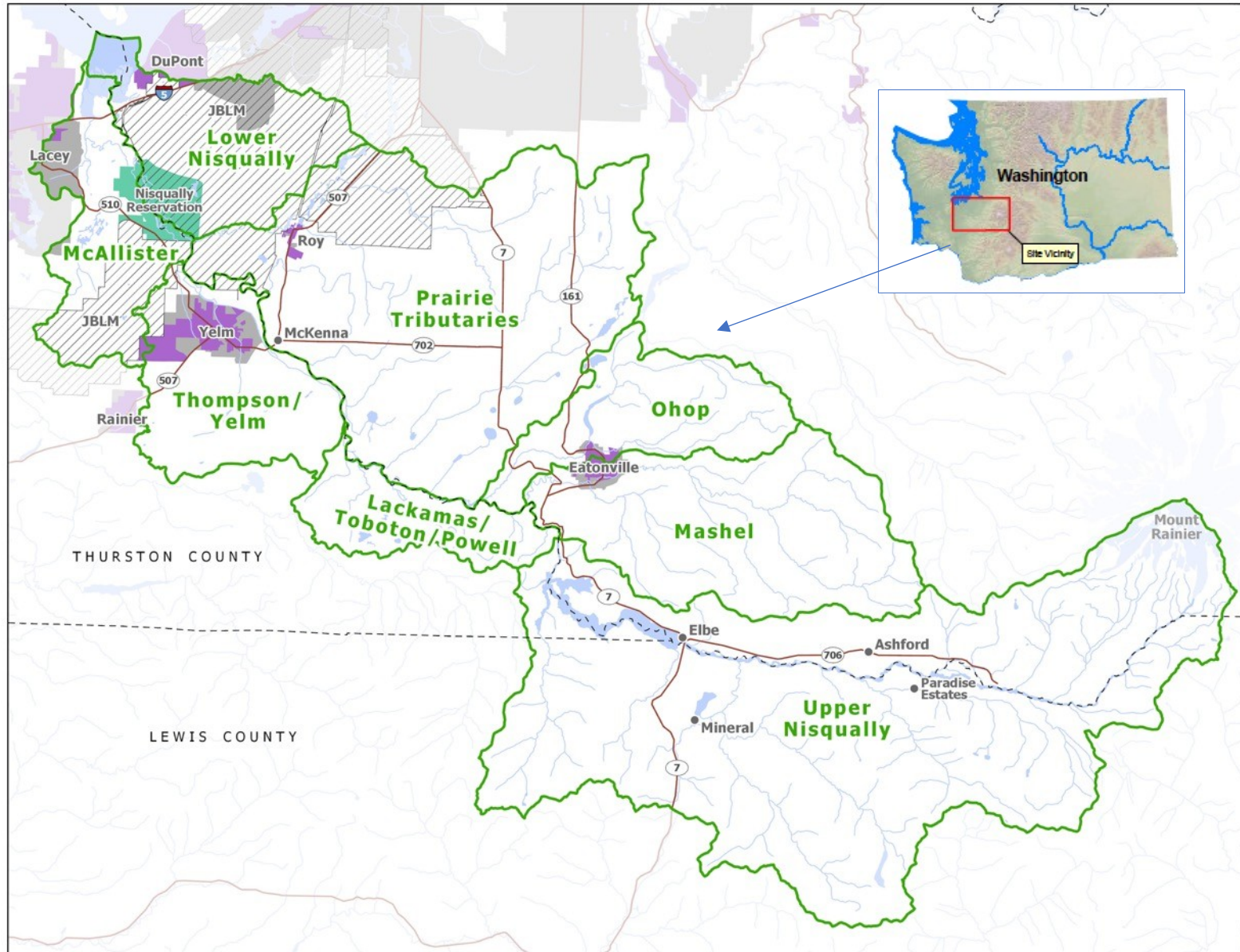




CONTENTS

- ❖ **The Nisqually Watershed – Geography, History, Relationships**
- ❖ **RCW 90.94.020 Planning Process in WRIA 11**
- ❖ **Consumptive Use Estimates**
- ❖ **Mitigation Offsets – Micro and Macro Approach**
- ❖ **Lessons Learned in Planning Process**
- ❖ **Next Steps – Implementation and Future Considerations**

WRIA 11



2018 Nisqually Watershed Planning Sub-Basins

- County Boundaries
- Watershed Planning Sub-Basins
- Incorporated UGA
- Unincorporated UGA
- Nisqually Reservation and Adjacent Trust Land
- Joint Base Lewis-McChord



Data derived from: City Urban Growth Areas - WSDOT; County Boundaries - WADNR; Joint Base Lewis-McChord Installation Area - JBLM; Sub-basins - Nisqually Indian Tribe;

Note: Sub-basin boundaries originated from WADNR's Watershed Administrative Units which were clipped to WADNR's Nisqually Water Resource Inventory Area and then manually modified using lidar and other terrain data as a guide. These sub-basins were then combined into logical groupings by the Nisqually Water Planning Unit for the purposes of this project.

