

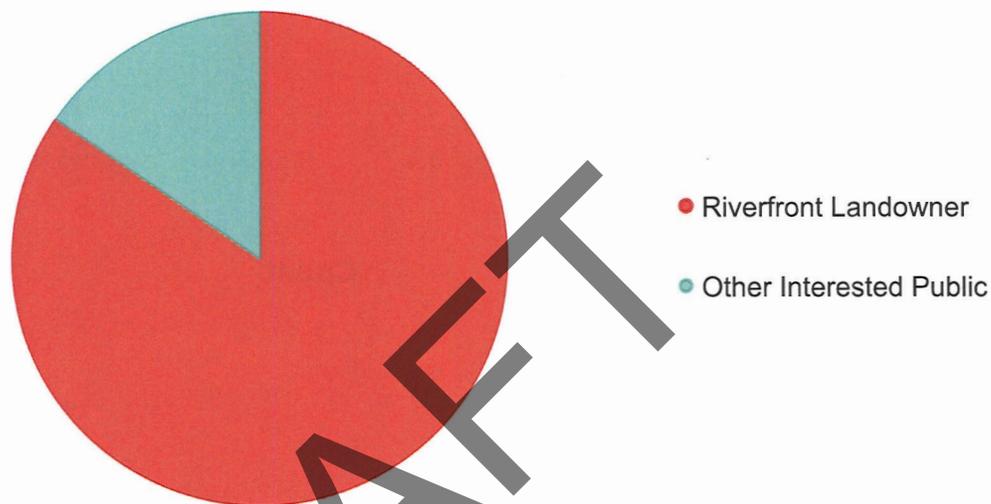
Appendix F
Community Questionnaire Form and Results
Outreach Presentation

DRAFT

Lower Elwha Channel Migration Zone Community Questionnaire

Section 1: Tell Us A Little About Yourself

1. I am an Elwha River, Little River, Indian Creek: *



Answers

Riverfront Landowner

Count

11

Percentage

84.62%

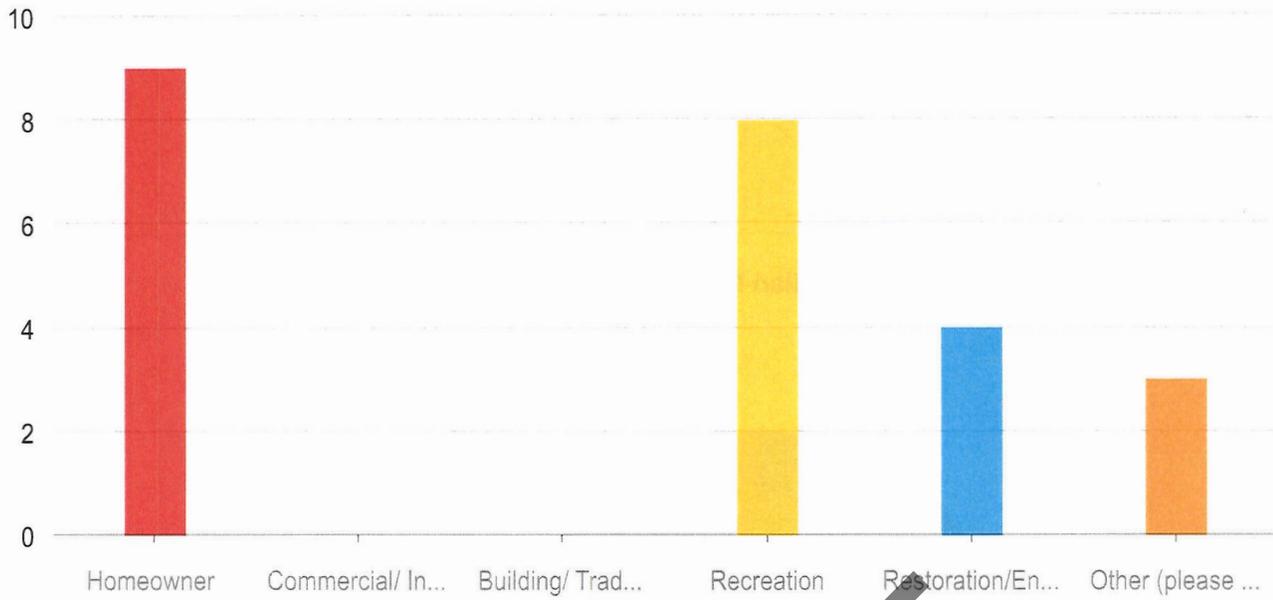
Other Interested Public

2

15.38%

Answered: 13 Skipped: 0

2. My typical riverfront activities include:



Answers

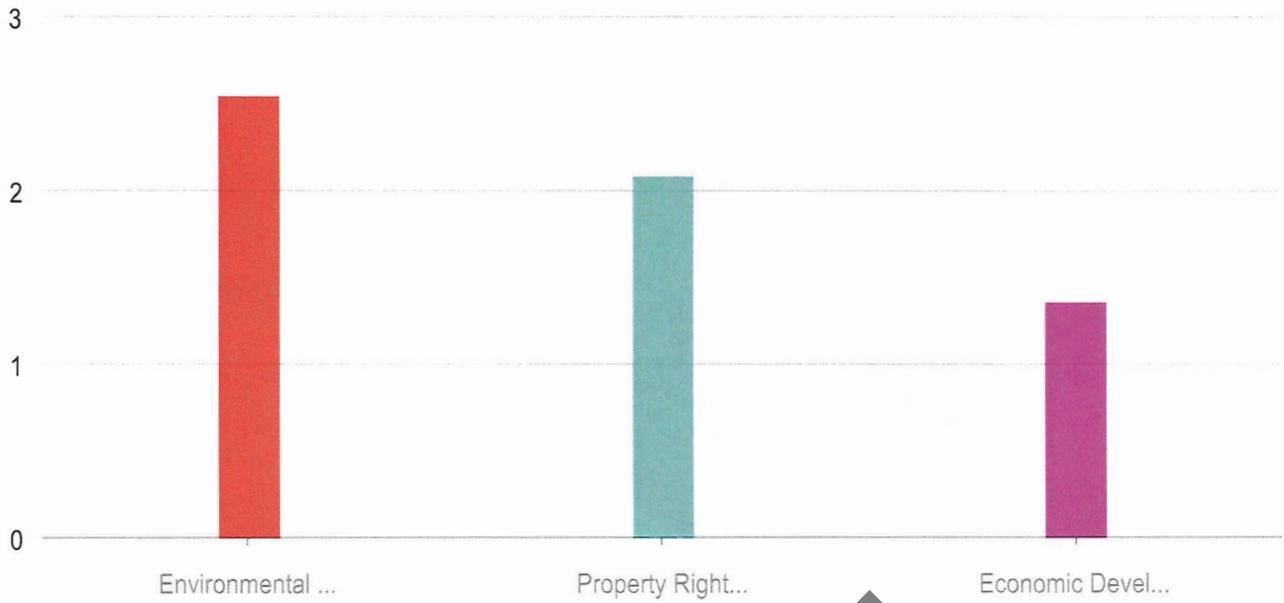
Count

Percentage

Homeowner	9	69.23%
Commercial/ Industrial Operation	0	0%
Building/ Trades Work	0	0%
Recreation	8	61.54%
Restoration/Enhancement Projects	4	30.77%
Other (please specify)	3	23.08%

Answered: 13 Skipped: 0

- 3. My values prioritize the following as most to least important:

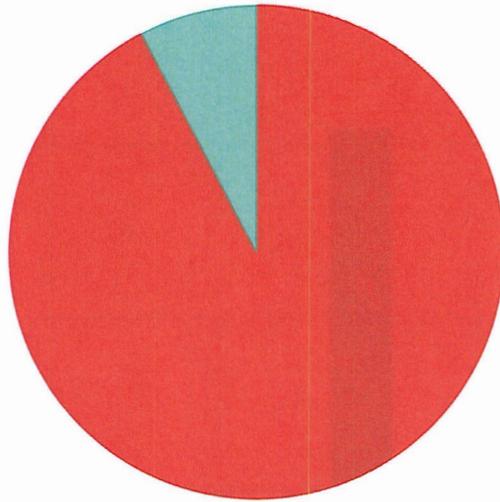


Rank	Answers	1	2	Average score
1	Environmental Protection	63.64%	27.27%	2.55
2	Property Rights	36.36%	36.36%	2.09
3	Economic Development	0%	36.36%	1.36

Answered: 11 Skipped: 2

Section 2: Flooding and Erosion Questions

- 1. Have you observed river channel flooding or erosion along the... *



- Yes
- I don't know
- No

Answers

Count

Percentage

Yes	12	92.31%
I don't know	1	7.69%
No	0	0%

Answered: 13 Skipped: 0

○ 1a. Describe where, how often, how much

The word cloud requires at least 20 answers to show.

