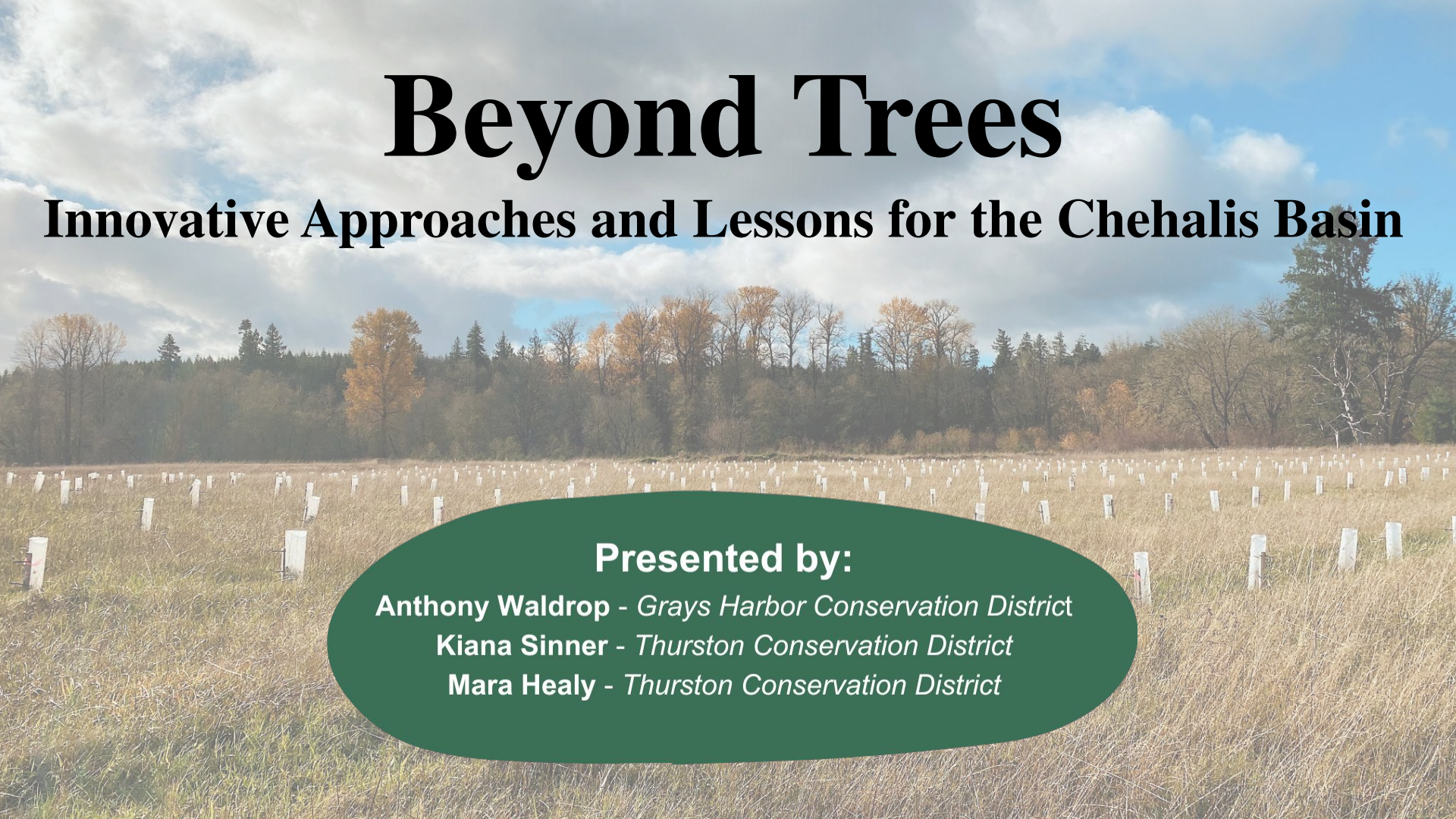
Beyond Trees

Innovative Approaches and Lessons for the Chehalis Basin



Presented by:

Anthony Waldrop - *Grays Harbor Conservation District*

Kiana Sinner - *Thurston Conservation District*

Mara Healy - *Thurston Conservation District*

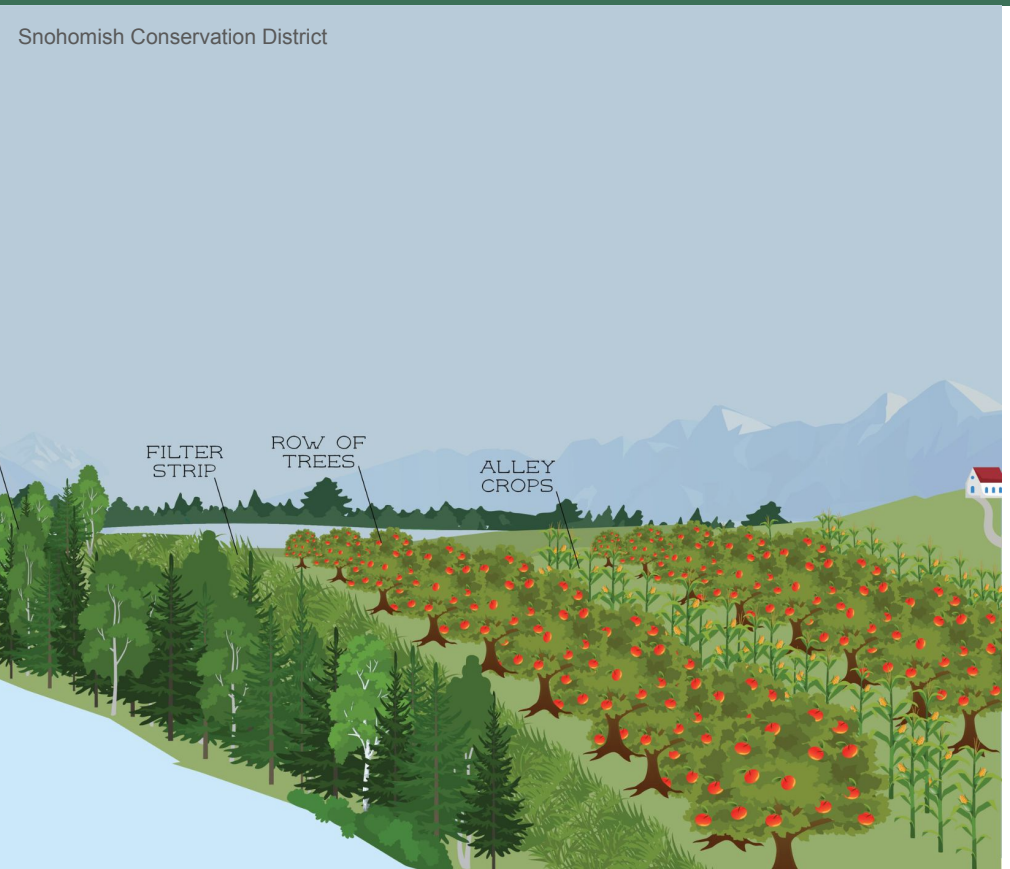
What are Conservation Districts?