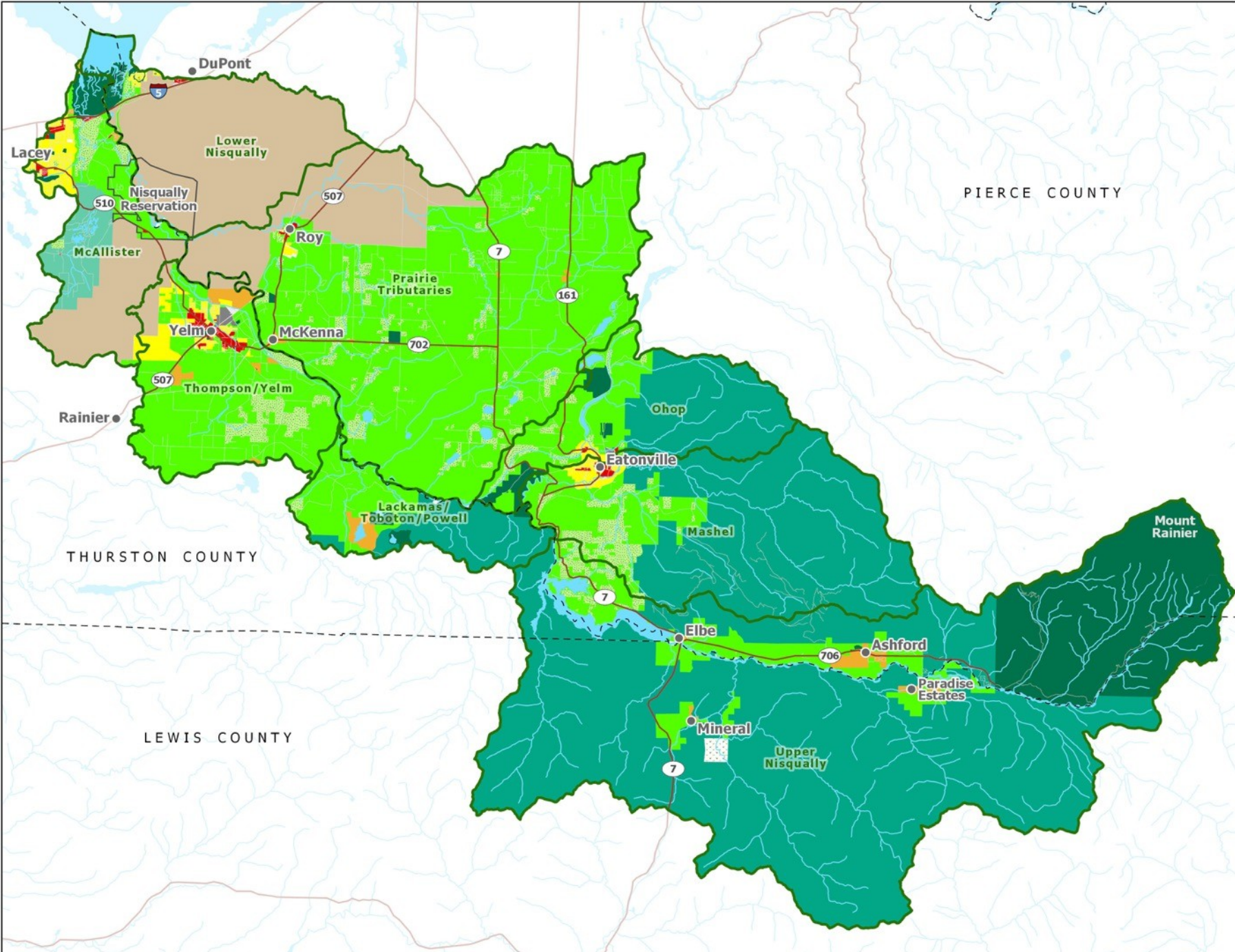


Nisqually Indian Tribe

Cartography by: J.Cutler, 12/18/2018



2018 Nisqually Watershed Planning General Land Use



- County Boundaries
 - Watershed Planning Sub-Basins
 - Nisqually Reservation and Adjacent Trust Land
- General Land Use**
- Active Open Space and Recreation
 - Forest Lands
 - Natural Preservation and Conservation
 - Agricultural Area
 - Rural Character Residential
 - Intensive Rural
 - Urban Character Residential
 - Intensive Urban
 - Military
 - Mineral Resource Area
 - Industrial
 - Undesignated
 - Right of Way
 - Water



Data derived from: General Land Use - WA Department of Commerce (Puget Sound Mapping Project - Pierce and Thurston Counties), Lewis County, Nisqually Watershed Planning Unit; Sub-basins - Nisqually Indian Tribe

Note: WA Department of Commerce General Land Use categories and symbology were used on this map except for the Intensive Rural category which was added by the Nisqually Watershed Planning Unit. Areas identified as Intensive Rural are Limited Areas of More Intensive Rural Development (LAMIRDs) consistent with the Washington State Growth Management Act.



Nisqually Indian Tribe

Cartography by: J.Cutler, 12/18/2018

HISTORY

- ❖ **History of Collaboration**
 - Nisqually River Council – 1987
 - 2003 Nisqually Watershed Plan
 - Plan Addendum in Response to Hirst – 020 Watershed
- ❖ **Nisqually Tribe – Planning Unit Lead**
- ❖ **Adopted by Ecology – February 1, 2019**

HISTORY – WA Watershed Planning

Legislation, Mandates, Initiatives, Drivers

Collaborative Process



- ❖ Treaty of Medicine Creek - 1854
- ❖ RCW 90.03.247 – Water Code, minimum flow setting
- ❖ RCW 90.22 Minimum Water Flows and Levels
- ❖ RCW 90.54 – Water Resources Act of 1971, Pilot process (RCW 90.54.045, 1991)
- ❖ Boldt Decision – 1974
- ❖ Chelan Agreement – 1990
- ❖ Initial Watershed Assessments (Completed 1994/1995)
- ❖ RCW 90.82 – Watershed Planning Act (1997)
- ❖ RCW 90.94 – Streamflow Restoration Act (2018) - **HIRST**

IMPLEMENTING GOVERNMENTS

- Nisqually Indian Tribe - LEAD
- Thurston, Pierce and Lewis Counties

OTHER PARTICIPANTS

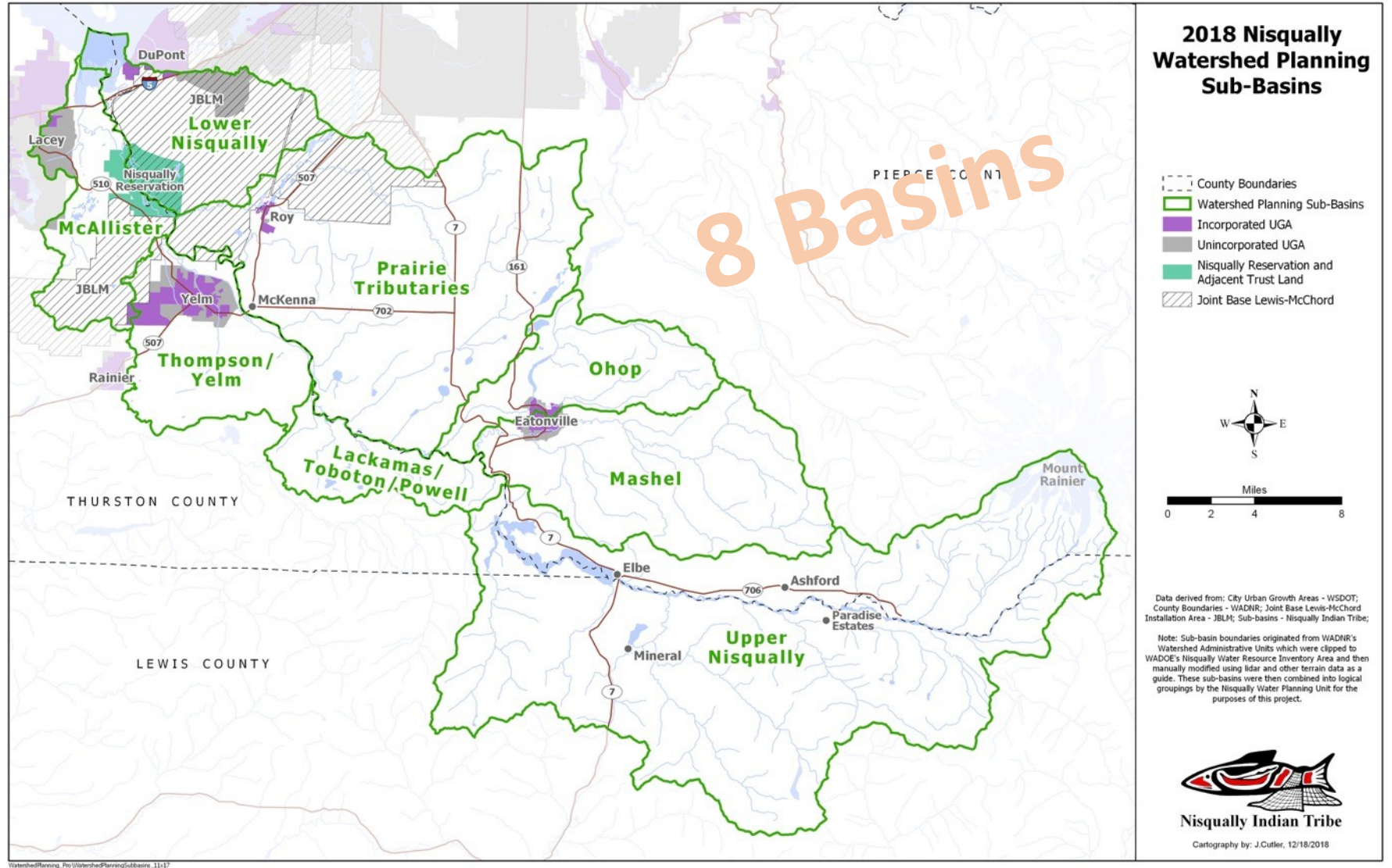
- Cities of Lacey, Olympia, Yelm
- Town of Eatonville
- Thurston PUD
- WDFW, WA Dept of Ag, Ecology
- Nisqually River Council Citizens Advisory Committee

