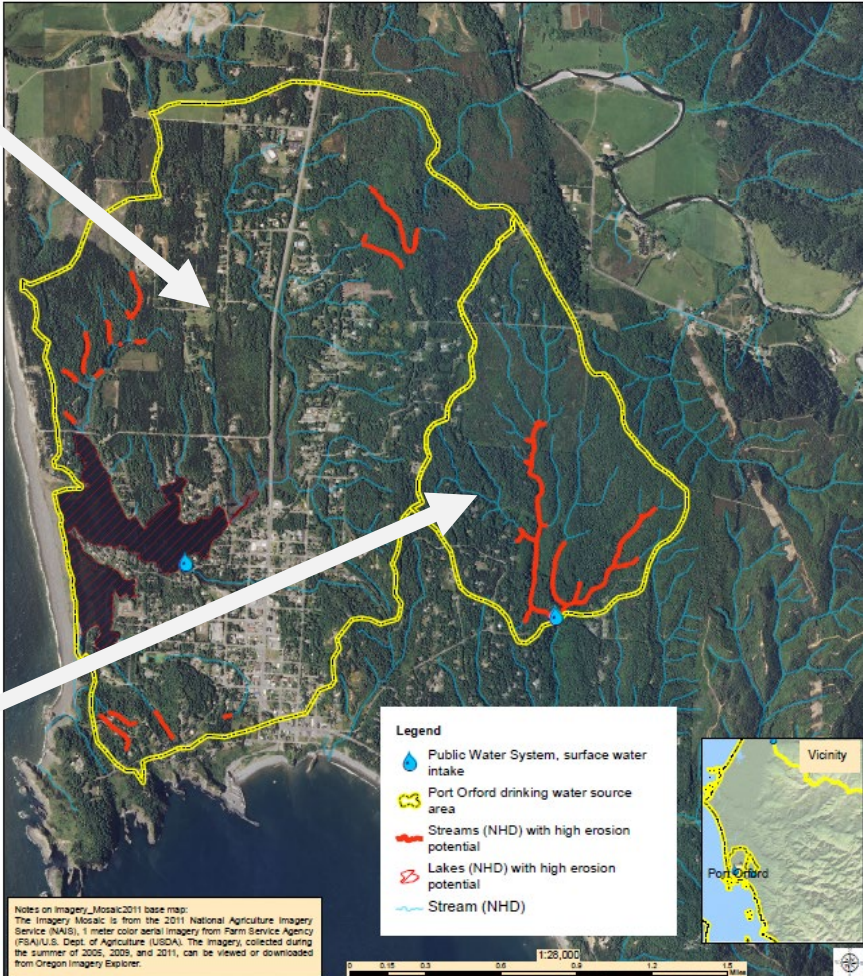
or...

The story of how partnerships are critical to success!





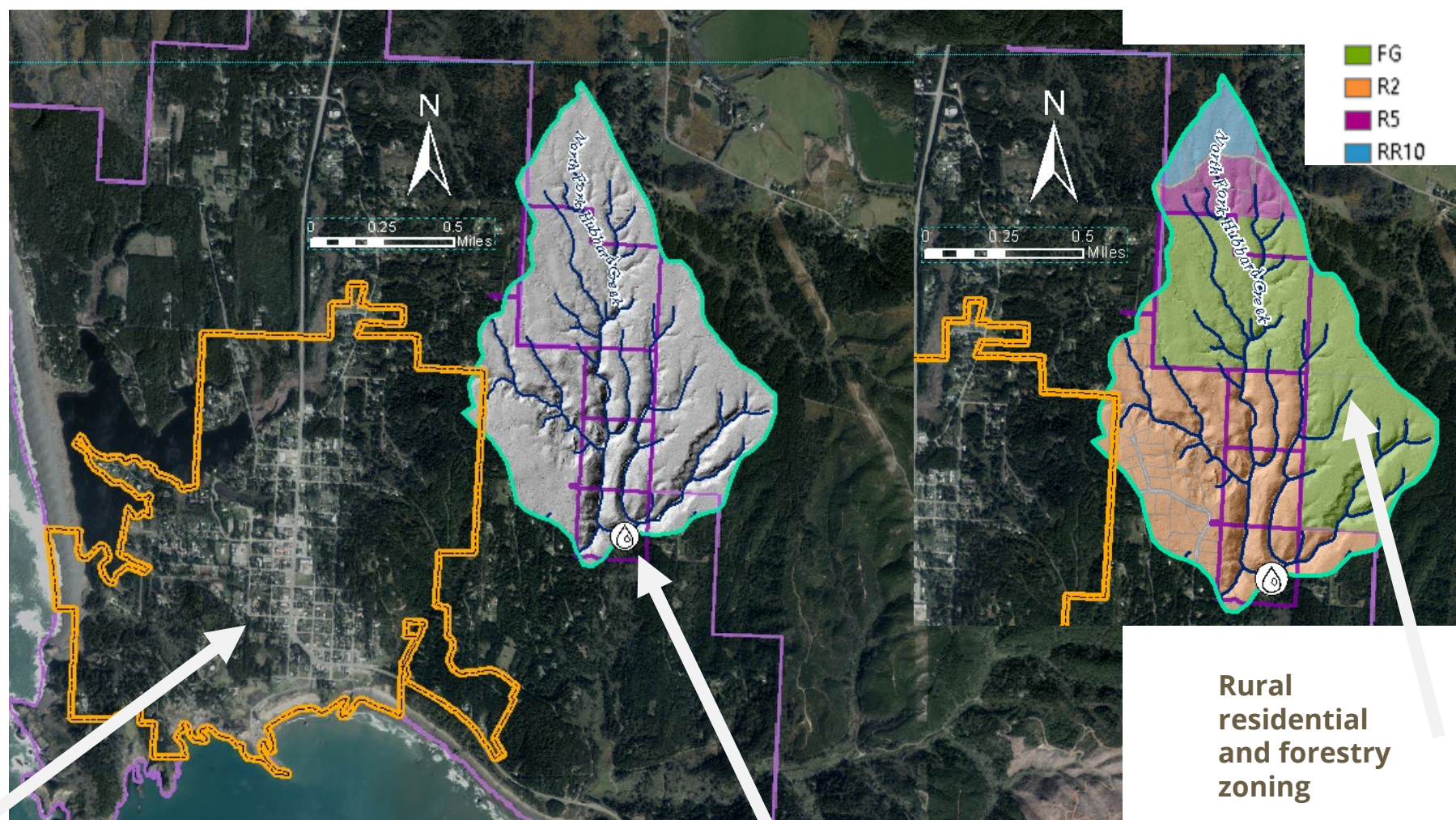
Figure 2. City of Port Orford (PWS 00670)
 Drinking Water Source Area Erosion Potential
 (See Appendix 2 for Key to map details and metadata)



Garrison Lake watershed

North Fork Hubbard Creek watershed

- N. Fk. Hubbard Creek watershed is 629 acres
- Primary (and currently sole) drinking water source for ~1,100 year round residents plus tourists in summer
- DEQ/OHA source water assessment identified stream channels on steep slopes that are prone to erosion if disturbed
 - ◆ Previous landslide deposits



- FG
- R2
- R5
- RR10

Urban Growth Boundaries for City

Drinking Water Intake & Reservoir

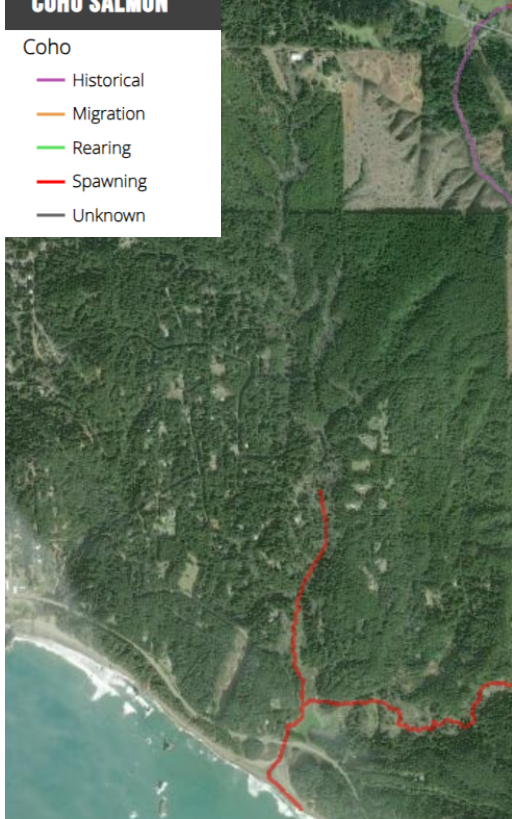
Rural residential and forestry zoning

Fish Presence in The Watershed:

COHO SALMON

Coho

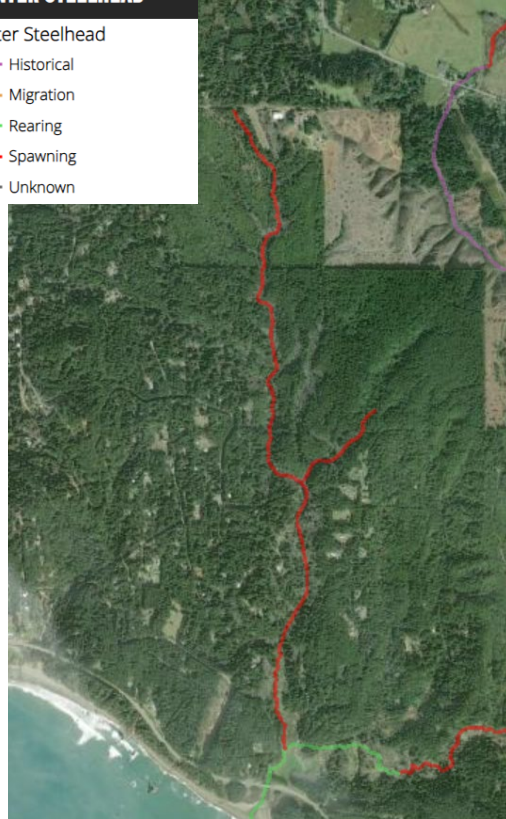
- Historical
- Migration
- Rearing
- Spawning
- Unknown



WINTER STEELHEAD

Winter Steelhead

- Historical
- Migration
- Rearing
- Spawning
- Unknown



COASTAL CUTTHROAT TROUT

Coastal Cutthroat Trout

- Historical
- Rearing
- Resident, multiple uses
- Spawning
- Unknown



Source: ODFW

Other Creatures Live Here Too!

- Elk
- Black bear
- Brook Lamprey
- Pacific giant salamander



Clouded salamander, ODFW

- Mapped as habitat for coastal tailed frog, clouded salamander, northern red-legged frog, southern torrent salamander



Western brook LAMPREY
(non-parasitic) spend their entire lives in freshwater and do not feed as adults. For more information on the western brook lamprey, scan the QR code or go to <https://tinyurl.com/36t8f6xu>

Partnerships Are Critical To Success:

- Fisher folk & OWEB
- Curry County
- Curry SWCD / Curry Watersheds Partnership
- South Coast Watershed Council
- Port Orford Watershed Council
- Coos Forest Protective Association
- CCD Business Development Corporation
- Oregon Health Authority
- Business Oregon
- Department of Environmental Quality
- Oregon Department of Fish & Wildlife
- USFS
- Lower Rogue Watershed Council
- Wild Rivers Land Trust
- The Conservation Fund
- Bandon Dunes Charitable Foundation



Others that we can't remember right now! Speak up if you were there.

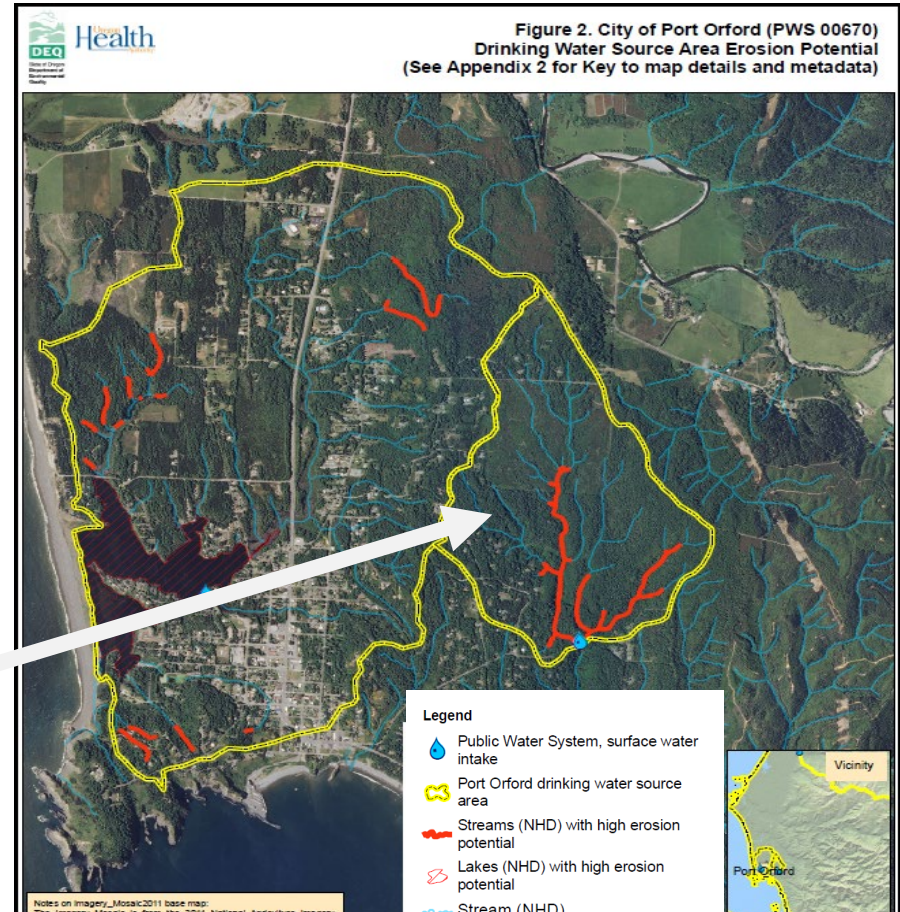
Watershed Threats to Water Quality & Quantity

- ★ Disturbance on steep slopes and sediment/ organic matter inputs to stream

DEQ and OHA's Updated Source Water Assessment (USWA) identified several tributaries on steep slopes that are at high risk for severe erosion

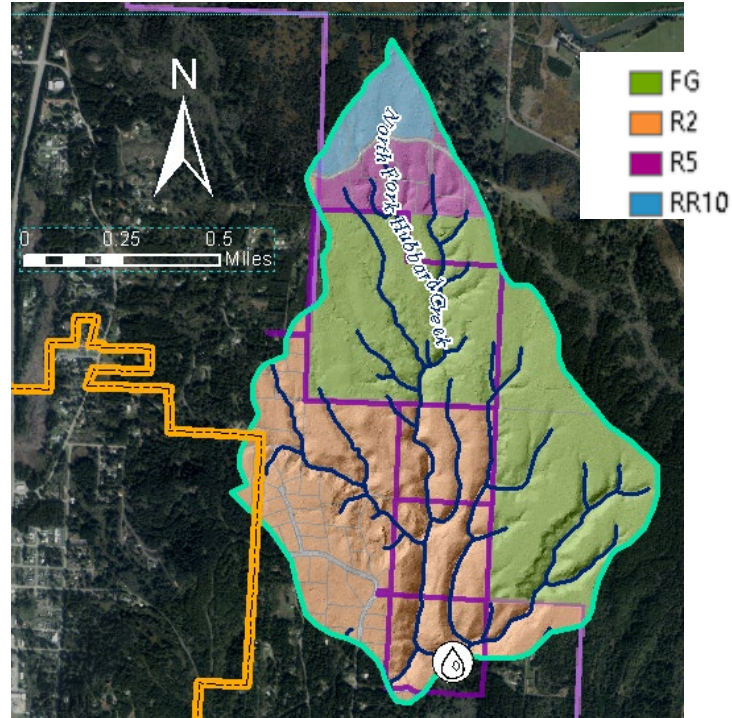
These tributaries are in close proximity to the City's drinking water intake and associated reservoir