- Formed nationally in the 1930's
- Non-regulatory & voluntary
- Local & community based
- Incentive-based programs
  - Technical assistance
  - Adult and youth education
  - Financial support

GRAYS HARBOR CONSERVATION DISTRICT

Thurston Conservation District EST 1948 www.thurstoncd.com

What are Working Buffers?



- Combination of economic production and environmental protection
- A bridge between no-touch riparian zones and agricultural viability
- Strong local enthusiasm for this topic & implementing this practice

Why Choose a Working Buffer?

- All the same benefits as a traditional riparian buffer
  - Prevents erosion
  - Sequester carbon
  - Filters water
  - Create wildlife habitat
- Incorporates benefits for the farmer
  - Happier livestock
  - Healthy local food
  - Increased biodiversity
  - Builds farm resilience and allows for income diversification

Types of Working Buffers

- Combination of trees + agriculture product
  - Livestock
  - Crop
- Working Buffer Types
  - Silvopasture
  - Alley cropping
  - Forest Farming


The Nature Conservancy


Science Direct: Naresh Thevathasan

Working Buffers

Riverbend Ranch Project

Satsop 2.5 Project

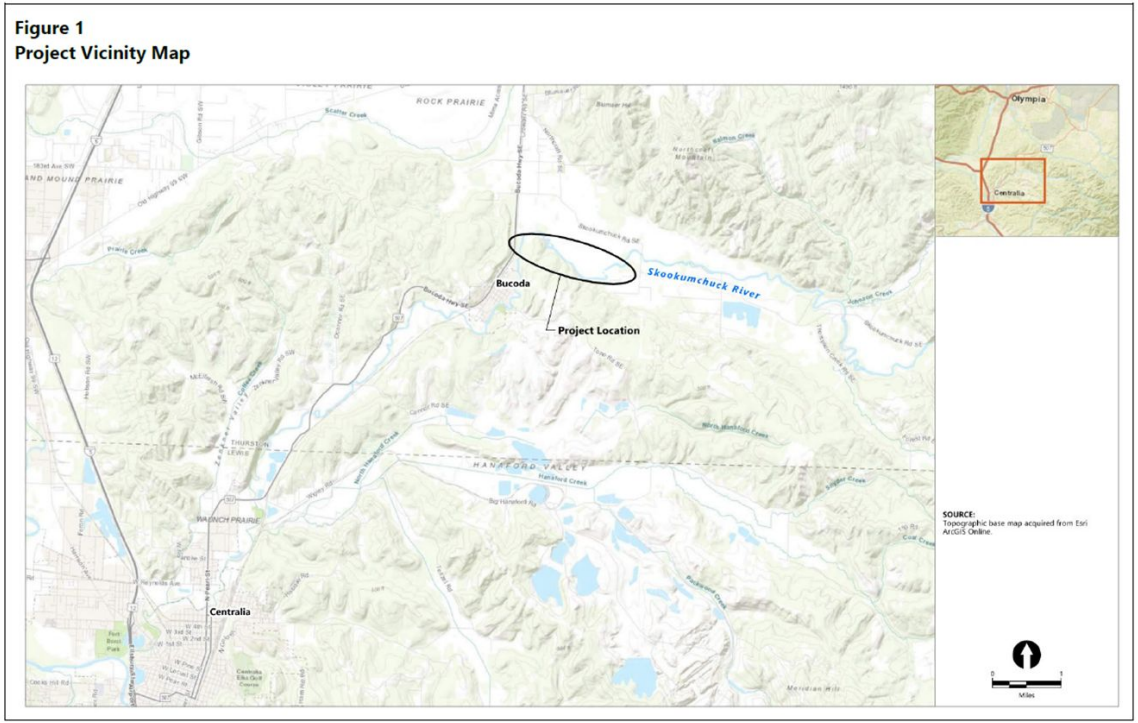
Skookumchuck River Project

Riverbend Ranch

Thurston Conservation District
EST 1948

Project Location

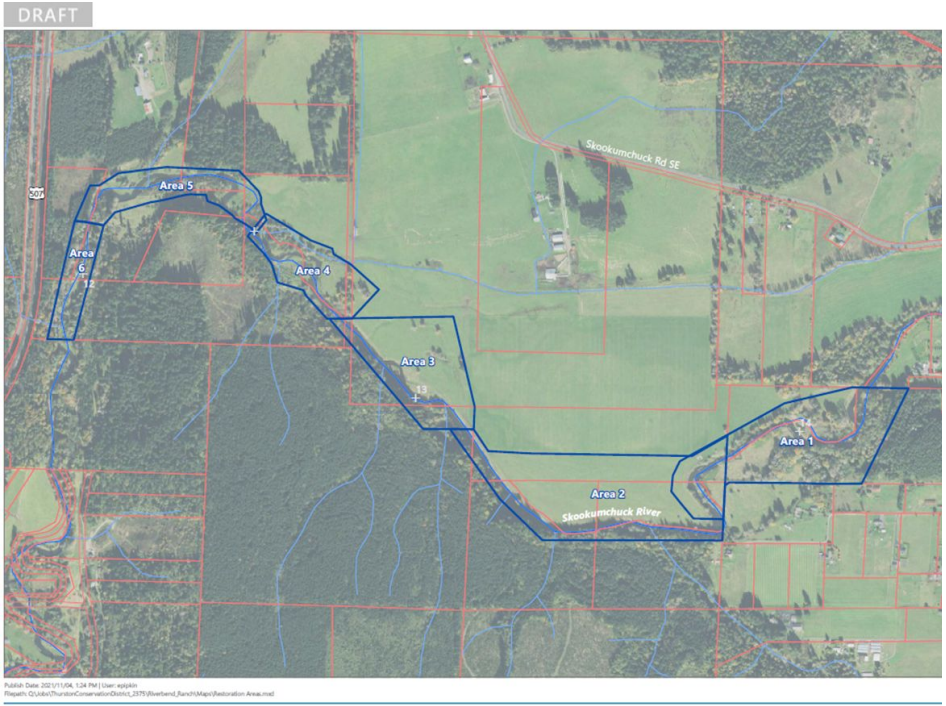
- Lower Skookumchuck GSU
- ASRP Near-Term Priority Area
- 2.5 river miles of the mainstem Skookumchuck