- 1. Define and Delineate Appropriately Sized Sub-basins**
- 2. Estimate 20-Year Population Growth and New Dwelling Units**
- 3. Calculate New Domestic Permit-Exempt Connections**
- 4. Estimate Consumptive Use (3 methods)**
- 5. Identify Projects (Offset Actions) to Mitigate 20 years of Consumptive Use**
- 6. Evaluate Projects (Offset Actions)**

WRIA 11 – Basic Steps to the First Response

Step 1
Define
appropriate
sub-basins

Step 2
Estimate 20
Year Growth



Total Estimated New Permit-Exempt Connections Aggregated by Sub-basin

Step 3

Calculate new domestic permit-exempt connections, 2018-2040

Sub-basin	UGA Connections	Rural Connections	Total Connections
McAllister	39	116	155
Thompson/Yelm	1,036	526	1,562
Lackamas/Toboton/Powell	-	430	430
Lower Nisqually		2	2
Mashel River		20	20
Prairie Tributaries		596	596
Ohop Creek		27	27
Upper Nisqually (Lewis, Pierce, Thurston)		195	195
Total	1,075	1,912	2,987

WRIA 11 – Basic Steps to the Hirst Response

Step 4

Calculate
Consumptive
Water Use

	Annual Average Consumptive Use per connection (gpd)	
	Total	Outdoor
Actual Water Use – Thurston PUD Method	95 gpd	80 gpd outdoor
Ecology Method	223 gpd	208 gpd outdoor
Legal Method	1,644 gpd	1,536 gpd outdoor

Ecology guidance:

- 10% indoor use is consumptive
- 80% outdoor use is consumptive

WRIA 11 – Basic Steps to the Hirst Response

Estimate New Domestic
Permit-exempt Well
Connections
and Associated
Consumptive Use
2018 – 2040
ECOLOGY METHOD

Sub-Basin	Total PE Connections	Annual Consumptive Use (AFY)	Cubic feet/second	cfs per connection
McAllister	155	39	0.054	
Thompson/Yelm	1,562	390	0.539	
Lackamas/Toboton/ Powell	430	107	0.148	
Lower Nisqually River	2	0	0.001	
Mashel River	20	5	0.007	
Prairie Tributaries	596	149	0.206	
Ohop Creek	27	7	0.009	
Upper Nisqually (all counties)	195	49	0.067	
Total	2,987	747	1.032	0.0003453

USGS – McKenna Gage – August Mean Discharge, 2000- 2010

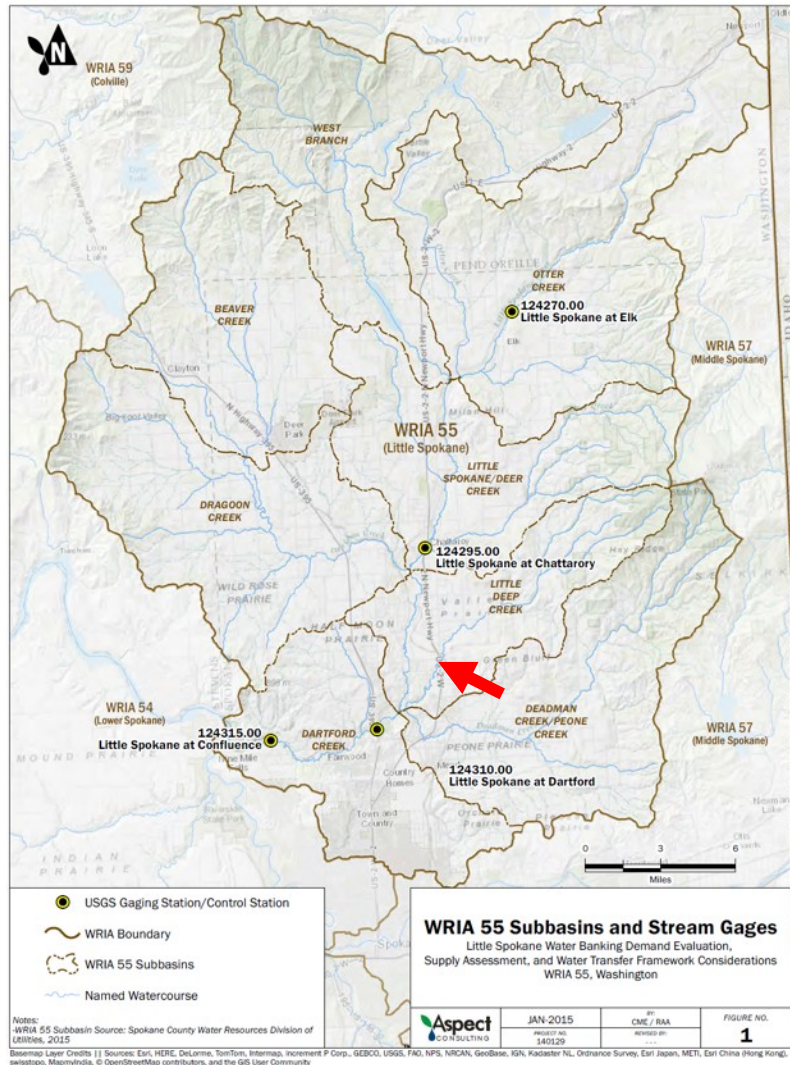
469 cfs



Watershed Offset Requirement

1.03 cfs

Impacts of permit-exempt use on streamflow – Little Spokane River Watershed



Modeled average reduction in flow (cfs)
 during July, August, September at
 Dartford Gage