Response

Count

The cliff above the elwha	1
Significant bank erosion and changes in the course of the river since dams have come down.	1
Regular flooding mostly mild during the Fall rains /Spring melt before the Aldwell dam was removed but nothing since. Considerable erosion noted on west back across from our property as the river has run straighter and deeper since dams out.	1
Lower Elwha westside by pumphouse for Lower Elwha homeowners association. I am part of Harry Rex HOA .	1

Little river channel change and erosion every year since project was completed. The same with the Elwha river since the dams were removed. 1

Historic satellite maps show ~ 250 feet of stream bank erosion in the area of our well system since dam removals. 1

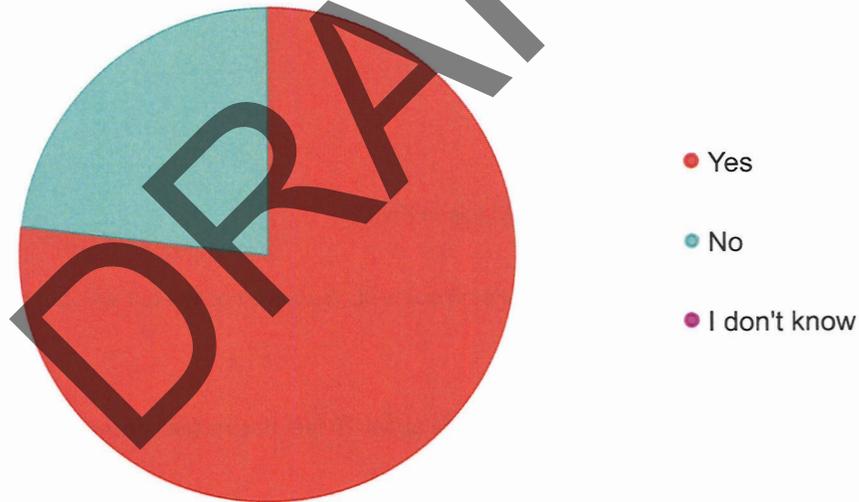
Erosion at the park boundary on Olympic Hot Springs Rd. Flooding of side channel behind "spur" dike downstream of USGS gauge. 1

Annually since dam was removed; have observed all along property boundaries on Elwha and Little River 1

100 yards upstream from Industrial pipeline intake. 1

Answered: 9 Skipped: 4

2. Has flooding or erosion impacted public resources, infrastructure, or... *



Answers	Count	Percentage
Yes	10	76.92%
No	3	23.08%
I don't know	0	0%

Answered: 13 Skipped: 0

o 2a. Describe where, how often, how much

The word cloud requires at least 20 answers to show.

Response

Count

Well, the answer I don't know to Section 2 question 1 is I don't just how confident I am in really what is the Study Area. But would predominately specify the answer to this Section 2 question 2 is nine years of continual flooding and erosion to all aspects of the question BECAUSE OF AN ANTHROPOGENIC ACTION.

Stream bank erosion causing trees to fall into the river. Well system may be impacted in near future with continued erosion.

Severe erosion has made the river access difficult.

Have lost much land and due to high banks can no longer access either river

Every year in the winter located before the 101 bridge. Massive amounts of land being eroded by the river.

Erosion of cliff affecting homes above the Elwha river

Erosion has threatened O.H.S.R. at park boundary (Madison Falls).

Drop in river level has an effect on the level of the water in our well. We have not lost our well but several neighbors have.

(potentially) widening of river and dropping of water table by about 10 feet has raised concern for us re: our well during summer and early fall.

Answered: 9 Skipped: 4

Section 2 continued: Questions for Elwha River, Little River, Indian Creek Riverfront Property Owners

o Please provide your address

The word cloud requires at least 20 answers to show.

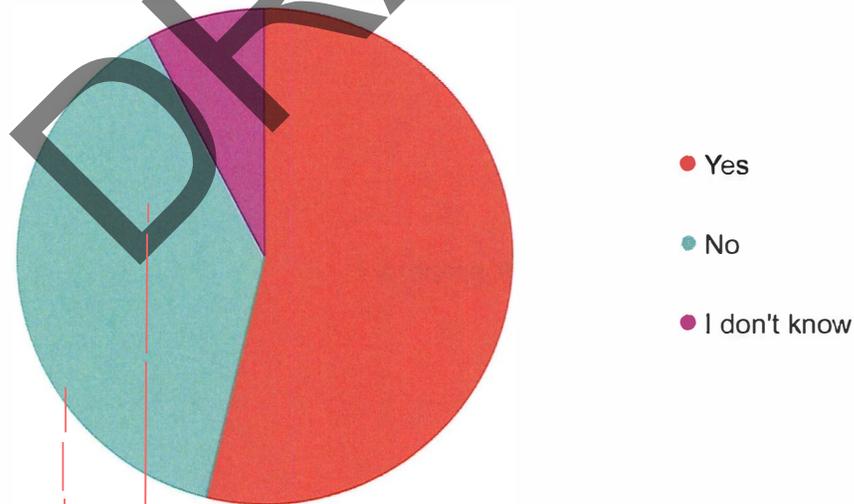
Response

Count

For now, figure it out.	1
Hunt Road and HOA well system on lower portion of Harry Rex way.	1
Olympic Hot Spring Road	1
Hunt Road	1
Olympic Hot Springs road	1
OLYMPIC HOT SPRINGS RD, PORT ANGELES, WA, 98363	1
The property we own on the Elwha and Little River 386 olympic hot springs rd is the neighboring property owner.	1
fox point road	1
Olympic Hot Springs rd	1

Answered: 10 Skipped: 3

3. Have you experienced flooding on your property?



Answers	Count	Percentage
Yes	7	53.85%
No	5	38.46%

I don't know

1

7.69%

Answered: 13 Skipped: 0

○ 3a. Describe the nature of flooding (where, how often, how much)

The word cloud requires at least 20 answers to show.

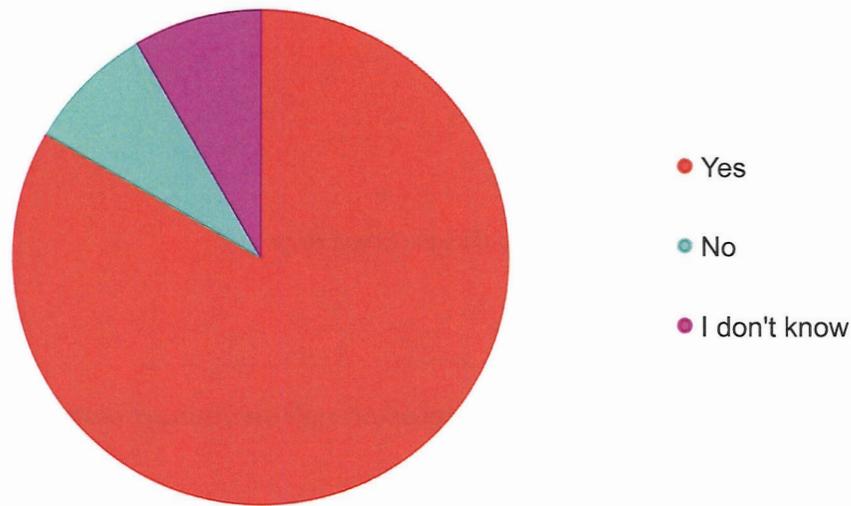
Response

Count

The property has not flooded since the dams have been removed.	1
The flooding happened before the dam removal.	1
Significant flooding before dams were brought down.	1
Occasional running water across our meadow and driveway. One occasion of 25 year flood before dams were removed when water was 5 feet up our piling blocking ingress and egress to/from the house.	1
Flooding of Elwha into Madison Creek channel along 1930 O.H.S.P. parcel. Flooding into side channel along 624 O.H.S.R. parcel.	1
Before dams were removed. Nearly every winter during big storms but again prior to dams removal.	1
Annually, creating land loss and high banks	1

Answered: 7 Skipped: 6

○ 4. Have you experienced erosion on your property?



Answers	Count	Percentage
Yes	10	76.92%
No	1	7.69%
I don't know	1	7.69%

Answered: 12 Skipped: 1

4a. Describe the nature of erosion (where, how often, how much)

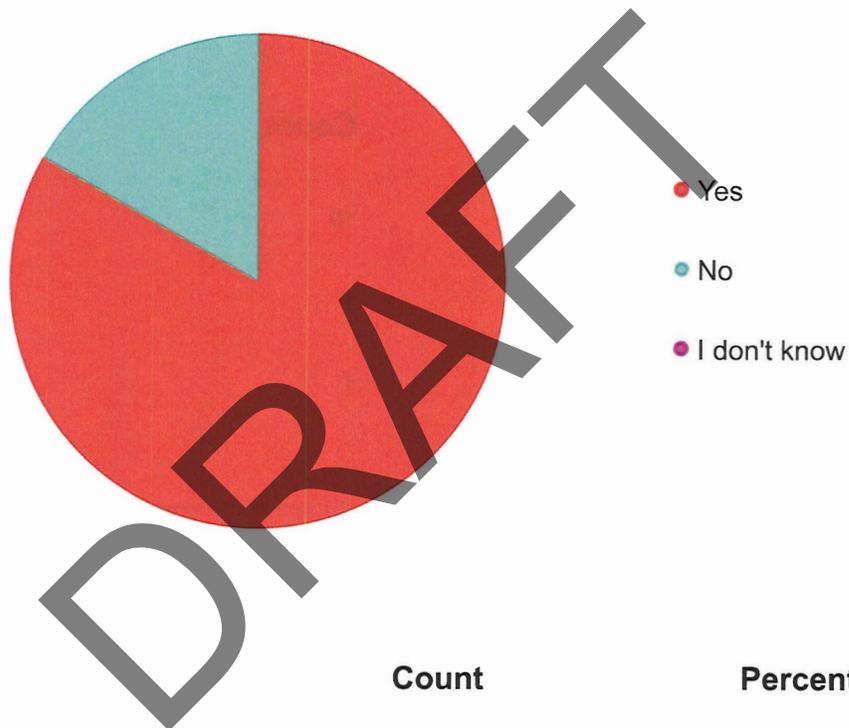
The word cloud requires at least 20 answers to show.