- Active and diversified farm and ranch
- Near town of Bucoda



Project Background

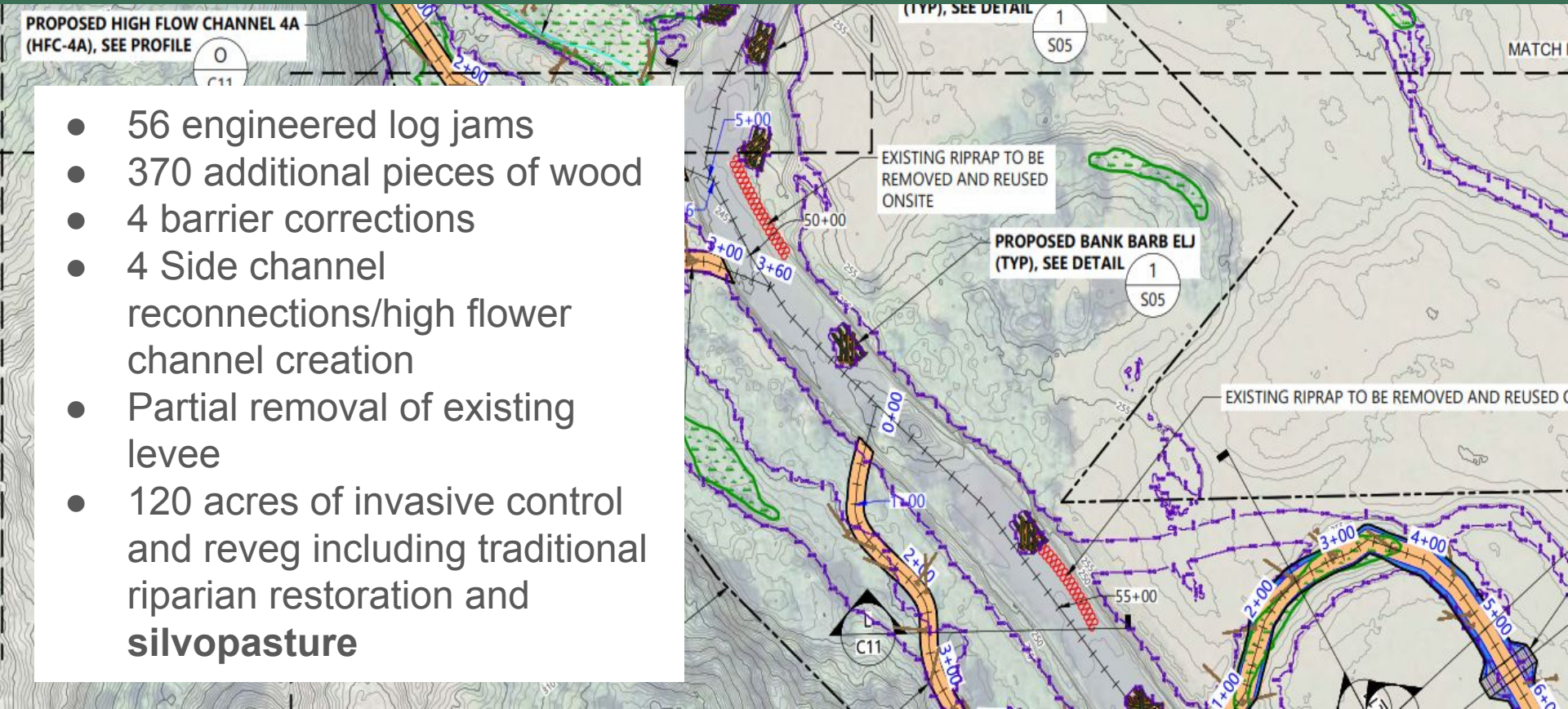
- 10+ years of relationship building trust with the Jensen family
- Holistic planning blends habitat restoration and agricultural assistance
- Collaborative approach with support and funding from ASRP, WSCC, VSP, CREP, USFWS Partners Program

Current Conditions



- Reduced channel length and habitat quantity
- High water temps
- Lack of key salmonid habitats (side channels, deep pools)
- Incomplete riparian buffers and livestock fencing
- Reduced floodplain connectivity

Project Practices



- 56 engineered log jams
- 370 additional pieces of wood
- 4 barrier corrections
- 4 Side channel reconnections/high flower channel creation
- Partial removal of existing levee
- 120 acres of invasive control and reveg including traditional riparian restoration and **silvopasture**

Integration with Agriculture

- Restoration techniques and expected outcomes in harmony with ag operation
- Seek and implement multi-benefit actions that support habitat improvements AND ag operation
- **Silvopasture Goals**: Habitat improvement, enhance livestock operation

Planting Designs

- Grids, lines, **clusters**
- **Native trees** (Douglas fir, Cedar, Garry oak, Red Alder)
- Spacing of clusters and spacing of trees within clusters
- Temporary electric fencing
- Compatible with prescribed grazing systems: Permanent cross fencing, watering facilities, etc.