North Fork Hubbard Creek watershed



Watershed Threats to Water Quality & Quantity

- ★ Urban/ rural residential and forestry land uses



Watershed Threats to Water Quality & Quantity

- ★ Road system (largely historic from forestry uses)



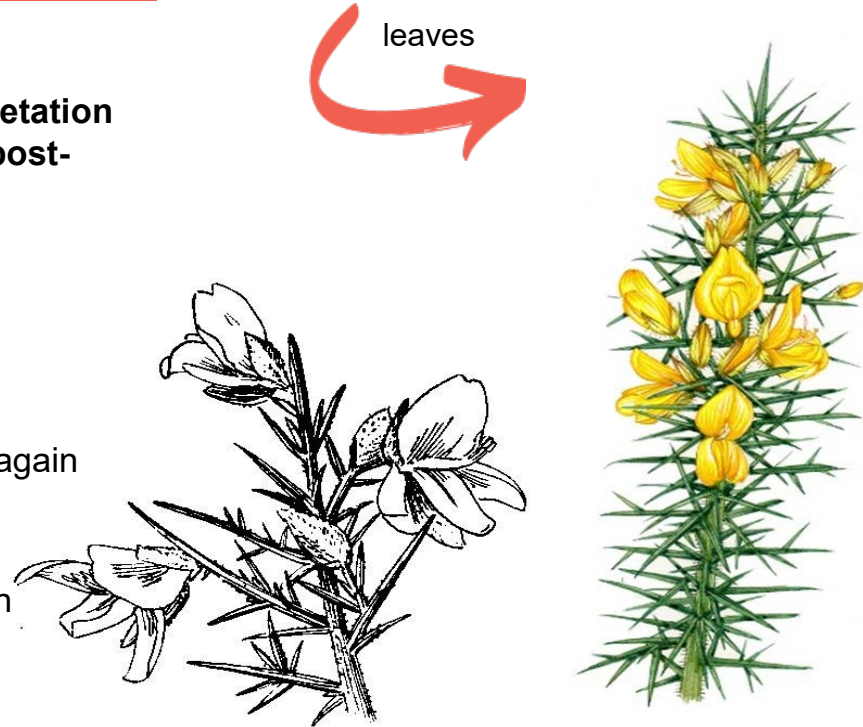
Watershed Threats to Water Quality & Quantity

WHAT
IS
GORSE
?

Gorse is a highly invasive weed, extremely flammable and poses a serious fire risk

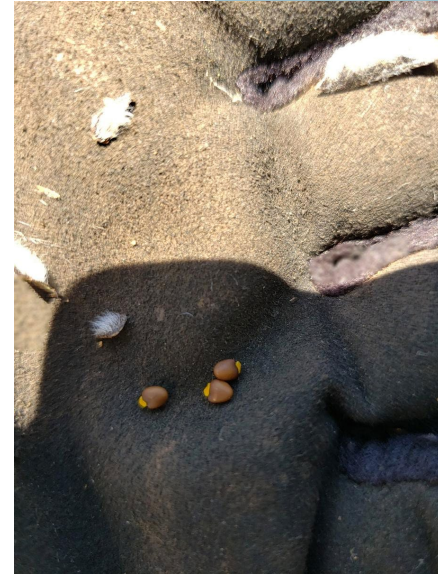
- Gorse aggressively outcompetes other vegetation (including native and shrub/ small tree) in post-disturbance landscapes
- Introduced in the late 1800s from Ireland
- Member of the Pea/Legume family
- Evergreen, blooms in early spring (sometimes again in late fall)
- Highly invasive – 3rd largest negative impact on Oregon economy due to a noxious weed
- Seeds viable for at least 30 years or more

Sharp spikes are modified leaves



SO MANY SEEDS!!!

Annual Production: 500-2,000 seeds/sqm

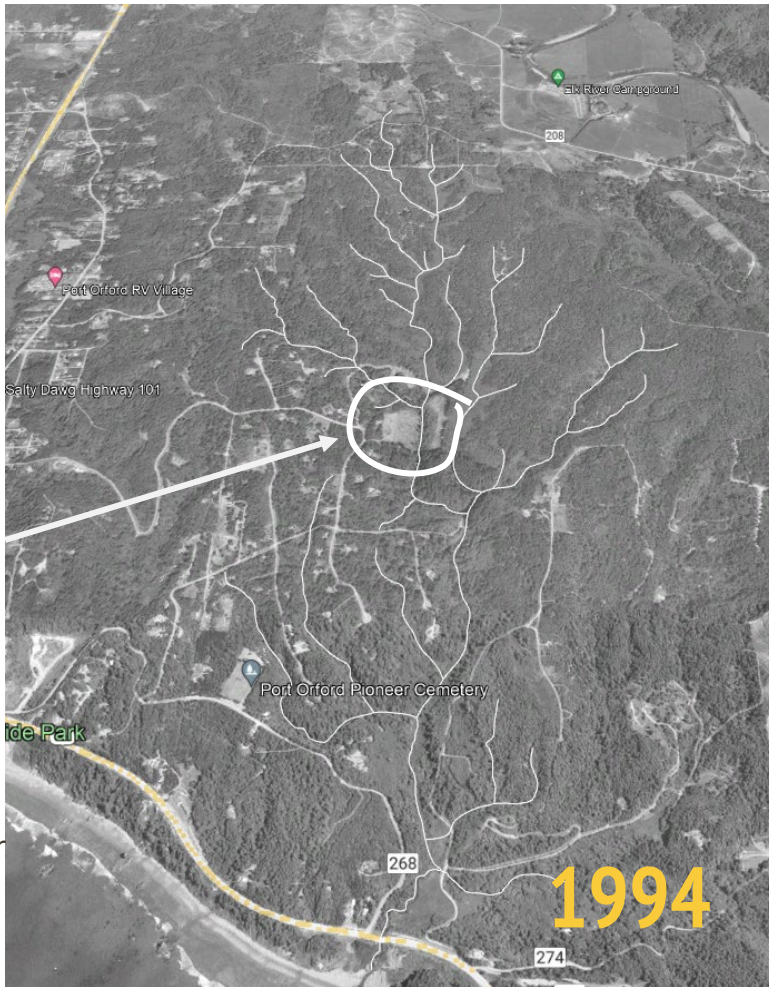


SO MANY SEEDS!!!