Response	Count
The cliffs above the elwha	1
On both the main Elwha River and our property line on the Little River.	1
Not on our private property but on HOA property. The river channel has eroded ~250ft west ward toward our well system.	1
Lots & lots -on both Littler River and Elwha property boundaries - come look if you want	1
Every winter along the river bank. Large quantities of soil and rock moving down the river. The area before the 101 bridge across the Elwha river.	1

Before dam removal we had erosion of bank north of our house ~10-15 ft loss of alders etc.	1
Bank erosion at upstream end of 1930 OHSR property.	1
Bank erosion	1
30-40 ft of land has been lost on the property that borders the Elwha River	1

Answered: 9 Skipped: 4

5. Do you have any concerns about flood or erosion risk on your property?



Answers	Count	Percentage
Yes	10	76.92%
No	2	15.38%
I don't know	0	0%

Answered: 12 Skipped: 1

5a. Describe your concerns about flood or erosion risk on your property

The word cloud requires at least 20 answers to show.

Response	Count
Without Lake Aldwell buffering prior flood and river speed, I am concerned about the river speed going unchecked during high water contributing to more erosion.	1
What can be done to help mitigate against erosion. What can we be doing?	1
sort of , We bought the property in 2012 and are fully aware of the risks. We are comfortable with the decisions the river makes for itself! We keep a close eye on flow predictions and as long as all the people are safe we accept the risk of property loss.	1
See 3a and 4a	1
Possible loss of home and land	1
Loss of more land.	1
losing more land.	1
Biggest concern now relates to side channel that opens up when area on north end of dike on OHS road receives overflow of high water during fall and spring.	1
Bank erosion.	1
Again, this is the same description as in Section 2 question 2a for all of the I don't know answers above in this section and for Section 2 question 5 in terms of continual due to BECAUSE OF AN ANTHROPOGENIC ACTION and likely to be that way for many generations to come.	1

Answered: 10 Skipped: 3

6. What changes have you observed in the river/stream on or near your property?

The word cloud requires at least 20 answers to show.

Response	Count
The Elwha is much wider and deeper in front of our property.	1
Shifting channels, sediment deposits moving back and forth , vegetation growth due to sediment deposits.	1
See above.	1

See 3a and 4a	1
main channel of Elwha has changed dramatically post dam removal.	1
Loss of land, through erosion.	1
Left the main channel because of sediment loads, and historic flood control removed by a Federal Act that did not mitigate those anthropogenic activities decided by the Feder Agency.	1
HOA property has 100ft wide gouge where high flow eroded the land.	1
Development of rock bars to south and west of our property has created a channel along our bank that becomes backwater in summer and this seems to be filling in over the years with more vegetation and trees coming up on the edge closest to our house.	1
Decreased flow likely due to drought conditions and loss of water to the city of port angeles	1

Answered: 10 Skipped: 3

7. Describe the historical and current conditions of your property and shoreline along t...

The word cloud requires at least 20 answers to show.

Response	Count
We have only been at the OHSR property since 2012, so we don't have much/any historical info. The	1
river has dropped significantly and moved west of our property.	1
Right after Glines dam removal we had a constant reconfiguring of silt into beaches for a few years until larger rock created larger rock bars to the south and west.	1
Private property is vegetated currently but not all HOA properties are and the bank erosion occurs even at lower than critical flood levels.	1
N/A	1
Lots of land loss and high banks that reduce property value and prevent river access	1
Less land and trees compared to 30 years ago.	1

Historically the Elwha River was about 30-40 ft wide in front of our property with a forest across from our river bank. That forest is gone and the Elwha is 50-70 yards wide depending on the time of year and water flow.

1

Geo survey showed that the cliff was eroding at approximately 1 foot per year.

1

Don't know what I want to disclose at this time because I still don't believe the purpose and use of this project...especially because of the deceptive practices of the State's DOE and their abusive use of "guidelines" that are not peer reviewed or clearly in the realm of public engagement to create. Question whether they even abided by WAC rules of establishing something other than a "dream document". This is one agency I have zero confidence and total loss of confidence they have my back and do what is in my best interest, and not focused on creating a new interest for me or changing my culture and environment.

1

Answered: 10 Skipped: 3

8. Do you have questions about the CMZ mapping process?

The word cloud requires at least 20 answers to show.

Response

Count

Would like updates on future projections of the Hunt Road side channel.

1

What are your objectives for this process?

1

Well, you can probably figure out who this is from, but I do have a right to privacy. Wonder if the bean counters and other Sovereign interest will have access to tracking me down because I submitted online these responses? My feedback is this survey is not well advertised, not posted as a key topic for the citizens of the county, either at large or Elwha community. I only happen to stumble across it because I bothered to periodically check the department's web site and there it is in smaller print as news, and not a left-hand column tab nor posted on the county hope page...it's been running apparently since Sep 17 but here it is the end of September that I stumble across it. How do you plan to notify the citizens of the Elwha (and those other two drainages) without them establishing an account to be notified?

1

Not yet.

1

No. Interested in ways to decrease erosion on the cliffs above the river

1

no

1

- landowner 1

Is the "armored" bank along OHSR at the Madison Creek trailhead considered a "hard line" that won't be yielded to channel migration? (DMA) 1

I wasn't able to attend the presentation but am totally in favor 1

I assume it's another land grab from private property owners without any compensation for reducing ability to use private property. My experience has been the county and state wants to take full control without paying for the reduction in value of properties 1

Happy to be a resource if needed. 1

Answered: 11 Skipped: 2

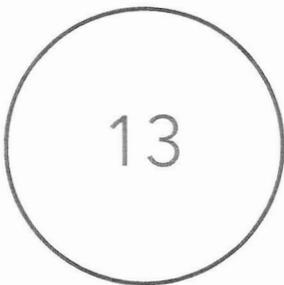
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Lower Elwha Channel Migration Zone Community ...

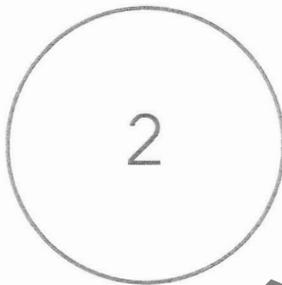
Overview Analyze Data

Clallam County is leading an assessment of flood and erosion risk in the lower Elwha River basin by mapping the Channel Migration Zone (CMZ). The primary goal is to better understand these risks to protect public safety, infrastructure, and the natural environment - considering how rivers/streams are changing. Your input is a key part in the study.

Owner: portaladmin, created: Sep 9, 2024, updated: Sep 26, 2024



Total records



Total participants



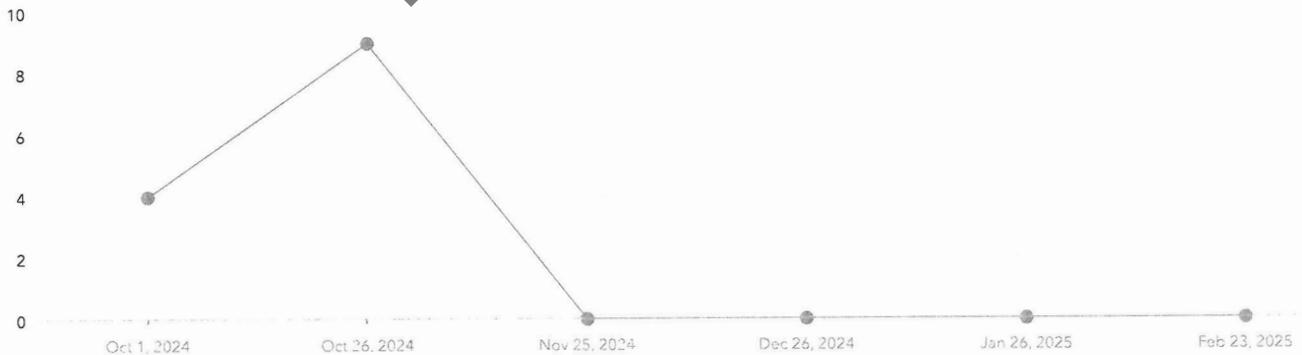
First submitted on



Last submitted on ⓘ

Surveys count: 13 (total: 13)

10/1/24 - 3/25/25



Top participants

DRAFT



Draft Lower Elwha River Channel Migration Zone

October 29, 2024

This project is funded in part by WA Dept. of Ecology (Grant # SEASPC-2325-CLoCD-00006)





Channel Migration Zones (CMZ) are areas in a floodplain where a river or stream channel can be expected to move naturally over time.