Year	2040 Permit Exempt Demand	2040 Climate Change No Additional Demand
2005	-0.26	-14.5
2006	-1.42	-13.4
2007	-0.44	-14.4
2008	-1.72	-21.8
2009	-2.35	-24.6
2010	-1.08	-19.6
2011	-1.01	-30.7
2012	-0.56	-27.3
2013	-0.58	-29.4

WRIA 11 – Micro and Macro Approach to Mitigation

Step 4

3 METHODS to Calculate Consumptive Water Use

	Nisqually Watershed: Projected Annual Average Consumptive Use	
	(AFY)	(CFS)
Actual Water Use – Thurston PUD	318	0.439
Ecology Method	747	1.032
Legal Method	5,501	7.598

Micro
Macro

WRIA 11 – Offset Actions (Micro-mitigation)

Step 5

Identify Offset Actions

Micro Mitigation

- City of Yelm – Water Right Offset (future + current)
- Water System Improvements (Group A and B)
- Water Right Acquisition
- Reclaimed Water Infiltration
- Local Stream Restoration – Lower Sub-basins
- Managed Aquifer Recharge (MAR)
- Update County permitting processes – policies for Implementation – bank, credit system

WRIA 11 – Offset Actions (Macro)

Step 5

Watershed Scale
Offsets

Macro
Mitigation

Multiple Benefits

- **Community Managed Forests**
- **Large Scale Floodplain and Riparian Restoration & Protection Projects (Ohop Creek)**
- **Address Major Barriers to Salmon Recovery**
- **Mashel River Baseflow Strategies – Eatonville Infrastructure Improvements**

Further Evaluation

- **Managed forestry (VELMA Model¹)**
- **Stream/floodplain restorations**
- **Municipal actions (expansion of Yelm's water right, capital improvement projects identified in City of Eatonville's Comprehensive Stormwater Plan)**

- Hall, Justin, et. al, 2018.
<http://nisquallylandtrust.org/nisqually-wp/wp-content/uploads/2018/08/NCF-VELMA-Mashel-model-results-.pdf>
- Perry, T.D., and J.A. Jones. 2016. Summer streamflow deficits from regenerating Douglas-fir forest in the Pacific Northwest, USA. *Ecohydrology* 2016:1-13. DOI 10.1002/eco.1790
- McKane, Bob et. al. (unpublished)-
https://cfpub.epa.gov/si//si_public_record_report.cfm?dirEntryId=341378&Lab=NHEERL&SIType=PR&fed_org_id=111&dateBeginPublishedPresented=06/26/2017&dateEndPublishedPresented=06/26/2018

Ohop Creek Restoration



Consumptive Use (Ecology Method) Compared to Minimum and Maximum Estimated Mitigation (See Table 7-2)

Sub-basin	ECY Method Annual PE Consumptive Use (cfs)	Mitigation Actions (cfs) MIN	Mitigation Actions (cfs) MAX
McAllister	0.054	TBD	TBD
Thompson/Yelm	0.539	0.479	1.050
Lackamas/Toboton/Powell	0.148	0.116	0.697
Lower Nisqually	0.001	0	0.552
Mashel River	0.007	3.48	7.27
Prairie Tributaries	0.206	0.058	2.058
Ohop Creek	0.009	0.017	2.105
Upper Nisqually (Pierce, Lewis, Thurston)	0.067	0.067	0.619
TOTAL	1.03	4.22	14.35

Lessons Learned - Planning

- Focus time and effort on developing robust offset actions providing multiple benefits – **Mitigation Projects**
- 20 years of domestic PE Consumptive Use is a relatively small impact to streamflow – conservatively estimate and move onto offsets
- Work collaboratively with local salmon groups – overcome the language barrier between Water Resource and Salmon Recovery Scientists
- QUANTIFY your offsets
- Aim for multiple benefits,
- Trust, Partnerships and Leadership provided by the Nisqually Indian Tribe and a very hard working Planning Unit were keys to our success



APPROVED!

WRIA 11 – Implementation Challenges and Next Steps

- **Forward looking. Where do we want to be in Puget Sound in 50 years**
- **Creative opportunities to marry economic development/growth with environment**
- **Enable intelligent growth**
- **In the Nisqually:**
 - **Need to fully develop projects for funding**
 - **Push for multiple benefit projects rather than water for water projects**

1974 Federal Judge George Boldt issues landmark ruling affirming the Stevens Treaties. The case revolves around Article 3 of the Treaty of Medicine Creek:



meridian line of the United States land survey, and a square tract containing two sections, or twelve hundred and eighty acres, lying on the south side of Commencement bay; all which tracts shall be set apart and, so far as necessary, surveyed and marked out for their exclusive use; nor shall any white man be permitted to reside upon the same without permission of the tribe and the superintendent or agent. And the said tribes and bands agree to remove to and settle upon the same within one year after the ratification of this treaty, or sooner if the means are furnished them. In the meantime, it shall be lawful for them to reside upon any ground not in the actual claim and occupation of citizens of the United States, and upon any ground claimed or occupied, if with the permission of the owner or claimant. If necessary for the public convenience roads may be run through their reserves, and, on the other hand, the right of way with free access from the same to the nearest public highway is secured to them.

ART. III.

at all usual and stations is secured to said Indians in common with all citizens of the Territory, and houses for the use of the Indians with the privilege of taking roots and berries, and horses on open range. Provided, however, that they shall not take shell fish from any beds cultivated by citizens, and that they shall alter all stallions not intended for breeding horses, and shall keep up and confine the latter.

ART. IV. In consideration of the above cession, the United States agree to pay to the said tribes and bands the sum of thirty-two thousand five hundred dollars, in the following manner, that is to say: For the first year after the ratification hereof three thousand two hundred and fifty dollars; for the next two years three thousand dollars each year; for the next three years two thousand dollars each year; for the next four years fifteen

hundred dollars each year; for the next five years twelve hundred dollars each year, and for the next five years one thousand dollars each year; all which said sums of money shall be applied to the use and benefit of the said Indians under the direction of the President of the United States, who may from time to time determine at his discretion upon what beneficial objects to expend the same. And the superintendent of Indian affairs, or other proper officer, shall each year inform the President of the wishes of said Indians in respect thereto.