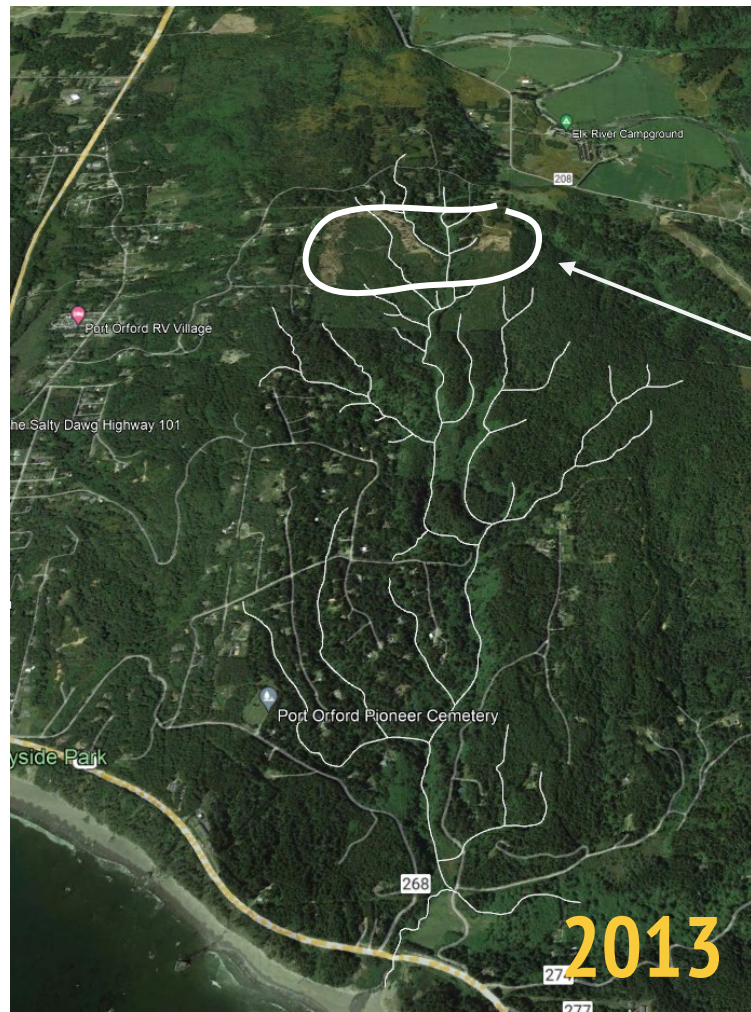
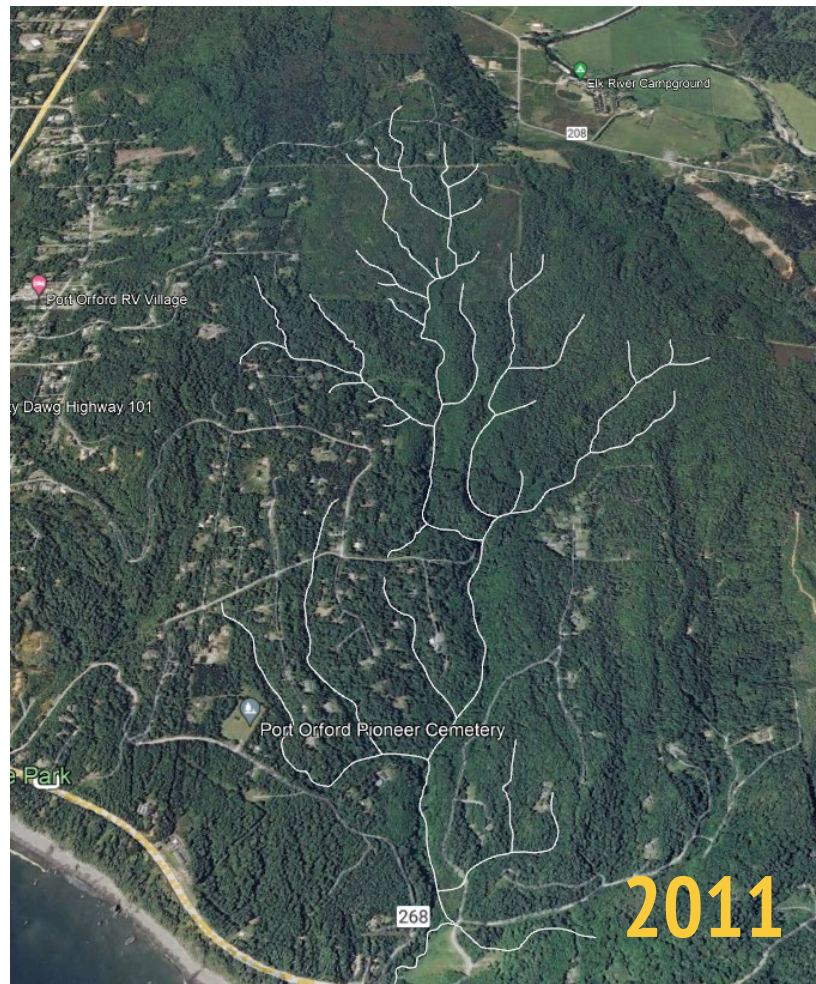
Friends wanted...



~80 acre Bussman cut right around drinking water reservoir earlier in 1994. Landslide cuts off Hubbard Creek as drinking water source for over 1 year.



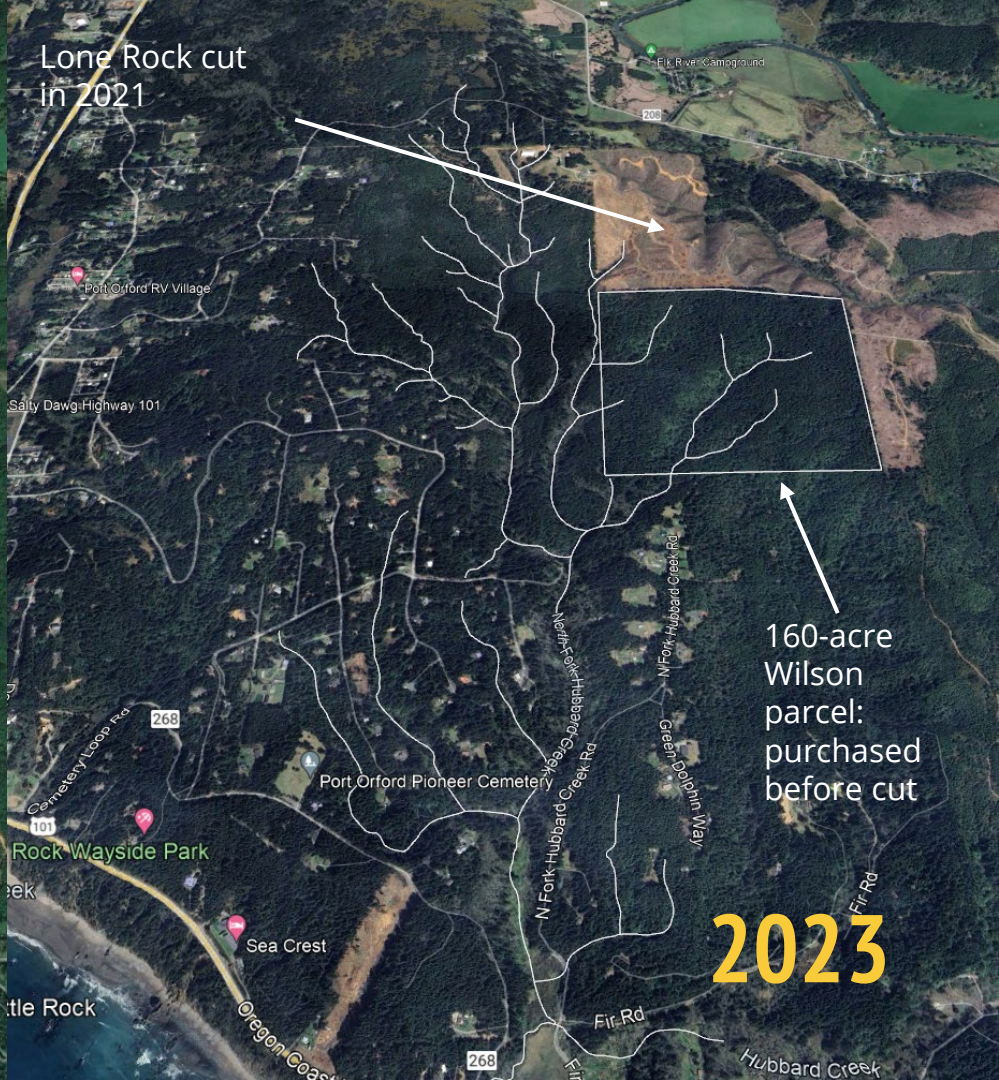
~140 acre cut on Sorenson parcel in 1999