- Overall goal is to better understand the current and future patterns of erosion and flooding along the Lower Elwha River, Indian Creek, and Little River systems to incorporate risk-informed decisions into various planning processes to benefit public safety, infrastructure, and aquatic and riparian ecology.
- The Elwha River is a shoreline of statewide significance under the Shoreline Management Act (SMA).
- The removal of two dams in the Elwha River has affected the river environment downstream and at the delta.
- A CMZ delineation gives planners and resource managers science-based reach scale information necessary to establish jurisdictional boundaries; better protect people, development, and natural resources from flood and erosion hazards.
- Shoreline use and development activities are regulated locally by the Clallam County Shoreline Master Program (SMP), which establishes limitations and requirements specific to CMZs.

Delineate a detailed CMZ for the Lower Elwha River, Indian Creek, and Little River to provide a better understanding of flooding and erosion hazards for planners, co-managers, landowners, and conservation partners.

➤ Predict areas that are at risk of future erosion along creeks and rivers

- Project Background
- Introduction to CMZs
- Study Methods
- Example CMZ delineation
- Q&A and discussion

DRAFT

Study Area

Elwha River

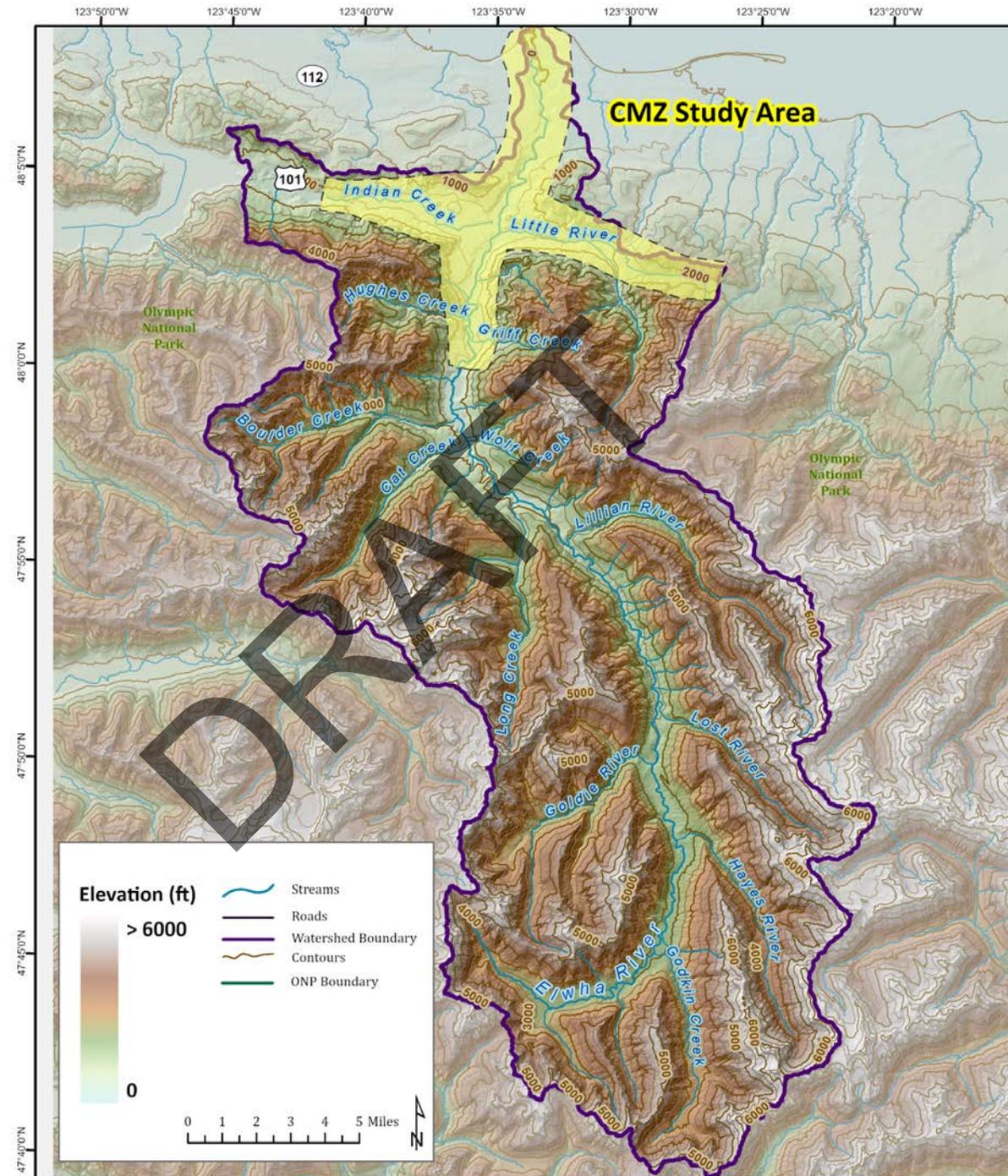
- ▶ ONP to Strait of Juan de Fuca
- ▶ 12.5 RM

Indian Creek

- ▶ Lake Sutherland to Elwha River
- ▶ 6 RM

Little River

- ▶ ONP to Elwha River
- ▶ 7 RM



Elwha River – Dam removal



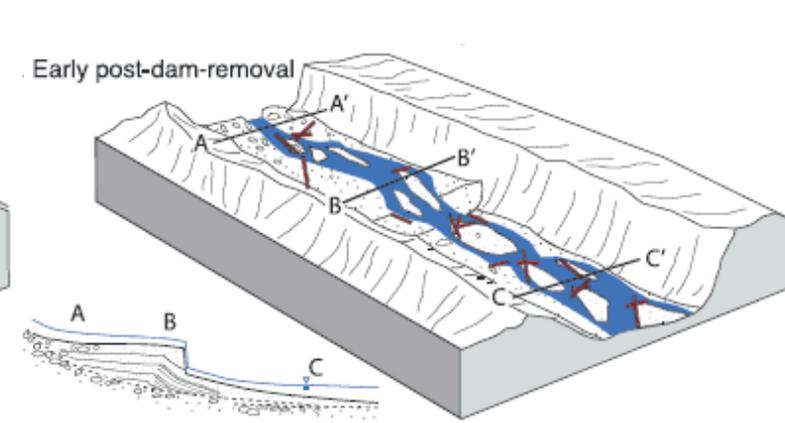
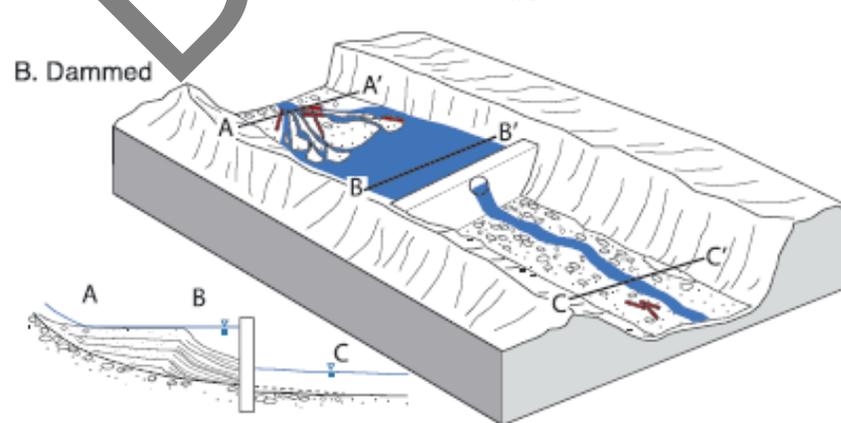
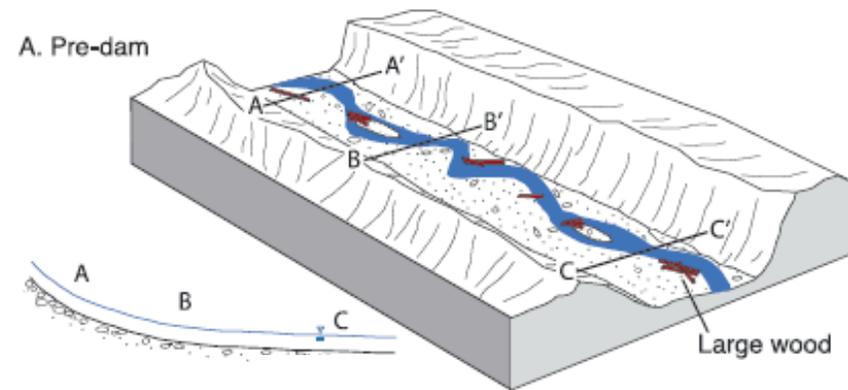
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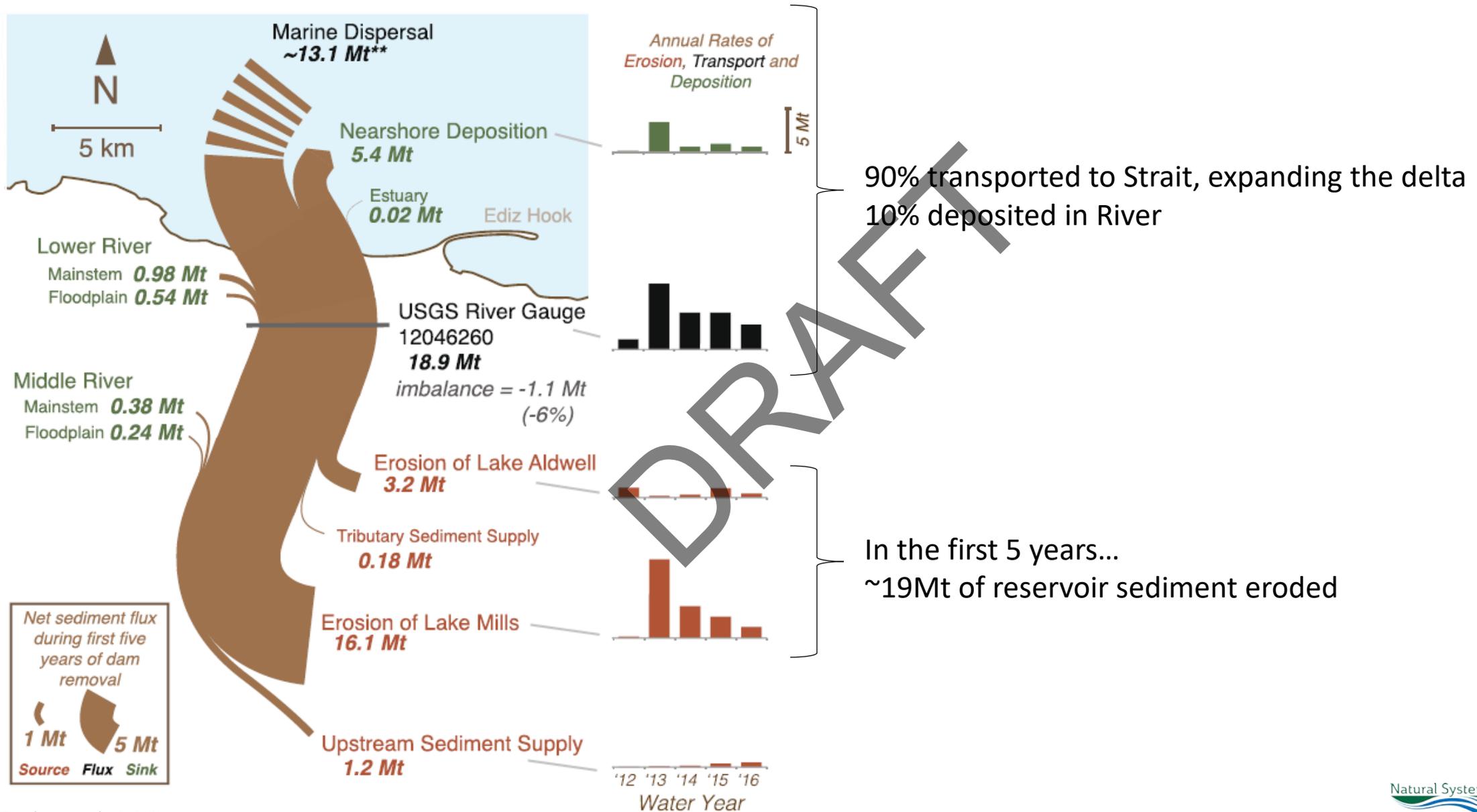
<https://images.seattletimes.com/wp-content/uploads/2015/06/a1elwhadampic21.jpg?d=1020x793>