Silvopasture for Agriculture Viability

- Tree roots provide shade and moisture retention = Edge effect
- Pasture grass growth and health in hot dry summers
- Shade for livestock
- Living barn structures
- Compatible with prescribed grazing

Silvopasture for Habitat Enhancement

Expected Benefits

- Extending benefit of existing no-touch riparian zone into floodplain
- Native tree species
- Deep rooted vegetation
- Floodplain roughness
- Slowing flood waters
- Wildlife habitat enhancement
- Wood inputs in the future

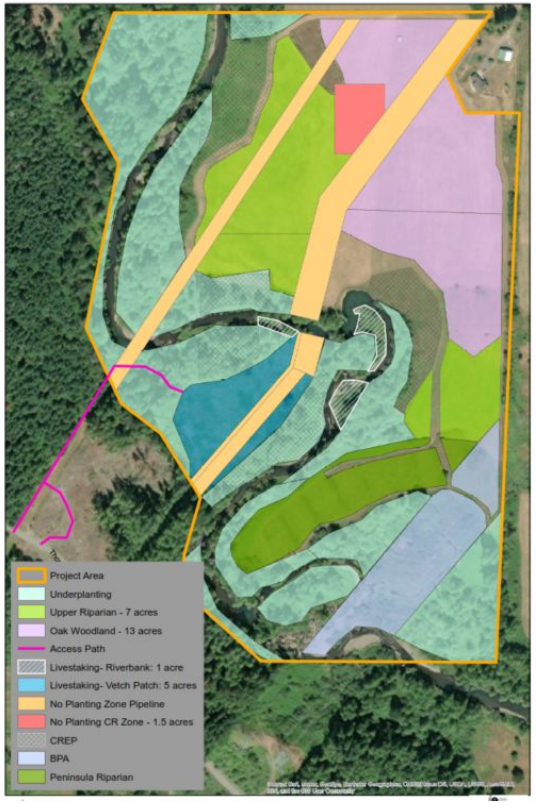
Anticipated Challenges

- Fencing and browse protection from livestock and wildlife
- Floodwaters disrupting plantings
- Short term reduction in grazable area (3-5 years)
- Controlling pasture grasses until grazing can safely occur

Skookumchuck River Restoration

Project Background

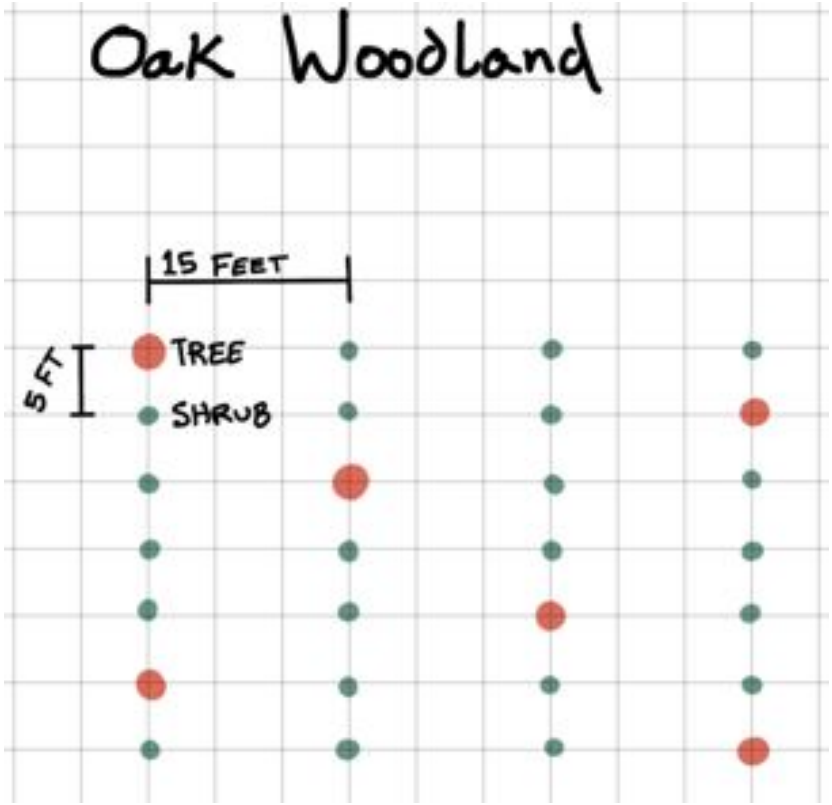
- ASRP Early Action Reach Project
- 9 miles upriver from the RBR project
- Again 10+ years of relationship building and trust with landowners!
- Goal: Habitat restoration and conservation, reduce maintenance and management needs for elderly landowners



Project Practices

- WDFW sponsored project with ~1.5 miles of river restoration including engineered log jams and high flow channel
- Capitol Land Trust Conservation Easement– prohibits development of land, but preserves working lands uses
- TCD – ~75 acres of reveg

Oak Woodland "Silvopasture"



- 12 acres of upland pasture area – leave it in pasture, or plant it?
- Oak woodlands are a declining ecosystem
- Oak overstory, shrub understory
- Mechanical control to reduce ag weed pressure
- Scale = line planting
- Can support future upland grazing

Project Challenges

- Oaks are notoriously slow growing
- Aggressive pasture grass competition
- Upland system = drought pressure
- Wildlife browse
- Plant stock and crew availability during COVID

Unexpected Benefits

- Line planting design created significant efficiencies with maintenance, irrigation and monitoring
- Synergies with permanent Conservation Easement allows for long-term approach, and potential for future compatible ag land use in upland areas

Satsop River RM 2.5 - 5.0

GRAYS HARBOR
CONSERVATION DISTRICT

Project Location

- Located in the Lower Satsop Mainstem GSU, a near term ASRP priority area

Geospatial Unit	Restoration Actions: Place Large Wood	Remove Fish Barriers	Reconnect/ Restore Floodplain	Riparian Restoration	Beaver Ponds/ BDAs	Wetland Restoration	Acres of OSF* Habitat Protection/ Restoration	Geospatial Unit Information: Number of Priority Barriers	Length of Primary River (miles)	Percent of Primary River Length Proposed for Restoration	Proposed Protection/ Restoration (miles)	Priority Species or Habitat Focus	Limiting Factors From Highest Priority to Lowest
Lower Satsop MS GSU	●		●	●				0	6.6	50%	3	● High Priority Core Habitats ● Early Riparian Restoration	**Key Habitat, Temperature, Habitat Diversity,** Channel Length, Channel Stability, Predation, Flow, Sediment Load