Fuel break
and gorse
removal
work visible
in Sorenson
parcel



2019



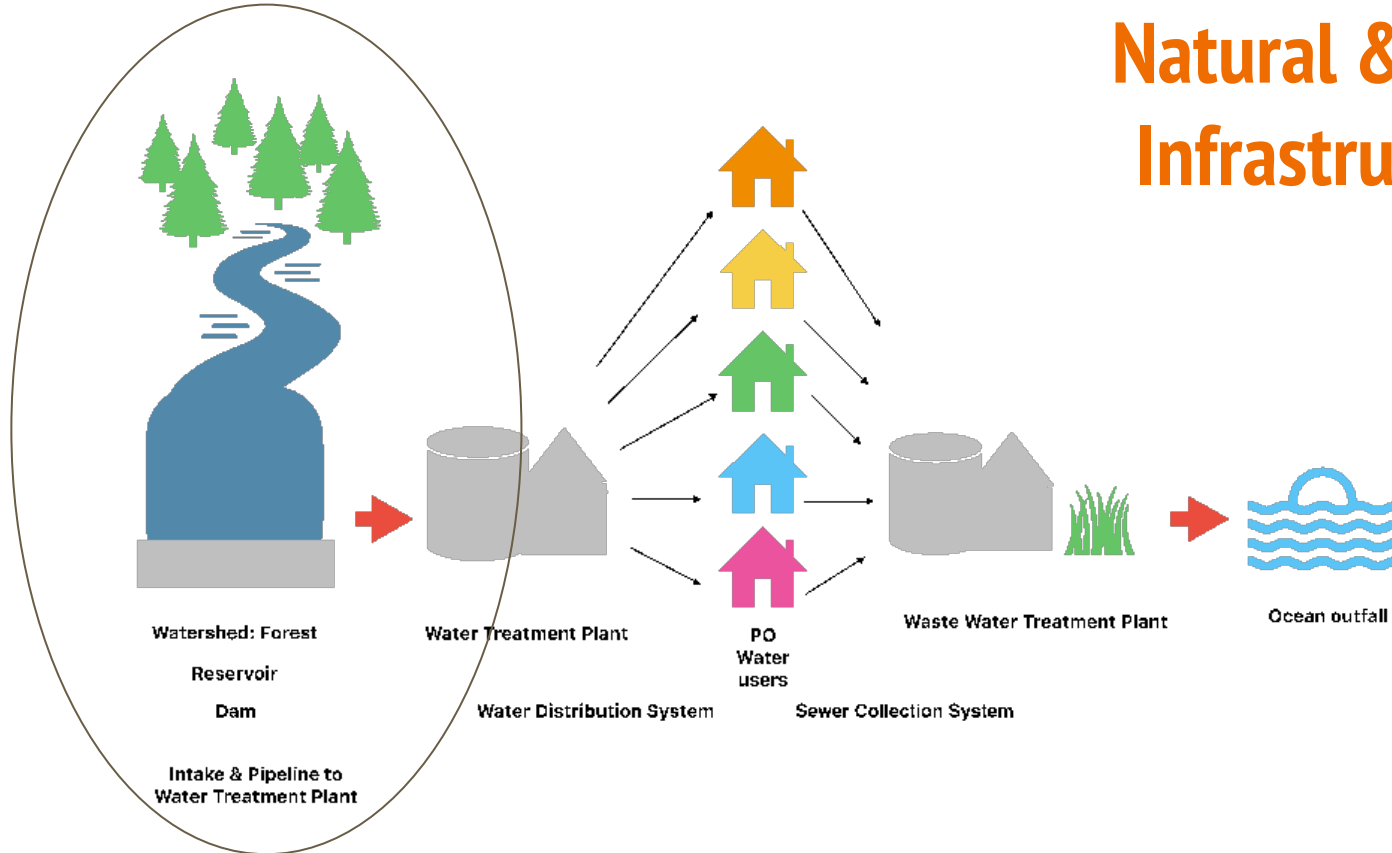
Lone Rock cut in 2021

160-acre Wilson parcel: purchased before cut

2023

PORT ORFORD WATER and SEWER INFRASTRUCTURE

The Link Between Natural & Built Infrastructure



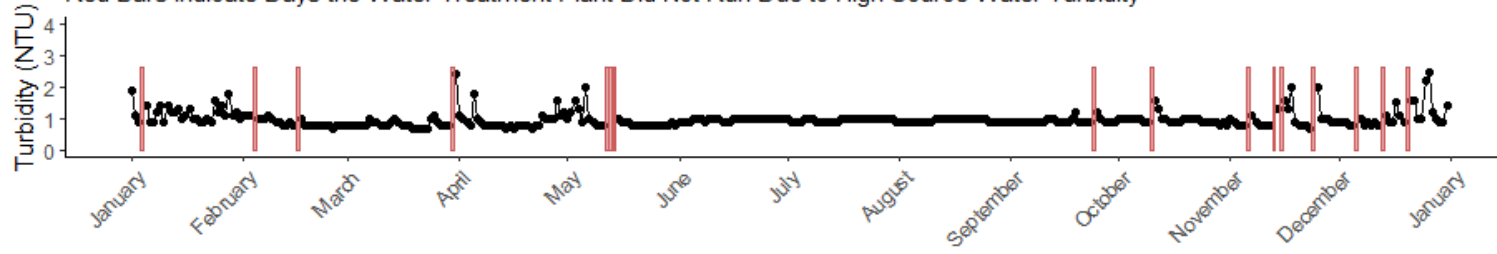
The Link Between Natural & Built Infrastructure

- Treatment plant operates at reduced capacity when turbidity levels rise in response to storms
 - ◆ It is more expensive and less efficient to make water when the source is turbid
 - ◆ Nonpoint sources of sediment in watershed
- Raw water storage capacity at reservoir diminished as reservoir fills with sediment
 - ◆ Problematic during times of low flow
- Limited finished water storage capacity

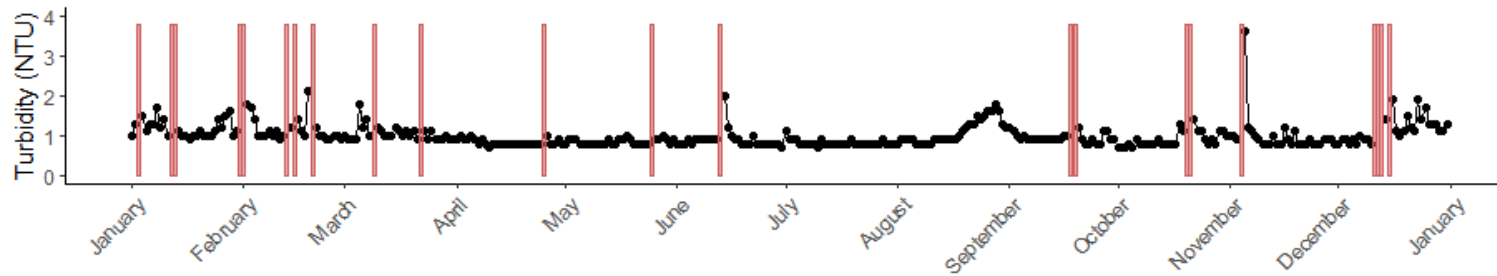


N. Fk. Hubbard Creek 2020 Raw Water Turbidity

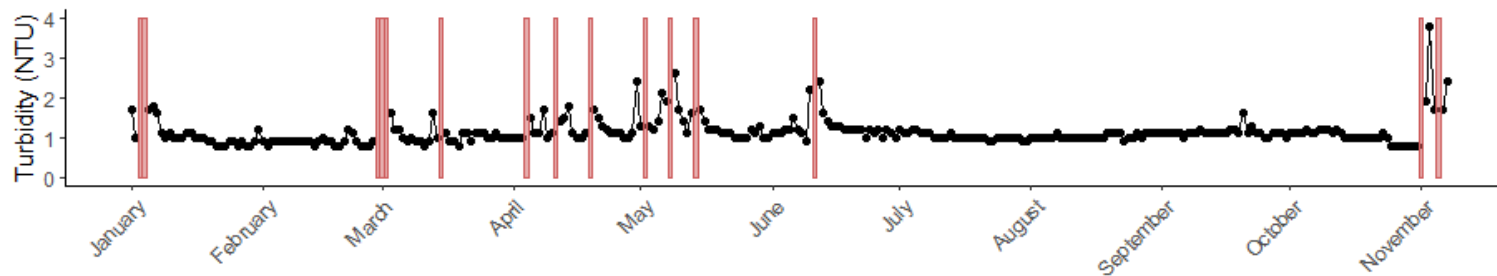
Red Bars Indicate Days the Water Treatment Plant Did Not Run Due to High Source Water Turbidity



2021 Raw Water Turbidity Data



2022 Raw Water Turbidity Data



**Port Orford
Water
Treatment
Plant
NO RUN DAYS**
2020: 16 days
2021: 22 days
2022: 15+ days
2023: 43 days

Achieving the Goal of a Resilient Watershed...