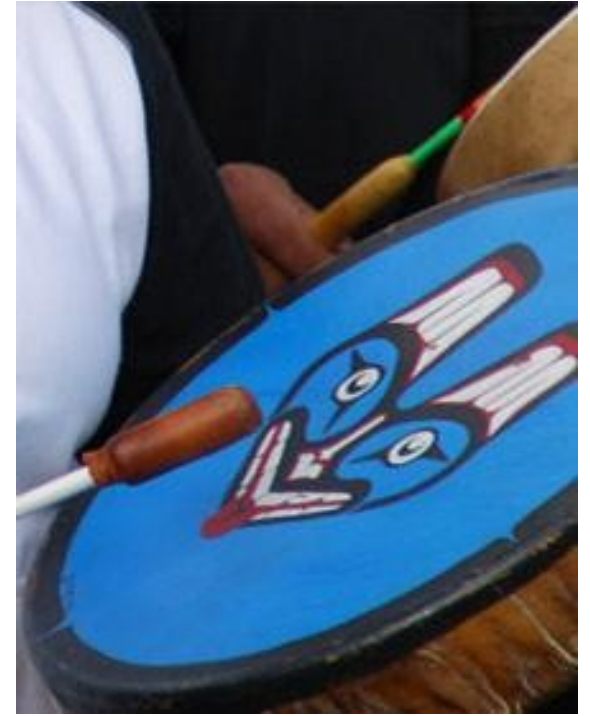
ART. V. To enable the said Indians to remove to and settle upon their aforesaid reservations, and to clear, fence, and break up a sufficient quantity of land for cultivation, the United States further agree to pay the sum of three thousand two hundred and fifty dollars, to be laid out and expended under the direction of the President, and in such manner as he shall approve.

ART. VI. The President may hereafter, when in his opinion the interests

Art. III. The right of taking fish at all usual and accustomed grounds and stations is further secured to said Indians in common with all citizens of the Territory...provided, however, that they shall not take shellfish from any beds staked and cultivated by citizens.

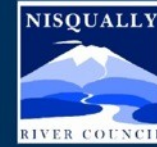
hereby reserved, or of such other land as may be selected in lieu thereof, to be surveyed into lots, and assign the same to such individuals or families as are willing to avail themselves of the privilege, and will locate on the same as a permanent home, on the same terms and subject to the same regulations as are provided in the sixth article of the treaty with the Omahas, so far as the same may be applicable. Any substantial improvements heretofore made by any Indian, and which he shall be compelled to abandon in consequence of this treaty, shall be valued under the direction of the