Project Background

Synopsis

- Reach Scale restoration of 2.5 miles along the Satsop River including engineered log jams (ELJs), riparian restoration, and invasives management.
- ELJ complexes will provide key habitat features for salmon, increase habitat diversity, increase side channel flow, increase channel stability along rapidly eroding banks, and capture sediment.
- Riparian plantings and invasive management will increase cover to reduce temperature, increase channel stability, increase habitat diversity, and increase long term habitat diversity by providing large wood material inputs.

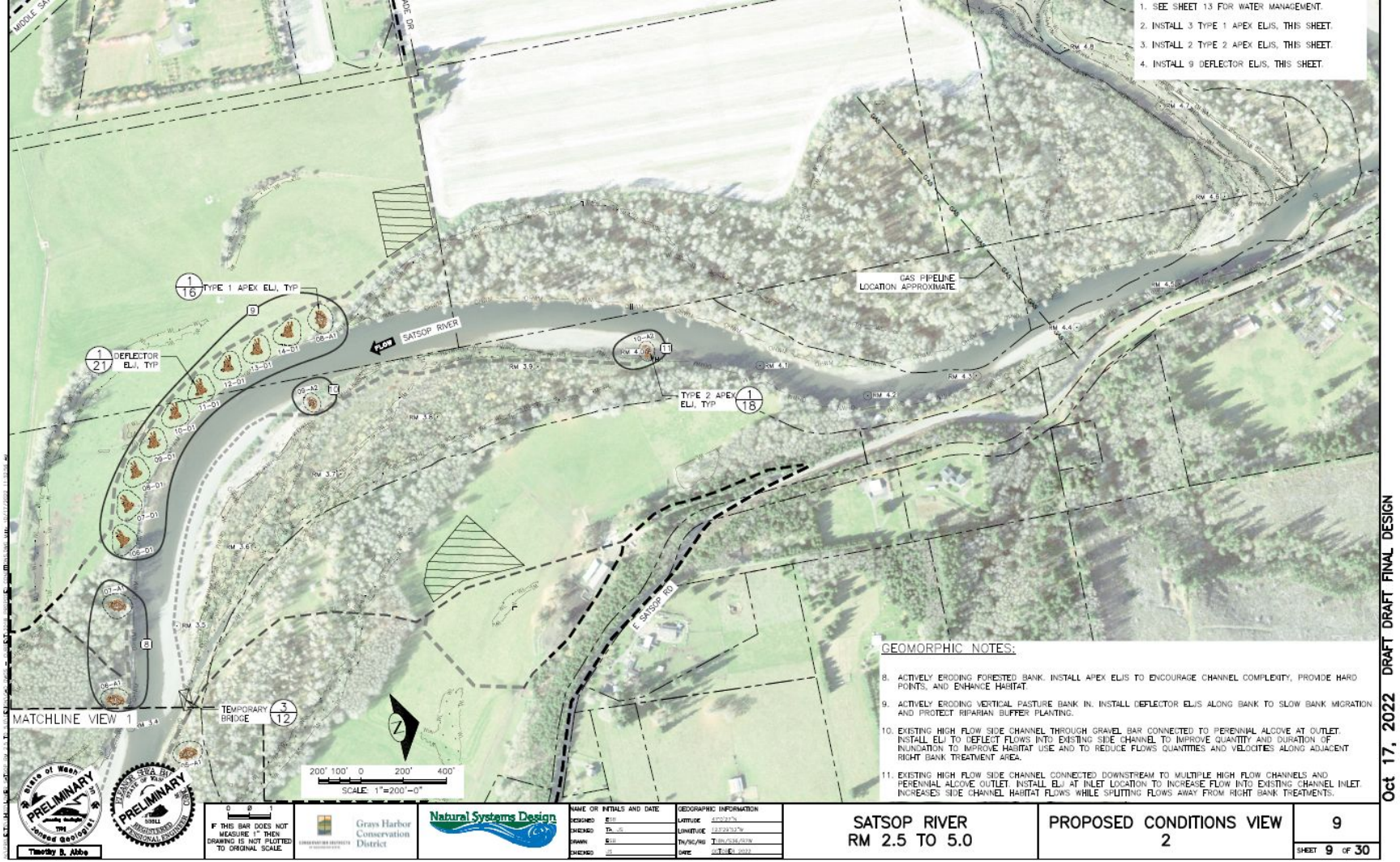
•Outcomes:

- **2.5 miles of large river restoration**
- **34 ELJs incorporating 9,810 pieces of wood**
- **240 acres of riparian enhancement** including conifer underplanting and invasive species treatment
- **33 acres of riparian buffer establishment** including dense riparian plantings and invasive species treatment