Is Not Straight Forward!

- Partners have played an outsized role in paying attention to what is happening in the watershed and alerting the City about threats and opportunities
 - ◆ Port Orford Watershed Council
 - ◆ Curry SWCD
- Reactive response to threats becoming more proactive through time

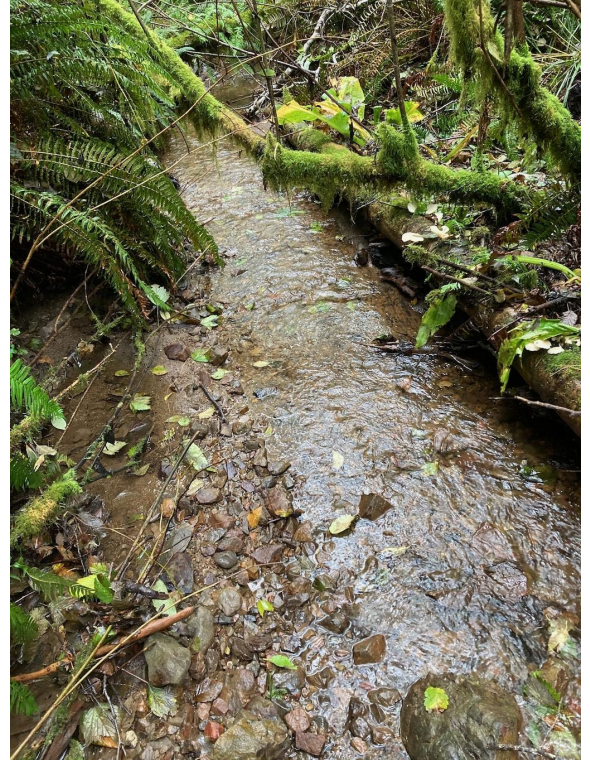
Responding to threats and managing degraded water quality & watershed conditions over time has led to the City's response of opportunistic land conservation through acquisition.

Community Goals for Resilient Watershed

- Prevent and/or reduce inputs of nonpoint source pollution (esp. sediment)
- Stable or increasing base flows, especially in summer months
- Preserve, maintain, and enhance forest conditions & native vegetation
 - ◆ Riparian forest benefits
 - ◆ Upland forest benefits
 - ◆ Enhance habitat for aquatic and non-aquatic species
- ★ Use nature based solutions when possible (including land conservation) to maintain and restore function



Forest acts as filter and sponge



Risk:

Disturbance on steep slopes and sediment/ organic matter inputs to stream

Urban/ rural residential and forestry land uses

Gorse! (and other invasives)

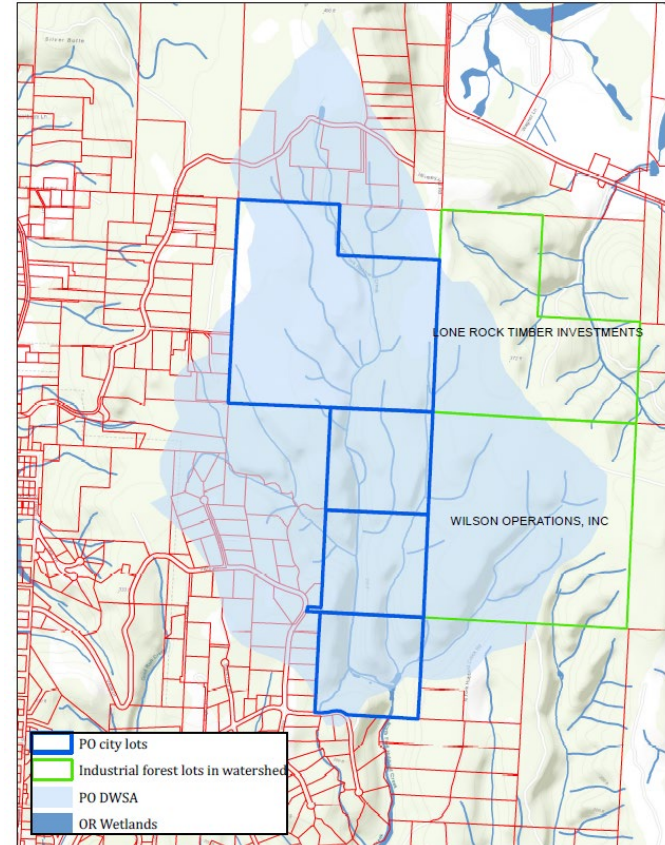
Response:

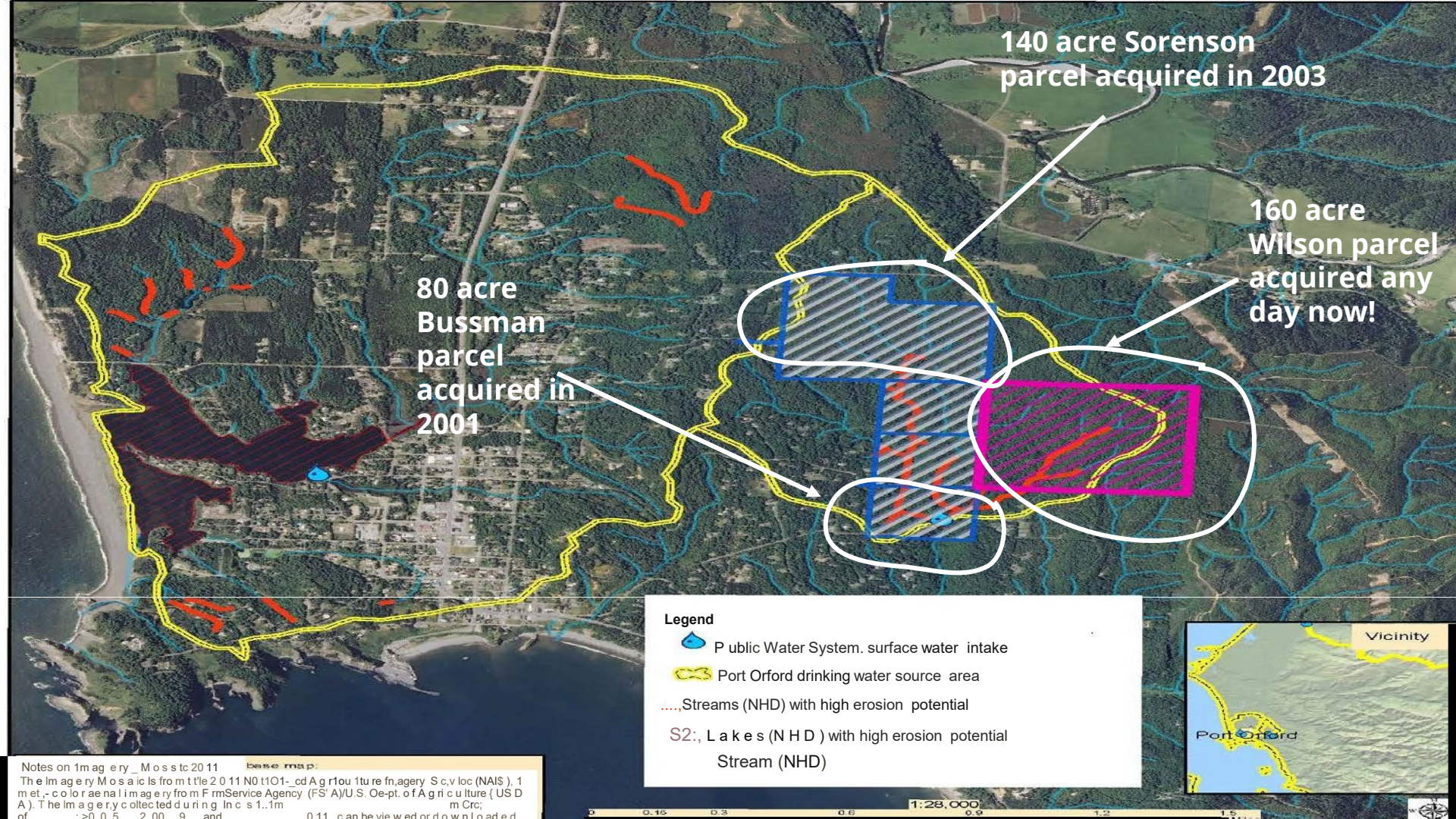
Opportunistic land purchase from willing sellers

Buy the Watershed!