Nisqually Watershed Stewardship Plan



Nisqually River Council





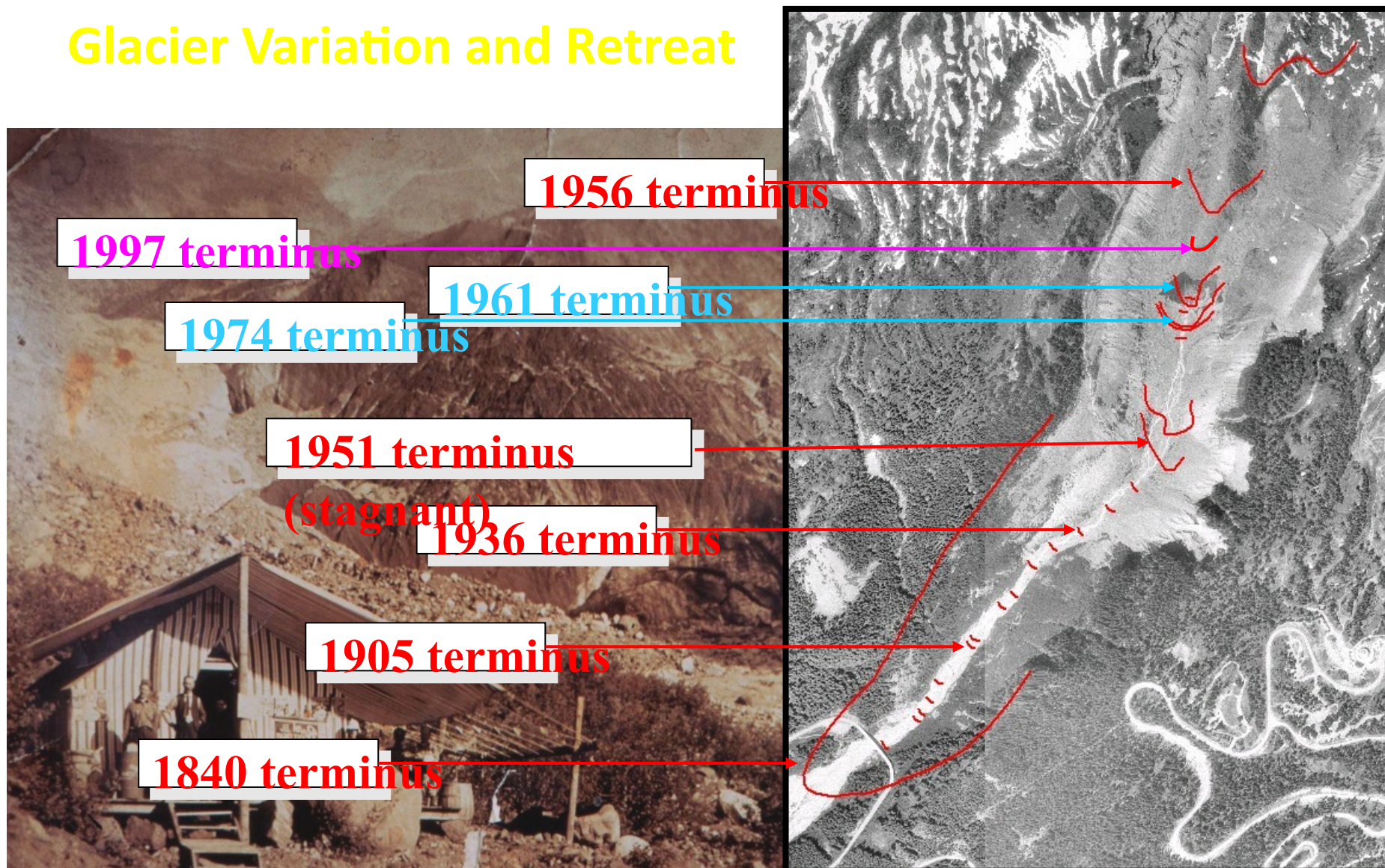
Nisqually Glacier



2004

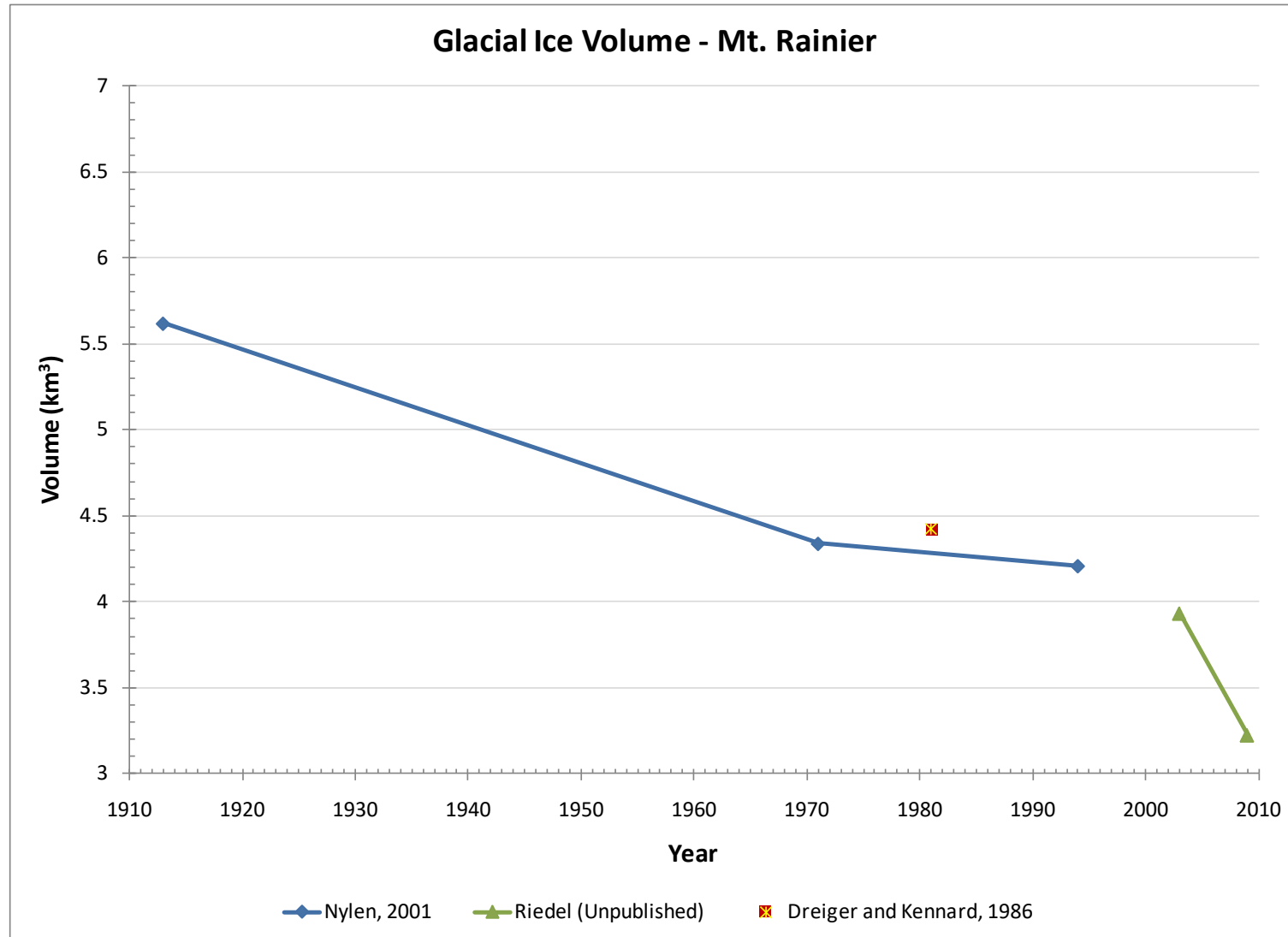
Photo: NPS/Scott Beason

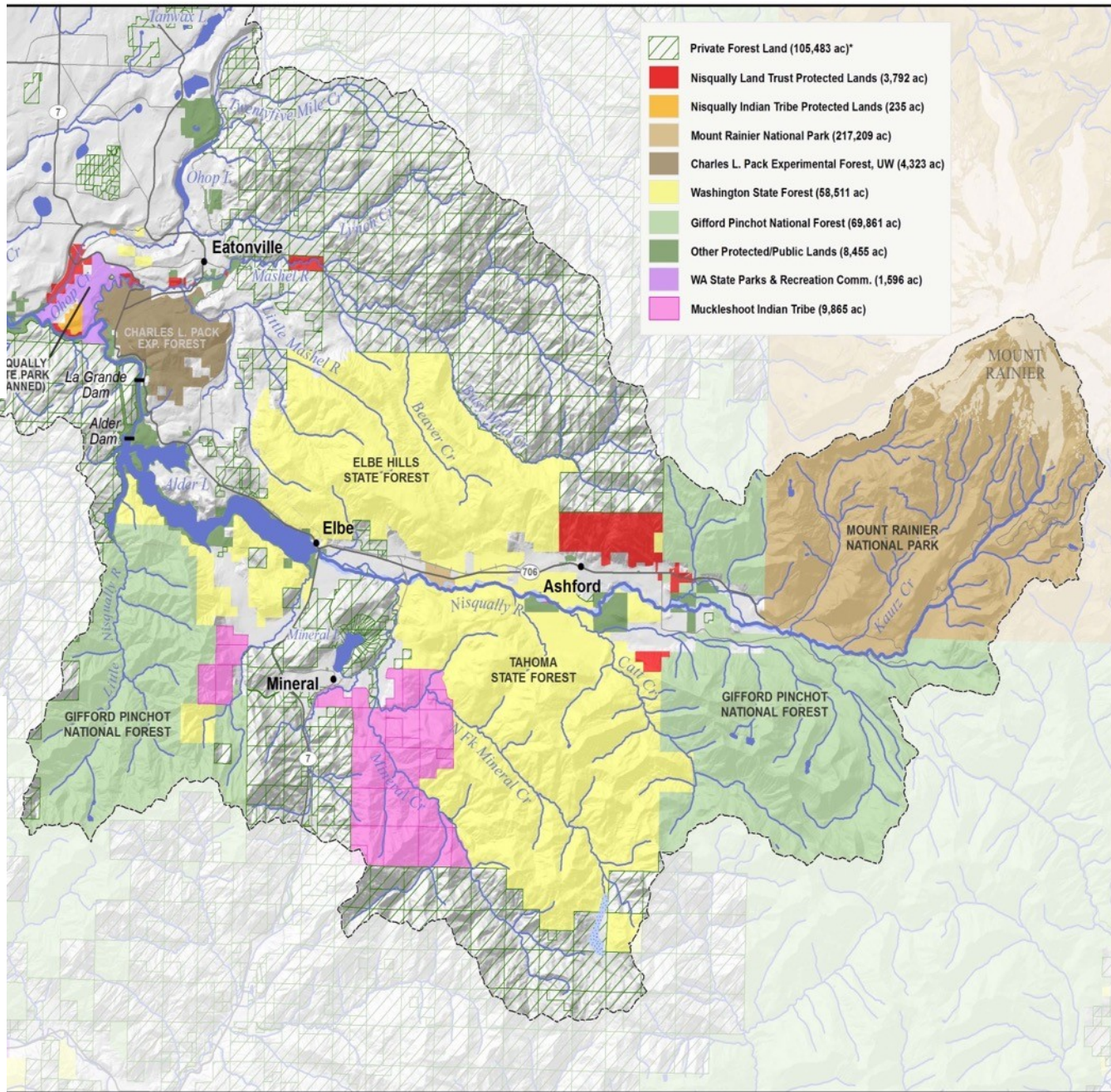
Glacier Variation and Retreat



The Nisqually retreated 700 feet since 2003, S. Lofgren, NPS.