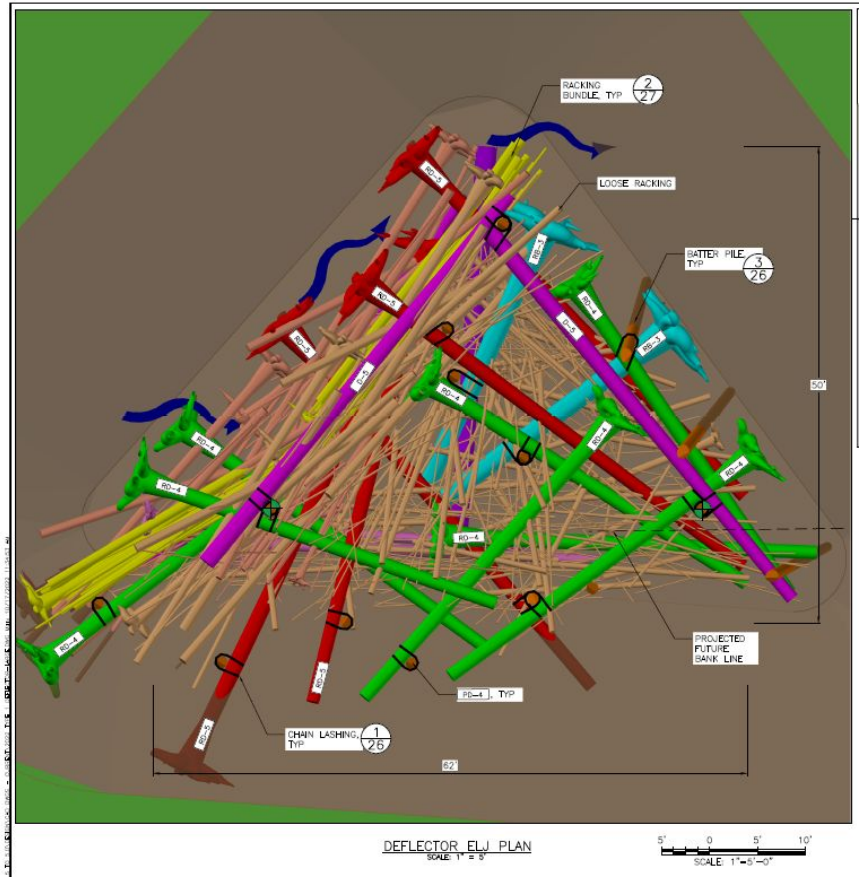
•Intended benefits:

- Intended long term outcome for the project is increased floodplain connectivity, reduced channel migration to allow for riparian forests to mature, a substantial increase in stable large wood throughout the reach, and multiple channels.
- Substantial increases to quantity and quality of fish habitat due to increased pools, side channels, spawning gravel stability, shade, large wood cover, and food web enhancement.
- Bank erosion reduction with ELJs and riparian plantings reduces risk to farmland, homes, and downstream infrastructure from rapid channel migration
- Silvopasture riparian plantings allows both ag production and riparian forest re-establishment


1991
2022
Stephens Rd
E Satsop Rd
Satsop River
E Satsop Rd
Image U.S. Geological Survey
Stephens Rd
E Satsop Rd
Satsop River
Gleason Rd
E Satsop Rd

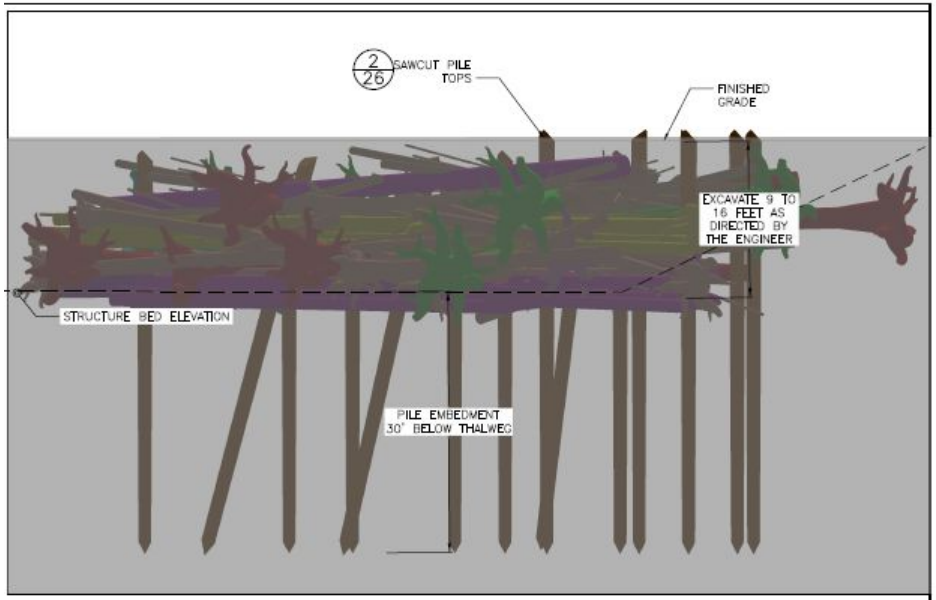

1. SEE SHEET 13 FOR WATER MANAGEMENT.
2. INSTALL 3 TYPE 1 APEX EL/S, THIS SHEET.
3. INSTALL 2 TYPE 2 APEX EL/S, THIS SHEET.
4. INSTALL 9 DEFLECTOR EL/S, THIS SHEET.
1/16 TYPE 1 APEX EL/, TYP
1/21 DEFLECTOR EL/, TYP
SATSOP RIVER
FLOW
GAS PIPELINE LOCATION APPROXIMATE
TYPE 2 APEX EL/, TYP 1/18
E SATSOP RD
MATCHLINE VIEW 1
TEMPORARY BRIDGE 3/12
200' 100' 0 200' 400'
SCALE: 1"=200'-0"
GEOMORPHIC NOTES:
8. ACTIVELY ERODING FORESTED BANK. INSTALL APEX EL/S TO ENCOURAGE CHANNEL COMPLEXITY, PROVIDE HARD POINTS, AND ENHANCE HABITAT.
9. ACTIVELY ERODING VERTICAL PASTURE BANK IN. INSTALL DEFLECTOR EL/S ALONG BANK TO SLOW BANK MIGRATION AND PROTECT RIPARIAN BUFFER PLANTING.
10. EXISTING HIGH FLOW SIDE CHANNEL THROUGH GRAVEL BAR CONNECTED TO PERENNIAL ALCOVE AT OUTLET. INSTALL EL/ TO DEFLECT FLOWS INTO EXISTING SIDE CHANNEL TO IMPROVE QUANTITY AND DURATION OF INUNDATION TO IMPROVE HABITAT USE AND TO REDUCE FLOWS QUANTITIES AND VELOCITIES ALONG ADJACENT RIGHT BANK TREATMENT AREA.
11. EXISTING HIGH FLOW SIDE CHANNEL CONNECTED DOWNSTREAM TO MULTIPLE HIGH FLOW CHANNELS AND PERENNIAL ALCOVE OUTLET. INSTALL EL/ AT INLET LOCATION TO INCREASE FLOW INTO EXISTING CHANNEL INLET. INCREASES SIDE CHANNEL HABITAT FLOWS WHILE SPLITTING FLOWS AWAY FROM RIGHT BANK TREATMENTS.
PRELIMINARY
Timothy B. Abbe
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT PLOTTED TO ORIGINAL SCALE.
Grays Harbor Conservation District
Natural Systems Design
NAME OR INITIALS AND DATE
DESIGNED
CHECKED
DRAWN
CHECKED
GEOGRAPHIC INFORMATION
LATITUDE
LONGITUDE
TN/RG/RG
DATE
SATSOP RIVER
RM 2.5 TO 5.0
PROPOSED CONDITIONS VIEW
2
9
SHEET 9 OF 30
Oct 17, 2022 DRAFT DRAFT FINAL DESIGN