- Willing landowners
- Curry County
- Port Orford Watershed Council
- The Conservation Fund/ Wild Rivers Land Trust
- Coalition for Oregon Land Trusts
- Oregon Health Authority
- DEQ (Drinking Water program & Clean Water State Revolving Fund)
- CCD Business Development Corporation

Partners:










140 acre Sorenson parcel acquired in 2003

160 acre Wilson parcel acquired any day now!

80 acre Bussman parcel acquired in 2001

Legend

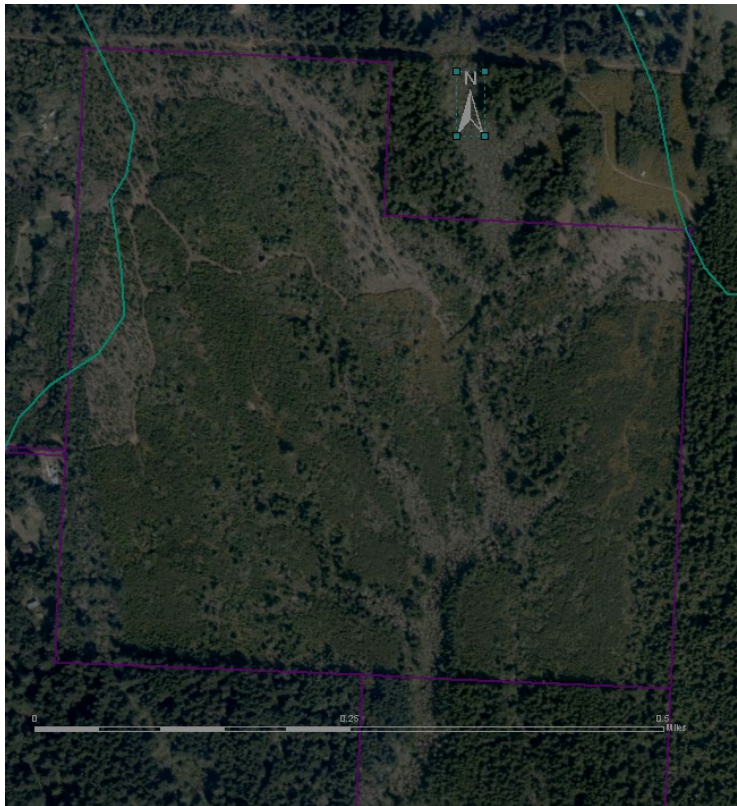
-  Public Water System. surface water intake
-  Port Orford drinking water source area
-  Streams (NHD) with high erosion potential
-  S2: L a k e s (N H D) with high erosion potential
-  Stream (NHD)



Notes on 1m imagery_Mosstc2011 base map:
 The imagery mosaics from tile 2011N01101-cd Agriculture Service (NAIS), 1
 met. color aerial imagery from Farm Service Agency (FS) / U.S. Dept. of Agriculture (USDA). The imagery collected during Inc 1.1m
 of :>0.5 :2.00_9_ add : 0.11 can be viewed or downloaded



Featured Action: Purchasing & Stewarding the Sorenson Parcel



2014 Imagery

1999: 140 acre parcel logged and replanted

2003: Curry County uses federal funds to purchase property and conservation easement; deeded to City for \$1

2003 - 2007: Watershed wide road and stream crossing inventory; sediment reduction, gorse eradication, and tree planting *Hire the Fisherman - OWEB program

2008: Curry Community Wildfire Protection Plan lists Port Orford Drinking Water Supply as a HIGH priority for fuels reduction targeting gorse infestation.

2013: Curry SWCD & Coos Forest Protective Association mowed and mulched two project areas (NE corner & Firebreak N & W boundaries)

2014: Project areas were planted with Sitka spruce.

Featured Action: Purchasing & Stewarding the Sorenson Parcel



2015-2020: Hit and miss maintenance of the tree plantings. Port Orford Watershed Council volunteers hand clear around planted trees and supplement plantings

2019: Port Orford Watershed Council and Curry SWCD partner with the City to submit an OHA Source Protection Fund grant aimed at continuing gorse control efforts and developing a Wildfire Hazard Reduction Plan for Gorse Infestation Management

2021-2022: Curry SWCD works to release trees, mow and mulch dense gorse patches, plant additional spruce and POC resistant cedar, and spread grass seed to suppress gorse seed sprout

2023: Curry SWCD finalizes Wildfire Risk Reduction Plan (aka Invasive Species Management Plan)



Gorse Control: NE Sorenson Parcel

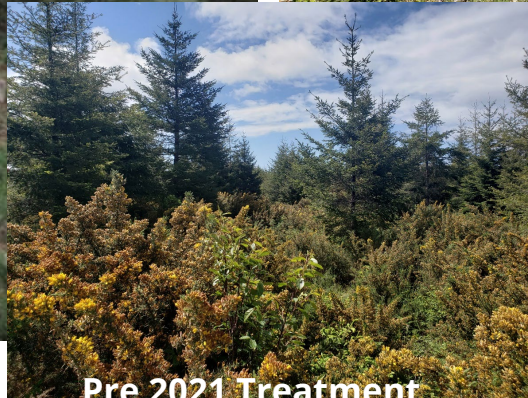
Controlling Gorse in the headwaters of the Hubbard Creek DWSA



October 2013



Post 2021 Treatment



Pre 2021 Treatment

Featured Action: Purchasing The Wilson Parcel

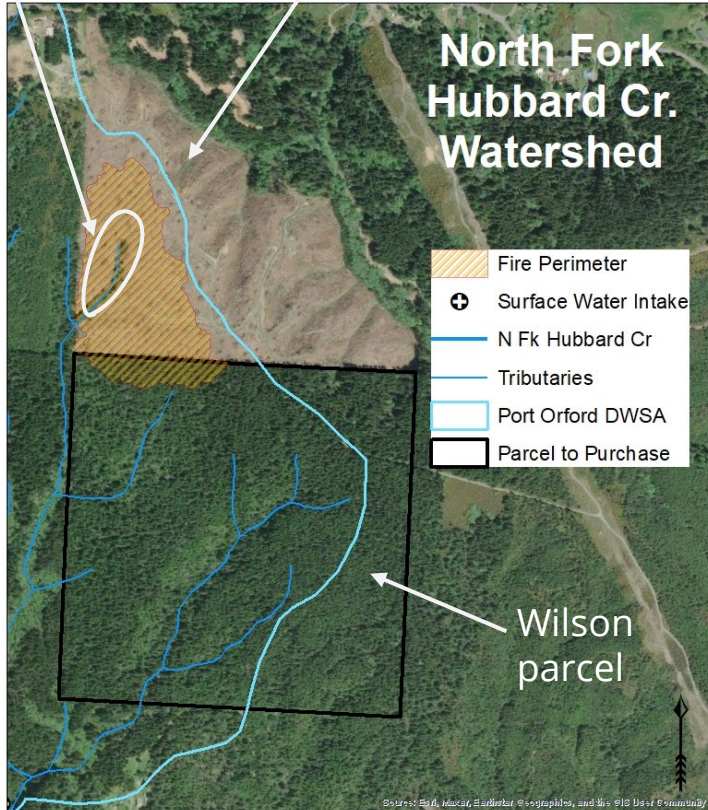


- 160 acre parcel
- Contains ~3.3 km of tributaries that drain directly into N. Fk. Hubbard Creek above the City's drinking water intake
- Within this tributary network, ~1.5 km of stream are at severe erosion risk and another ~1 km are at moderate erosion risk.