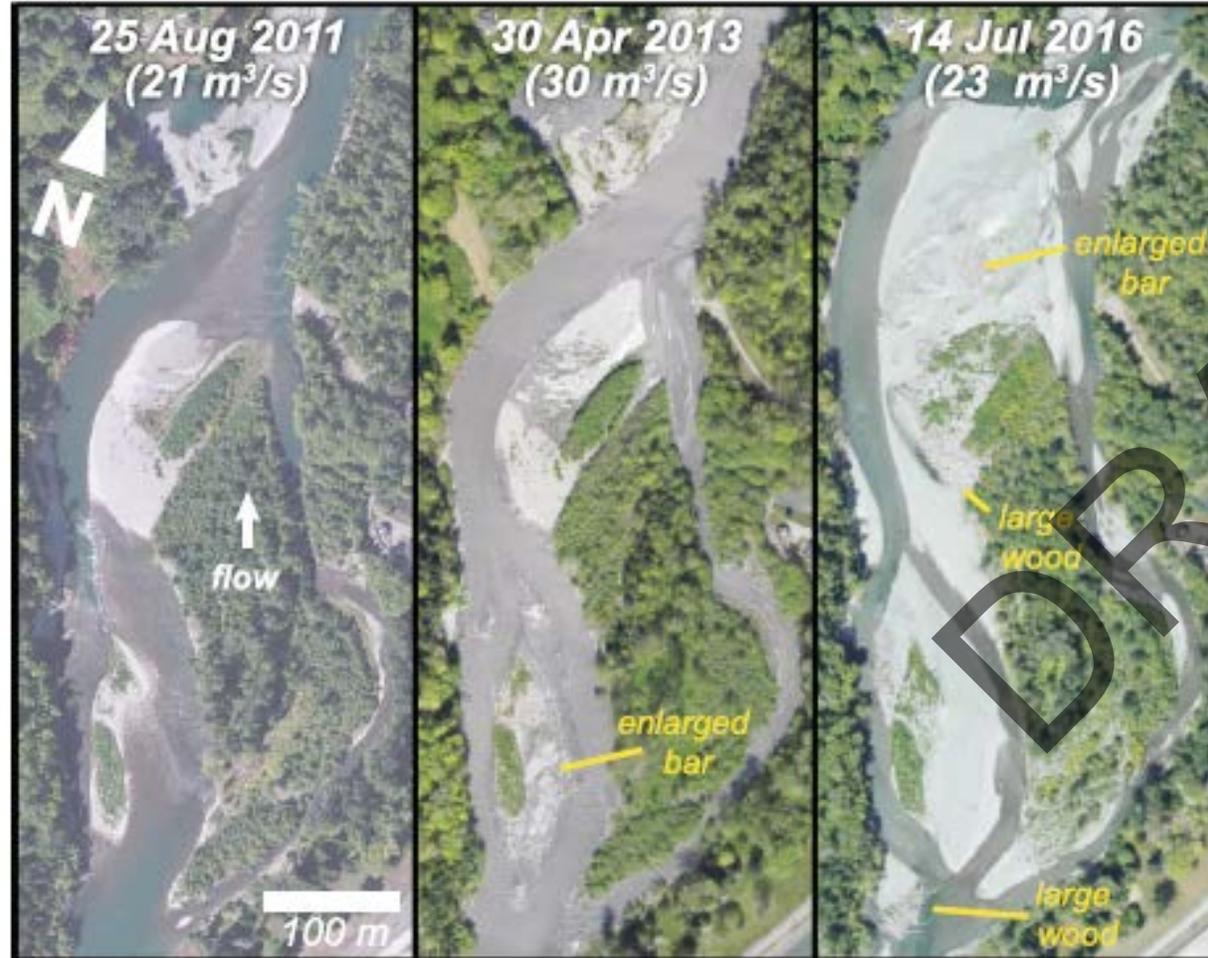
<https://www.opb.org/article/2022/08/02/elwha-river-transformed-10-years-after-dam-removal/>