Contemporary Glacial Volume Loss





Upper 1 Fores



*Private Forest Land: (RCW 84.34), designate and Vacant Land with Acreage = area of land extent of the N

Data derived from: L. Thurston and Lewis C. MRNP, WADNR, WAI



Nisqually
Cartography



The issue:

- Over 50 percent of the private working forests in the upper Nisqually River Watershed are now owned by East Coast investment managers
- Managed for the benefit of underlying investors
- Managed to produce short-term gains through rapid buying, harvesting, and selling of forestlands






The consequences:

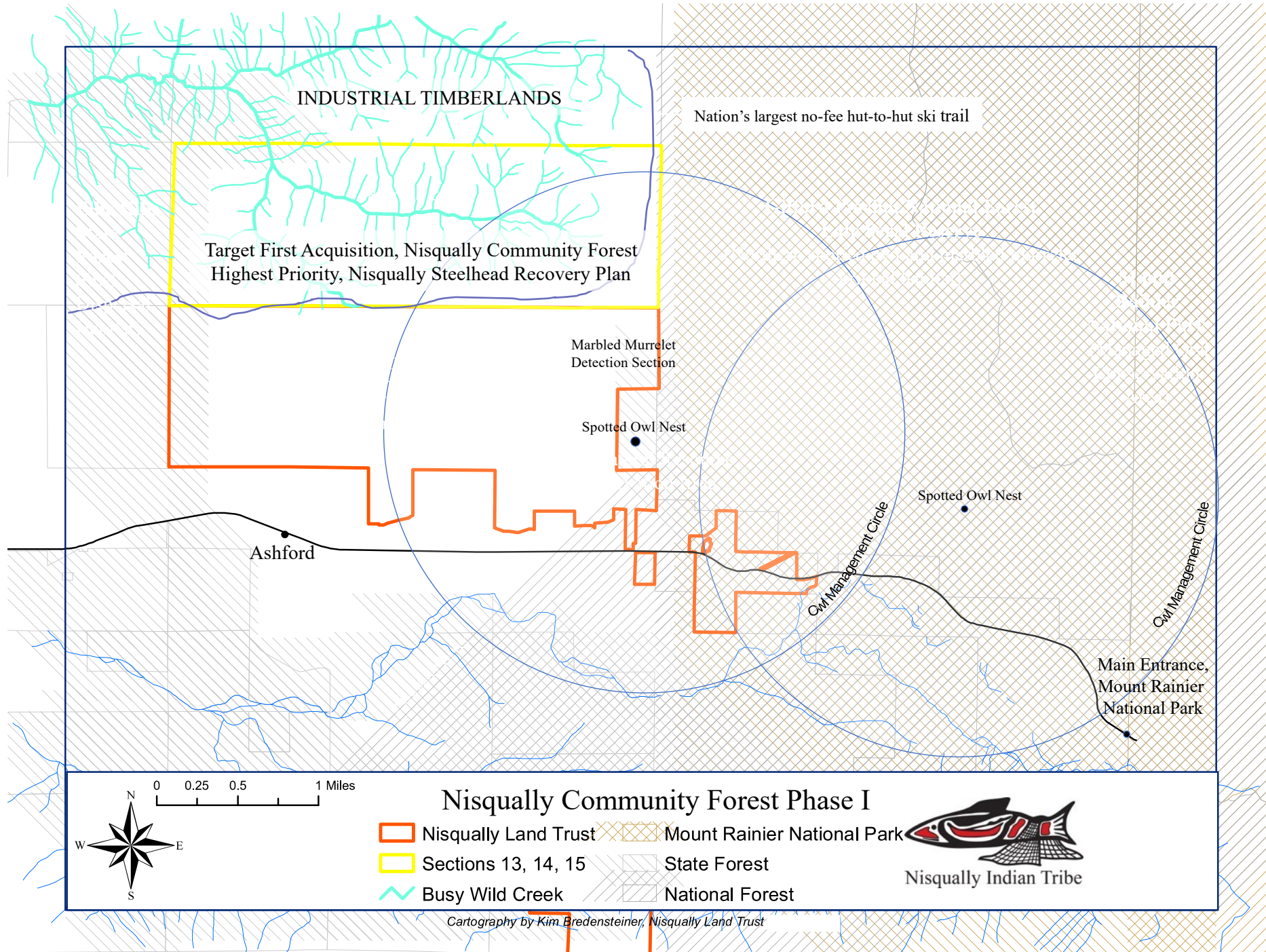
- Decreased consideration of local concerns
- Reduced investment in sustainable forest management
- Increased fragmentation of working-forest and conservation landscapes
- Negative impacts on
 - forestry jobs
 - river and forest health
 - scenic vistas and recreation opportunities that support the local tourism economy





Our vision: The Nisqually Community Forest

- Locally owned
- Economically self-sustaining
- At scale (10,000 – 60,000 acres)
- Managed to provide a suite of local benefits:
 - Sustainable forestry jobs and products
 - Treaty Right access and use for the Nisqually Indian Tribe
 - Recreation
 - Education
 - Protected wildlife habitat
 - Clean air and water
 - Scenic vistas
 - Support for the local tourism industry



INDUSTRIAL TIMBERLANDS

Nation's largest no-fee hut-to-hut ski trail

Target First Acquisition, Nisqually Community Forest
Highest Priority, Nisqually Steelhead Recovery Plan