Project Actions



DEFLECTOR ELJ PLAN
SCALE: 1" = 5'

5' 0 5' 10'
SCALE: 1"=5'-0"



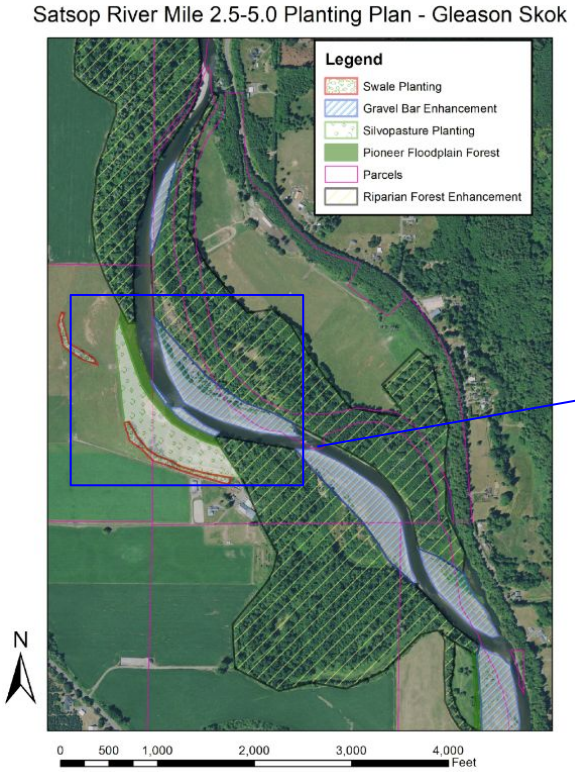
DEFLECTOR ELJ PROFILE
SCALE: 1" = 5'

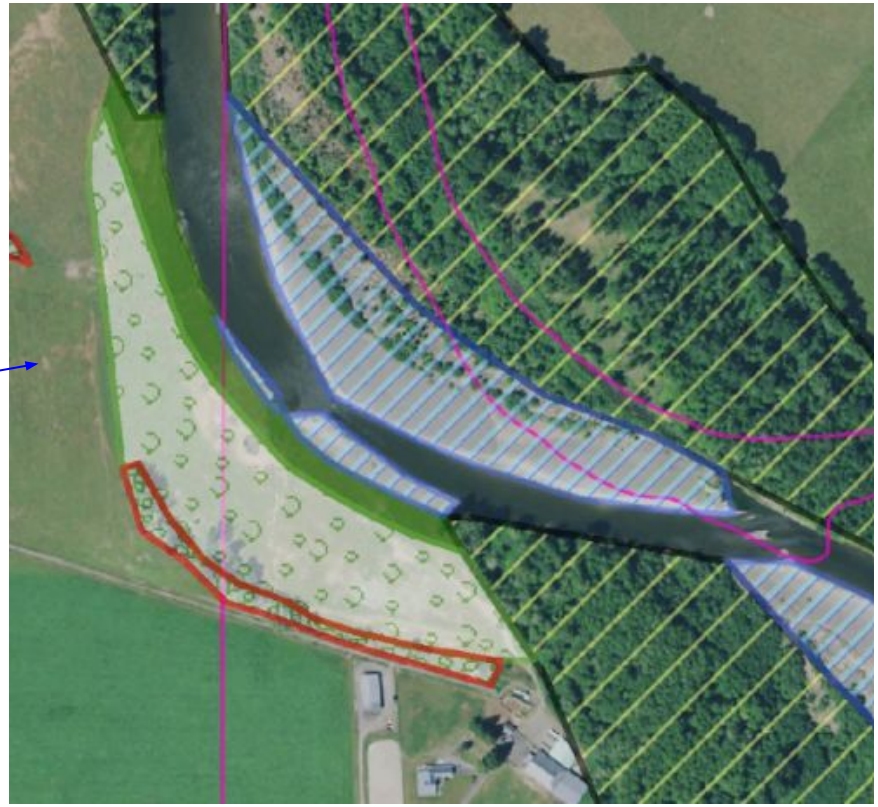
5' 0 5' 10'
SCALE: 1"=5'-0"

NOTES

1. SEE SHEETS 2 AND 22 FOR ELJ INSTALLATION NOTES AND SHEETS 22 AND 23 FOR LAYERING PLANS.
2. SEE SHEET 22 FOR DEFLECTOR ELJ LOG SCHEDULE.