Elwha River – Dam removal



(a) Lower Elwha River at Rkm 4.0

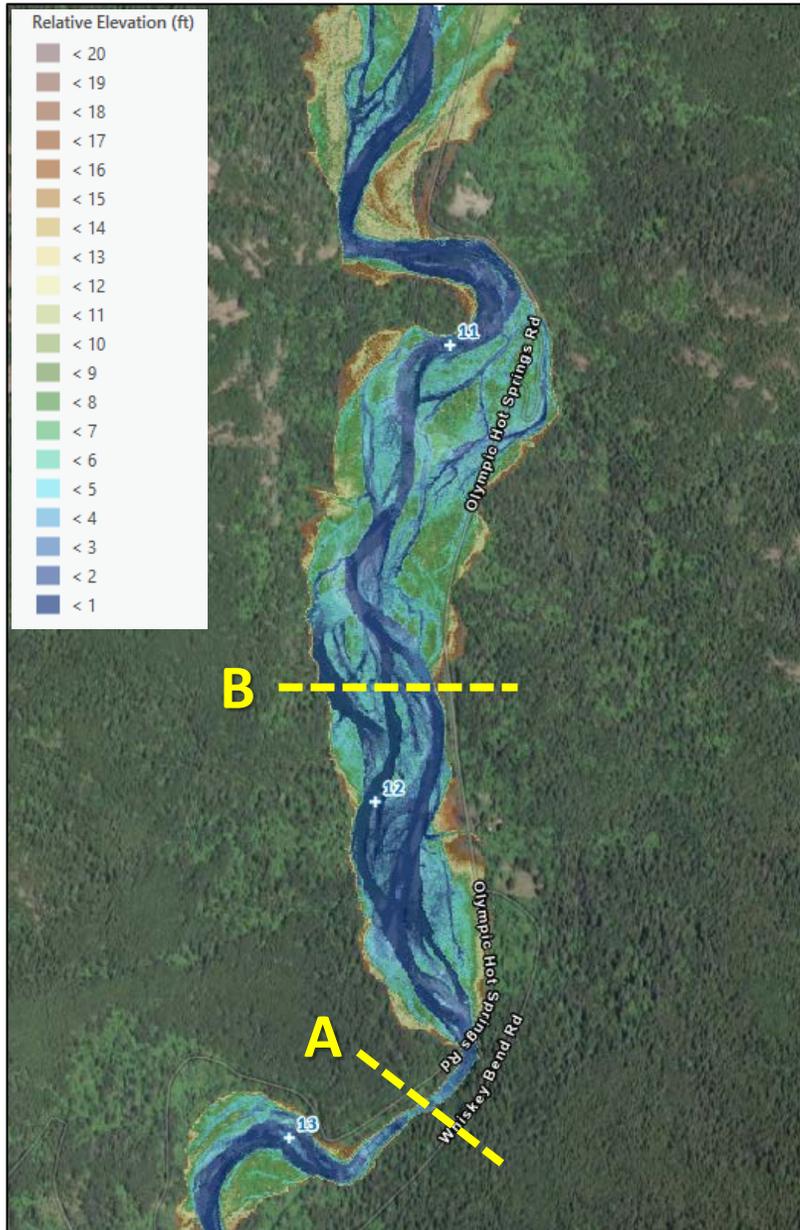


(b) Middle Elwha River at Rkm 17.5

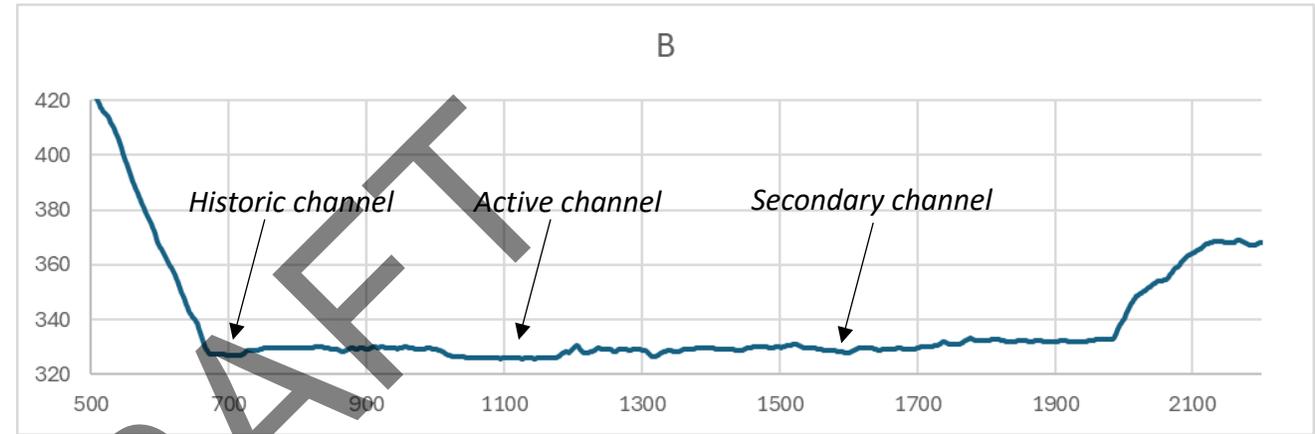


Ritchie et al., 2018

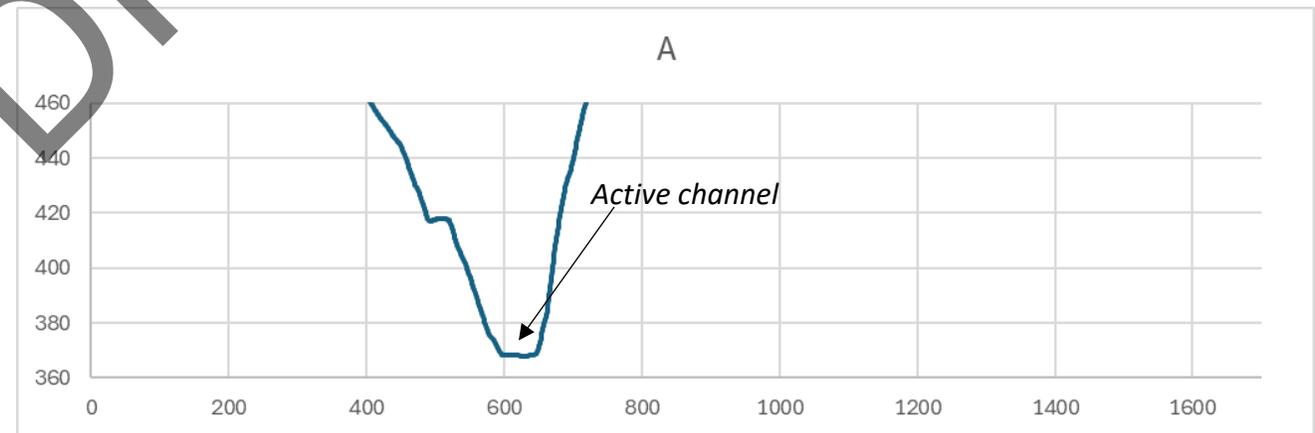
The Elwha River is continuing to adjust from dam removal.