Featured Action: Purchasing The Wilson Parcel

30 ft buffer negotiated by watershed council

Lone Rock cut in 2021



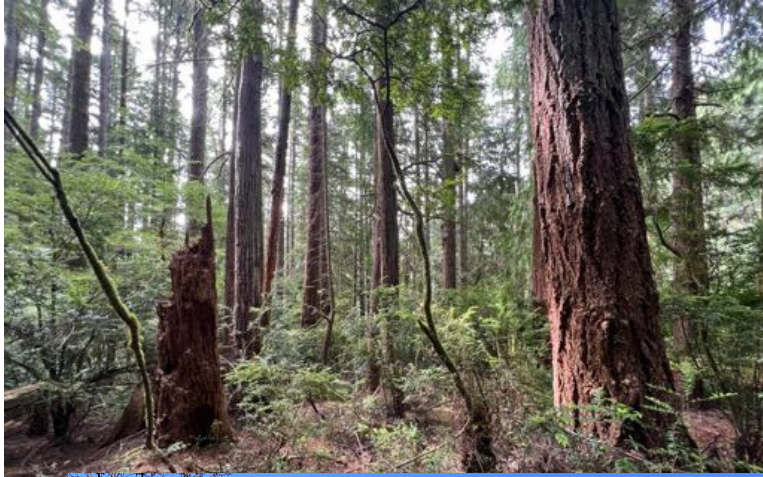
2020/2021: Lone Rock cut in NE of watershed. Port Orford Watershed Council communication with timber company to secure extra buffer. Field outing leads to conversation about upcoming sale of Wilson Parcel.

2021: The Conservation Fund (TCF) serves as bridge buyer - appraisal of property completed and TCF purchases property. Agreement between TCF and City of Port Orford.

2021: City applies for OHA Source Protection Fund grant to complete a Forest Management Plan for the watershed.

2022: City applies for Clean Water State Revolving Fund Loan to purchase property from TCF. Loan includes ~\$30k for site stabilization costs related to burn.

Featured Action: Purchasing The Wilson Parcel



Early 2023: Forest Management Plan finalized and adopted by City Council AND approved by Oregon DEQ.

- Plan consistent with OHA and DEQ's source water protection goals and meets the objectives within DEQ's EPA-approved Nonpoint Source Pollution Management Plan (2022). **This makes future land conservation projects eligible to receive Clean Water State Revolving Funds.**

Late 2023: City applies for Clean Water State Revolving Fund Planning Loan to complete updated road assessment & drainage structure inventory, planning/permitting for high risk culvert removal, and planning for habitat structure. ODFW Private Forest Accord grant submitted for planning instream habitat structure.

Any Day Now 2024: Finalize CWSRF loan, purchase Wilson parcel from The Conservation Fund

2024: Management projects will ensue to control gorse!

Risk:

Urban/ rural residential and forestry land uses

Wildfire & Invasive Species

Response:

Brochure for private landowners on best management practices

Partners:

- Willing landowners
- Port Orford Watershed Council
- Oregon Health Authority

MAINTAIN DRIVEWAYS AND IMPERVIOUS SURFACES

- Maintain natural vegetation up to and fully surrounding any driveway or impervious surface.
- Make sure that roads are surfaced with clean crushed rock. Renew the gravel on a regular basis to reduce potential for erosion and runoff.
- Watch for any signs of erosion or incision, particularly in ditches or around culverts. If you see erosion starting, re-route the water away from the incised area and / or use strawbales to protect the soil.
- If erosion continues, contact a road contractor or forester to come up with a plan for the road or driveway.

PROTECT AGAINST WILDFIRE - DON'T START FIRES

- If it's dry or windy, don't burn! Before doing any backyard burning, check with the Port Orford Fire Department, Oregon Department of Forestry, and / or the Coos Forest Protective Association for current burn restrictions.
- If something has a flame or is smoking, it can start a fire! Be careful with anything that could start a fire, including barbecues, backyard fires, cigarettes, and target shooting.
- Don't park in tall grass. The hot mufflers on cars, ATVs, and motorcycles can start a fire.
- If you see smoke, call 911. Small fires caught quickly can be easy to put out – the bigger it is, the harder it will be to control.

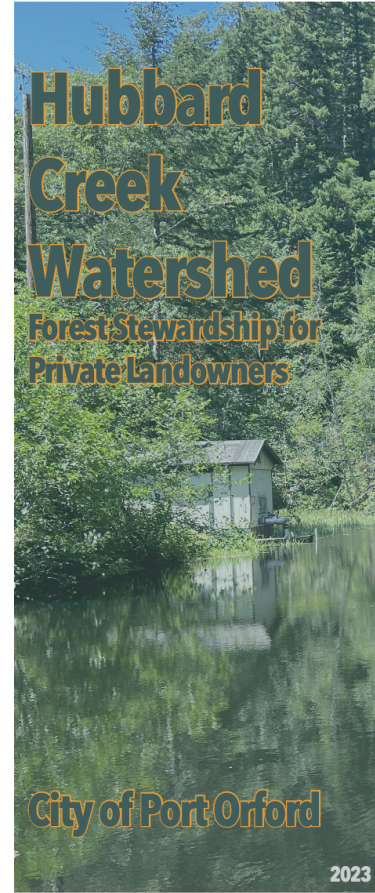
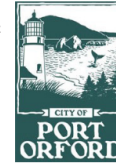
LIMIT VEGETATION DISTURBANCE

- Future developments in the watershed should limit disturbance to native forest vegetation, minimize conversion to grass, and build well-drained, stable road and driveway systems to minimize the risks of damaging runoff and wildfire.
- Consider conservation easements to assure lands needed for watershed protection can be conserved into the future. Consult with the Wild Rivers Land Trust to learn more about this option.

MAINTAIN SEPTIC SYSTEMS

- Old and leaking septic systems have the potential to contaminate Port Orford's source waters. Have your septic system inspected every 5-7 years. If it contains over 40% solids, make sure to have it pumped by a DEQ-licensed pumper.
- Signs of septic system failure include soft soil, or pools of water near the tank or drainfield, foul odors, and slow drainage. A failed septic system needs to be evaluated by a professional as soon as possible.

This brochure was written for the City of Port Orford with the support of the Oregon Health Authority and Business Oregon. Additional assistance was provided by the staff of the Wild Rivers Land Trust and Port Orford Watershed Council.



Risk:

Legacy forestry land uses
Road slides

Response:

Seek planning grant to remove failing culverts and to install habitat/sediment abatement structures above reservoir

Partners:

- ◆ COLT/CCD/ Bandon Dunes Charitable Foundation
- ◆ CSWD
- ◆ DEQ (Drinking Water program & Clean Water State Revolving Fund)



Challenges: The Struggle Is Real

- Lack of local government capacity to do all the work.
- Documentation/ Administrative Challenges
 - ◆ Staff turnover
 - ◆ Loss of institutional knowledge (eg. Conservation easement on Sorenson Parcel)
- Accessing funding / resources to do projects
- Pros and cons of having protected fish in the watershed



Lessons Learned:



- Protection is more cost-effective than reaction!
- Ongoing management is necessary
- **PARTNERS ARE KEY**
 - Partners are knowledge reservoirs
 - Partners hold you accountable
 - Partners can help with capacity to line out projects
- Source water protection is a marathon–or relay race–not a sprint