Marbled Murrelet
Detection Section

Spotted Owl Nest

Ashford

Spotted Owl Nest

Owl Management Circle

Owl Management Circle

Main Entrance,
Mount Rainier National Park

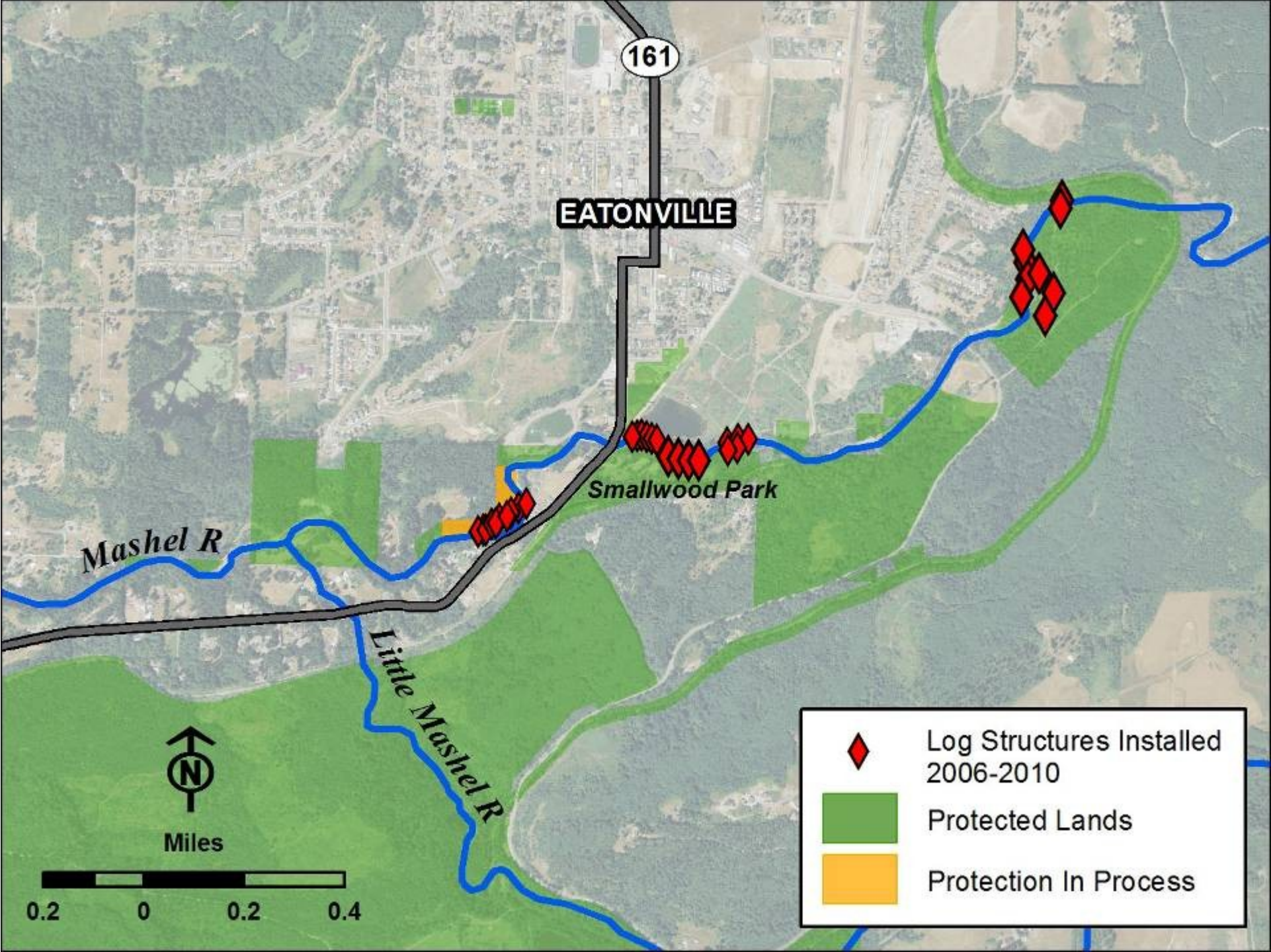
Nisqually Community Forest Phase I

- Nisqually Land Trust
- Sections 13, 14, 15
- Busy Wild Creek
- Mount Rainier National Park
- State Forest
- National Forest

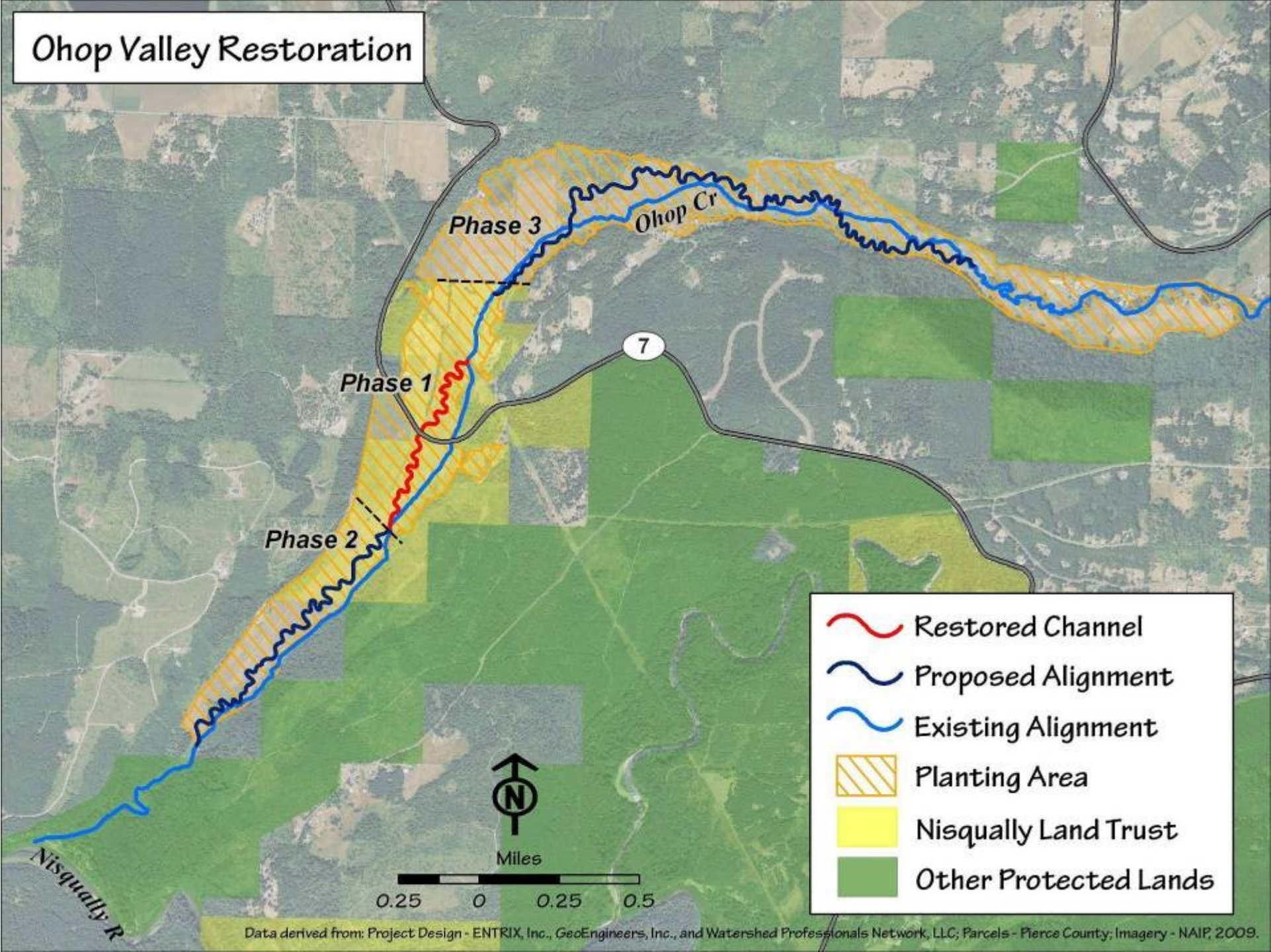


Nisqually Indian Tribe

Cartography by Kim Bredensteiner, Nisqually Land Trust



Ohop Valley Restoration



Data derived from: Project Design - ENTRIX, Inc., GeoEngineers, Inc., and Watershed Professionals Network, LLC; Parcels - Pierce County; Imagery - NAIP, 2009.





*“I believe in the sun and the stars,
the water, the tides, the floods, the
owls, the hawks flying, the river
running, the wind talking. They’re
measurements. They tell us how
healthy things are. How healthy we
are”*. –**Billy Frank Jr.**





Questions?

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