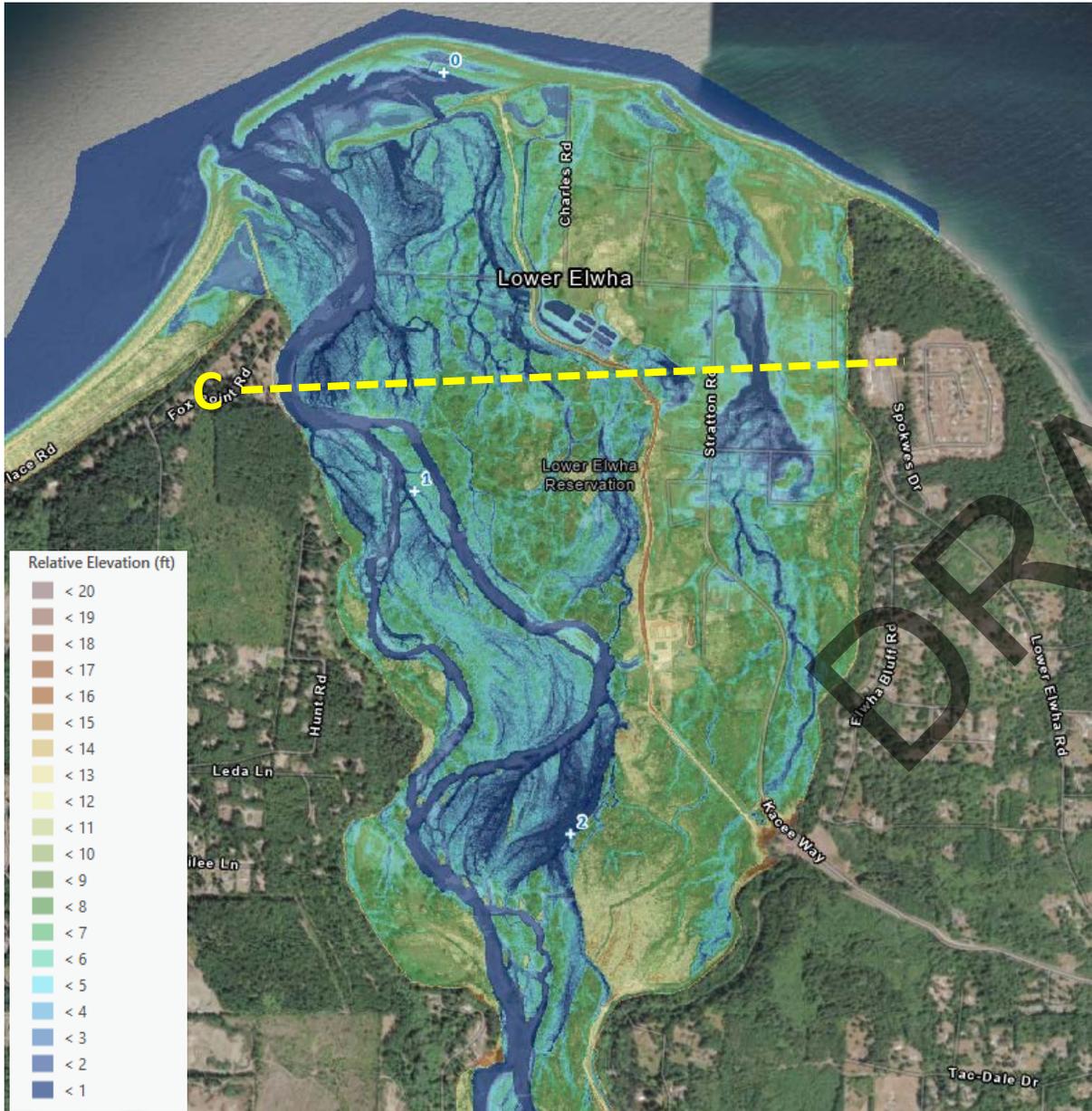


Wide floodplain with multiple channels

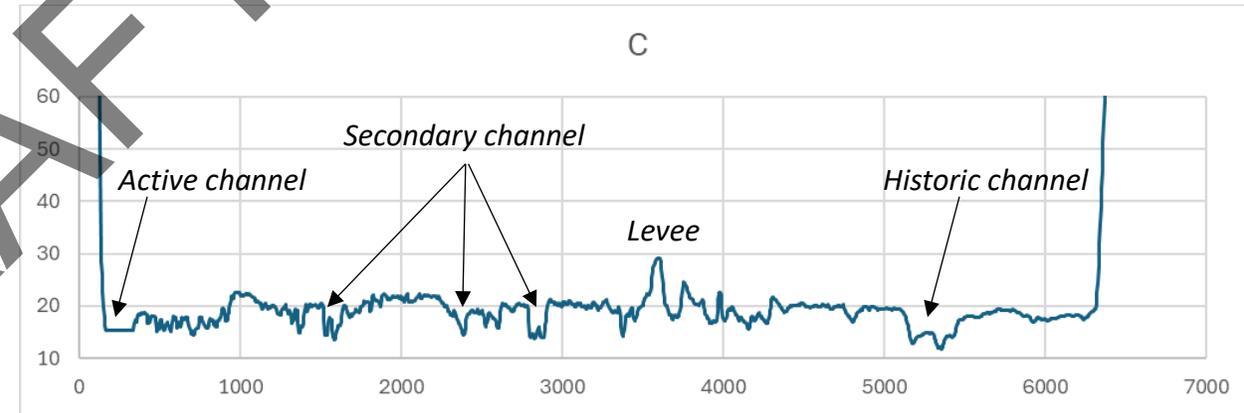


Narrow canyon with a single channel





Wide river delta with active and historic channels



Lower Elwha River, 2016



Flooding – inundation from high river flows.

The FEMA 100-year floodplain is a standard definition of risk area

- *1% chance in a given year*

Lower Elwha River, 2020

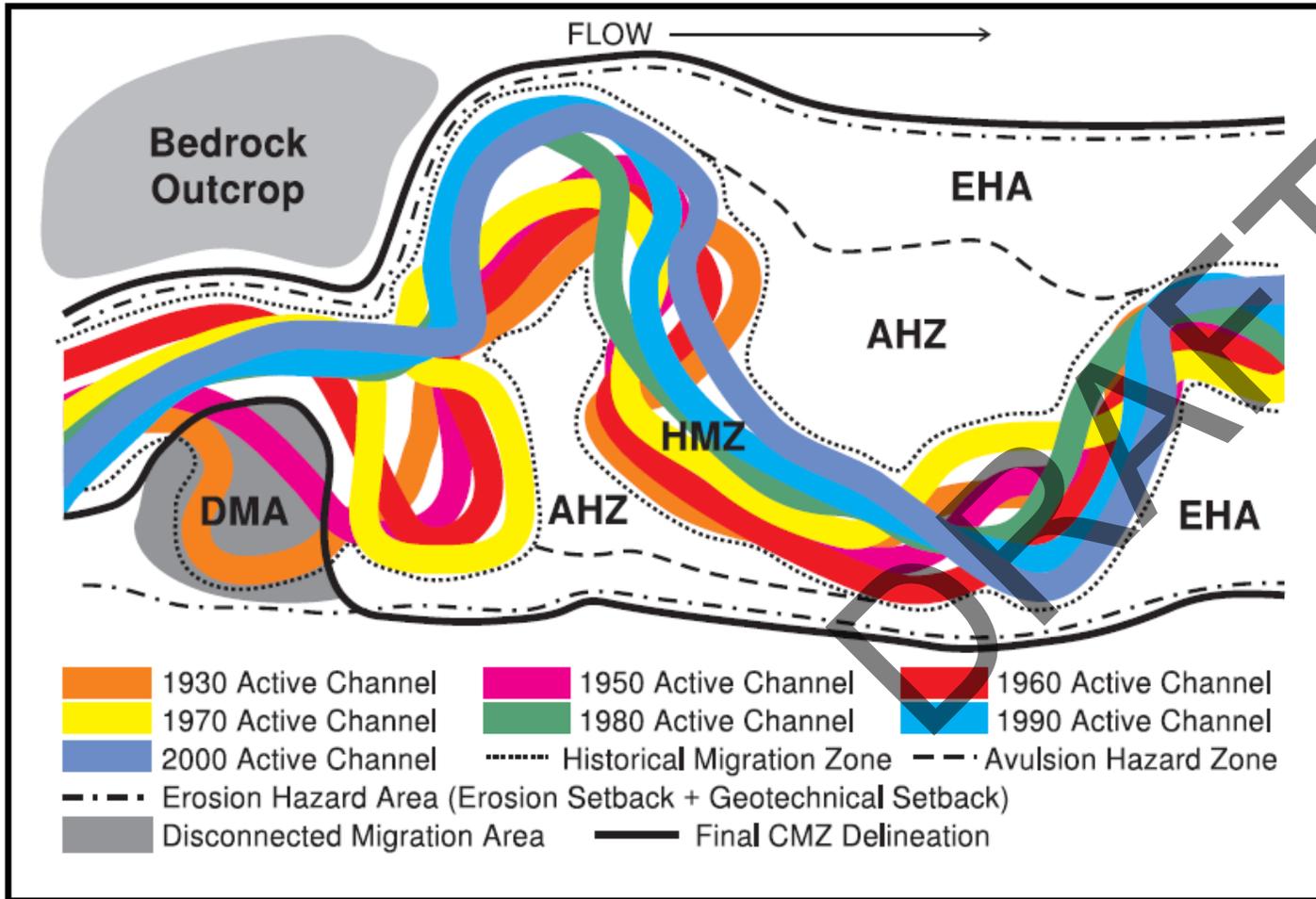


Erosion – removal and transport of soil or rock by river processes.

- Bank erosion
- Channel avulsion
- Mass wasting

Delineating Elements of a Channel Migration Zone

DRAFT

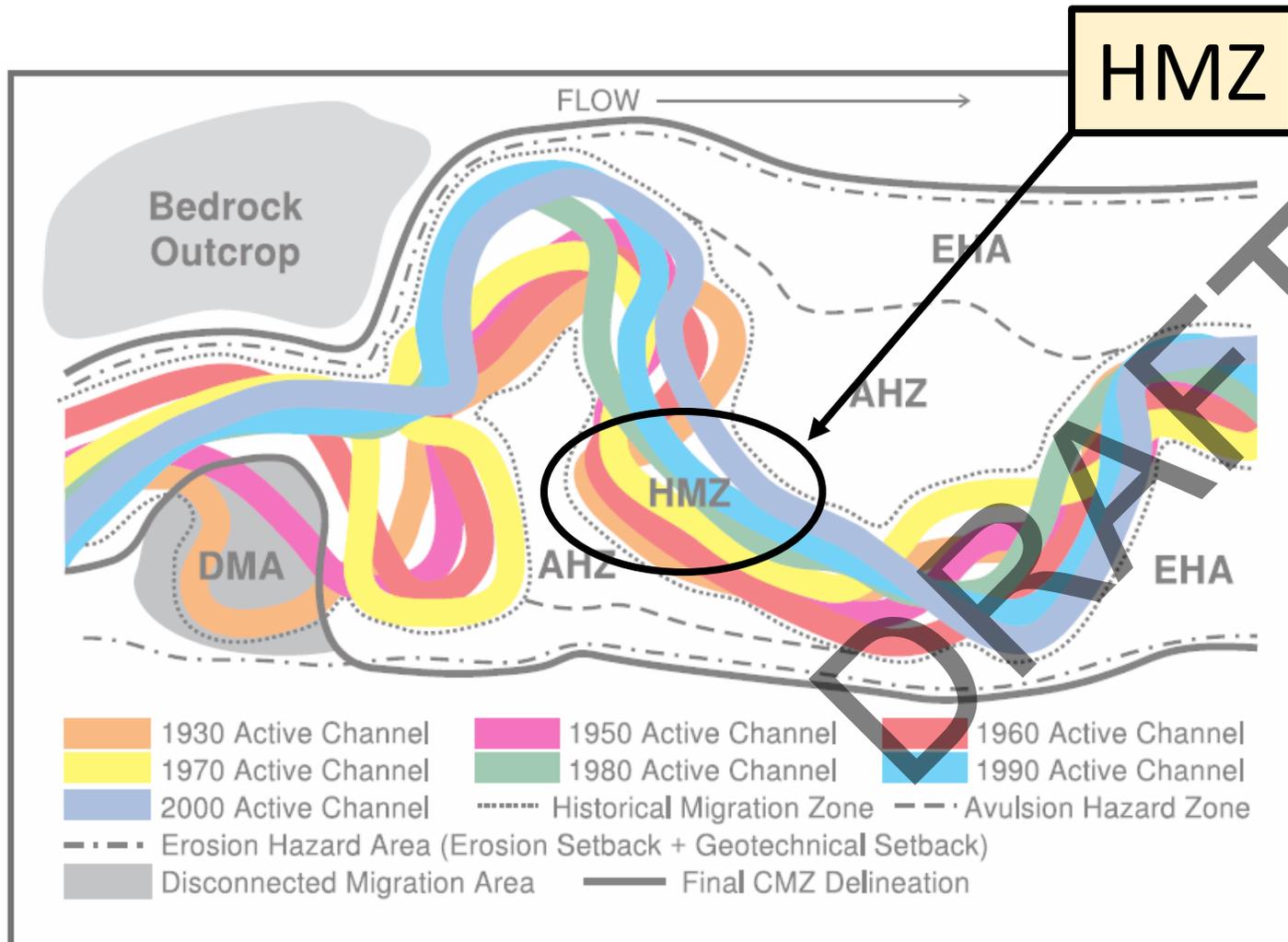


The CMZ boundary delineates the area in which channel processes will occur over a specified period of time: 100 years