Project Practices



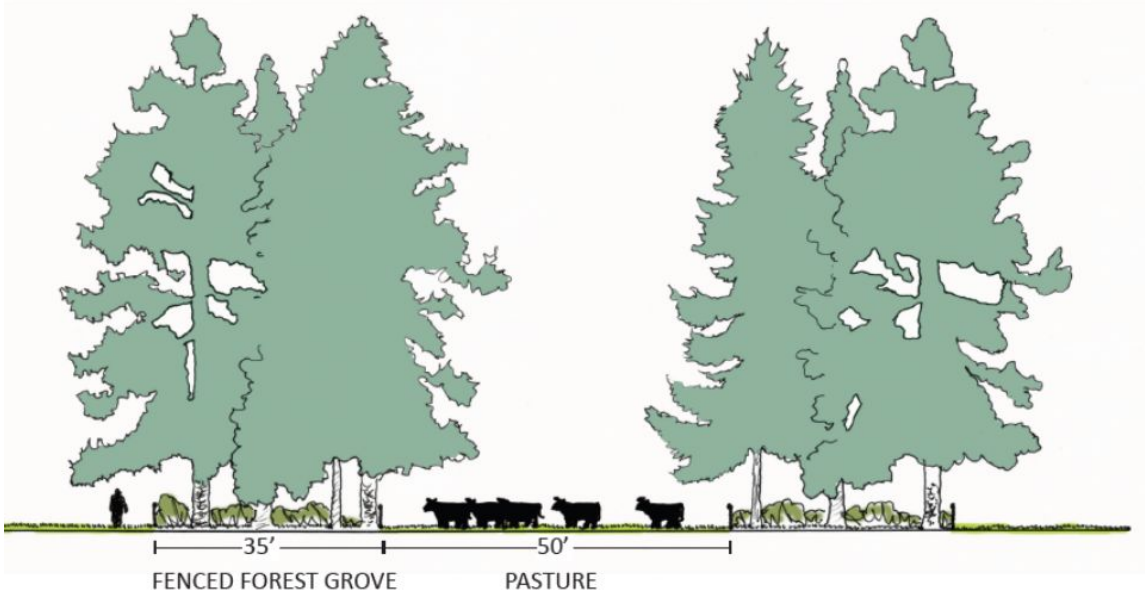


75' full exclusion buffer; expanded to 400' w/ silvopasture

Project Practices

SILVO-PASTURE:

A LIVESTOCK PASTURE INTEGRATED WITH NATIVE FOREST GROVES

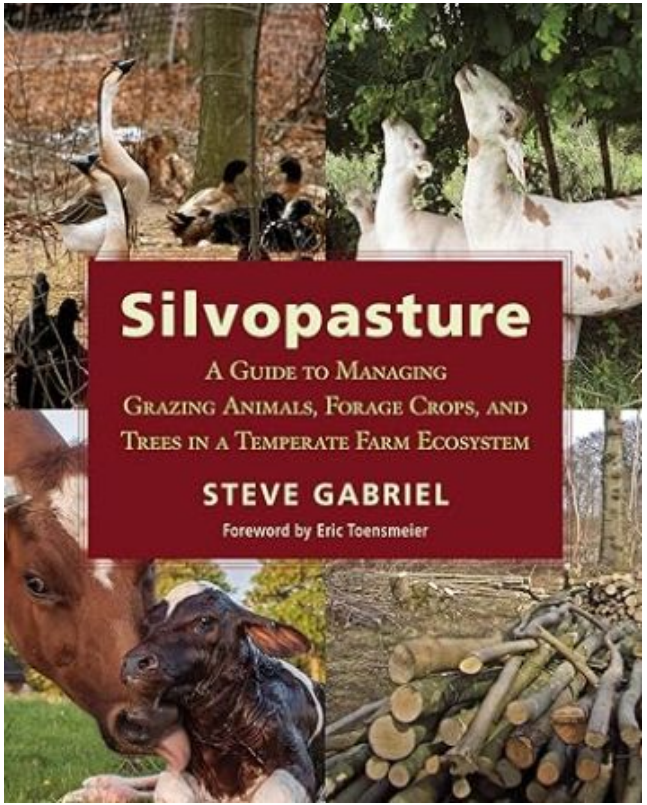


Note: Illustrations show 100-year old forest groves. Trees will be planted as very young saplings.

Integration with Agriculture

Considerations:

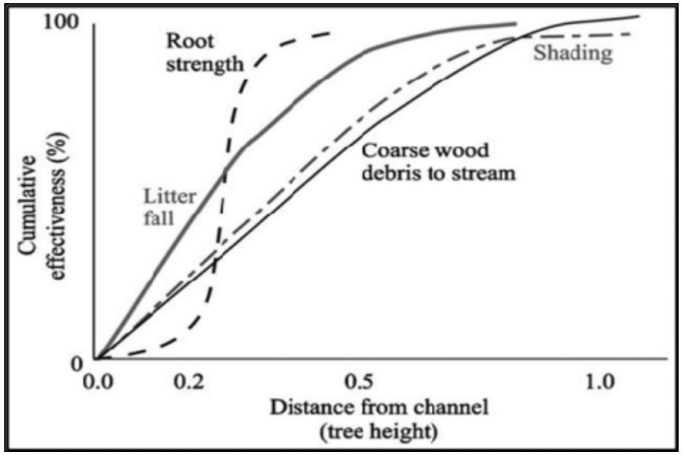
- What spacing of native trees/shrubs allows for adequate sunlight for forage plant growth?
- How do the species of tree/shrub alter sunlight availability, nutrient availability, and potential extra forage?
- Will alternate forage plants need to be seeded to maximize forage production?
- Does native plant spacing need to accommodate equipment access?
- What exclusionary measures are needed for the native plants from the livestock?
- Will the increased shade during summer provide benefits to the livestock?
- Is what we are proposing silvopasture or woodland grazing?
- What natural resource products could be gleaned from the native plantings?



Integration with Habitat Priorities

Considerations:

- What benefits are gained compared to no riparian buffer in this area?
- How to enhance these benefits with species, orientation, spacing, etc., without compromising agricultural viability?
- How to protect native trees/shrubs from livestock grazing, and for how long?



Wilhere, George & Quinn, Timothy. (2018). How Wide is Wide Enough?: Science, Values, and Law in Riparian Habitat Conservation. Natural resources journal. 58. 279.

Considerations and Questions

- For habitat enhancement, some native trees and shrubs are better than no trees and shrubs, but how do we analyze trade offs? How do we move forward collaboratively in the midst of uncertainty?
- As a restoration community, can we accept not letting perfect become the enemy of the good? When is a 'working buffer' a riparian buffer?
- What sort of landscape do we envision for the future and how does that impact how we invest in restoration and local communities?
- How do we work with the local community to accept a more dynamic equilibrium within our river corridors?

Anthony Waldrop
Grays Harbor Conservation District Watershed Restoration Program Manager
awaldrop@graysharborcd.org