- Historical Migration Zone (HMZ)
- Avulsion Hazard Zone (AHZ)
- Erosion Hazard Area (EHA)
- Disconnected Migration Area (DMA)

$$\text{CMZ} = \text{HMZ} + \text{AHZ} + \text{EHA} - \text{DMA}$$

A Framework for Delineating Channel Migration Zones (Rapp and Abbe, 2003)

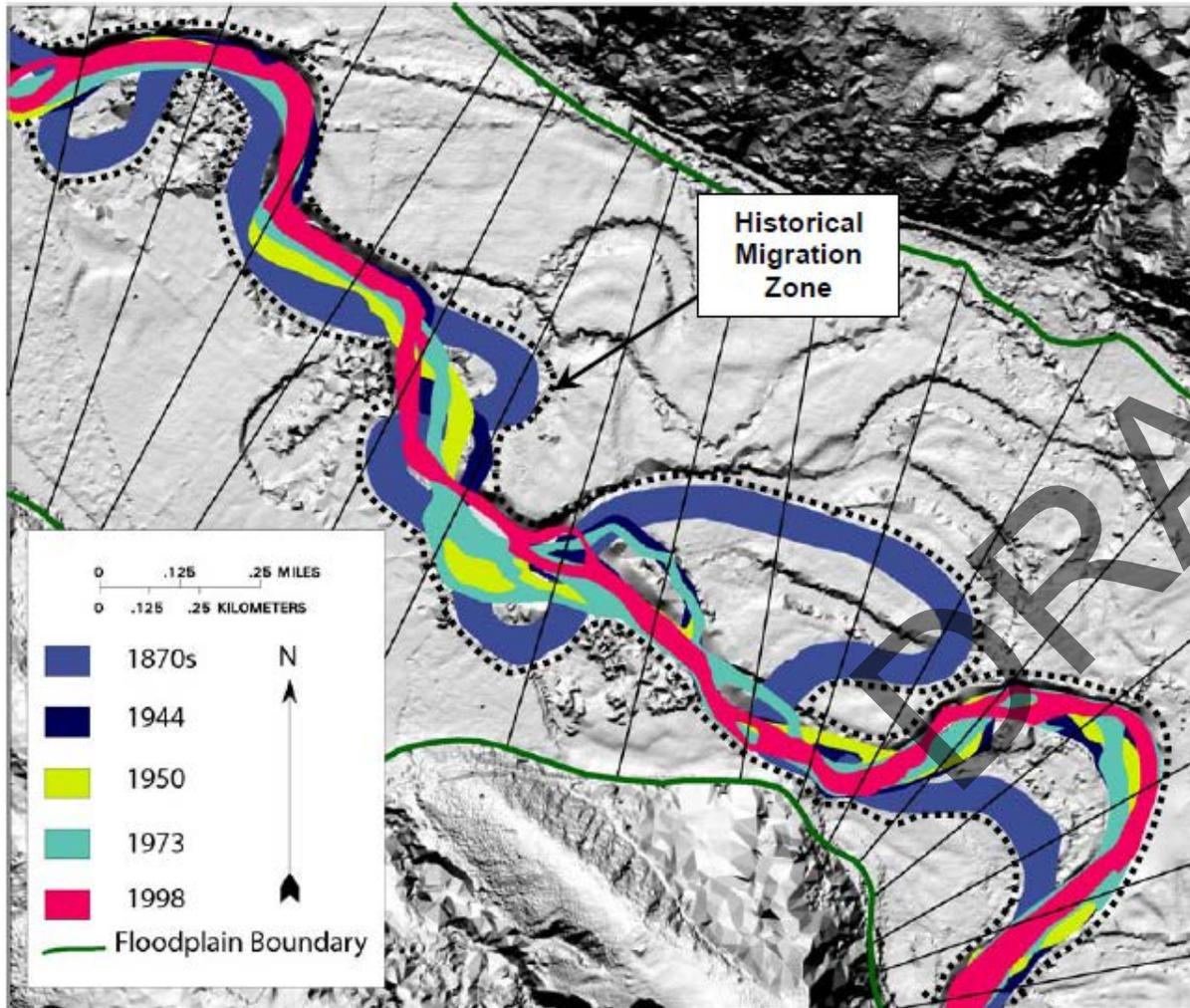


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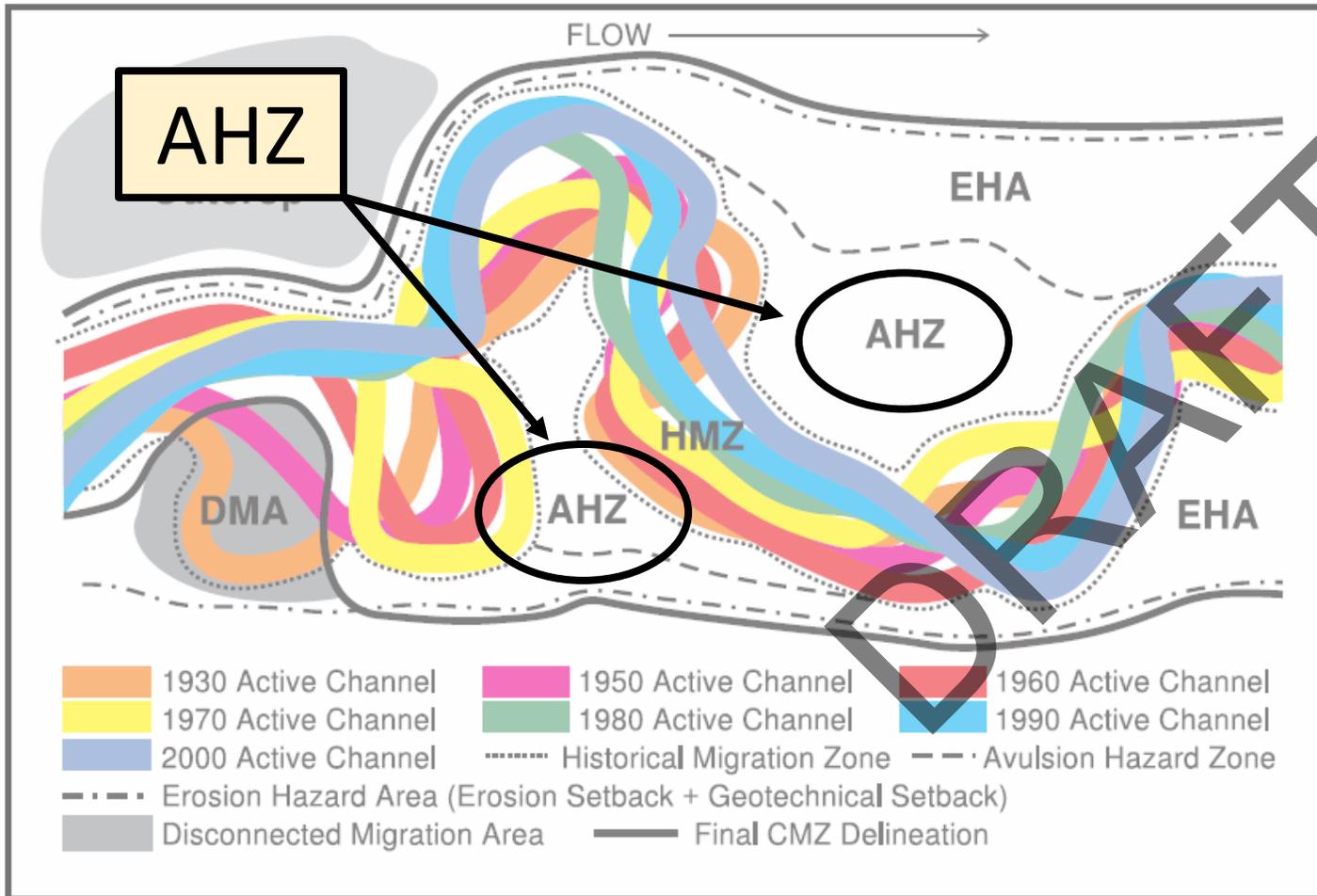
A Framework for Delineating Channel Migration Zones (Rapp and Abbe, 2003)



The HMZ boundary is the area the channel has occupied over the course of the historical record.

- Aerial photographs
- USGS topographic maps
- GLO survey plats

A Framework for Delineating Channel Migration Zones (Rapp and Abbe, 2003)

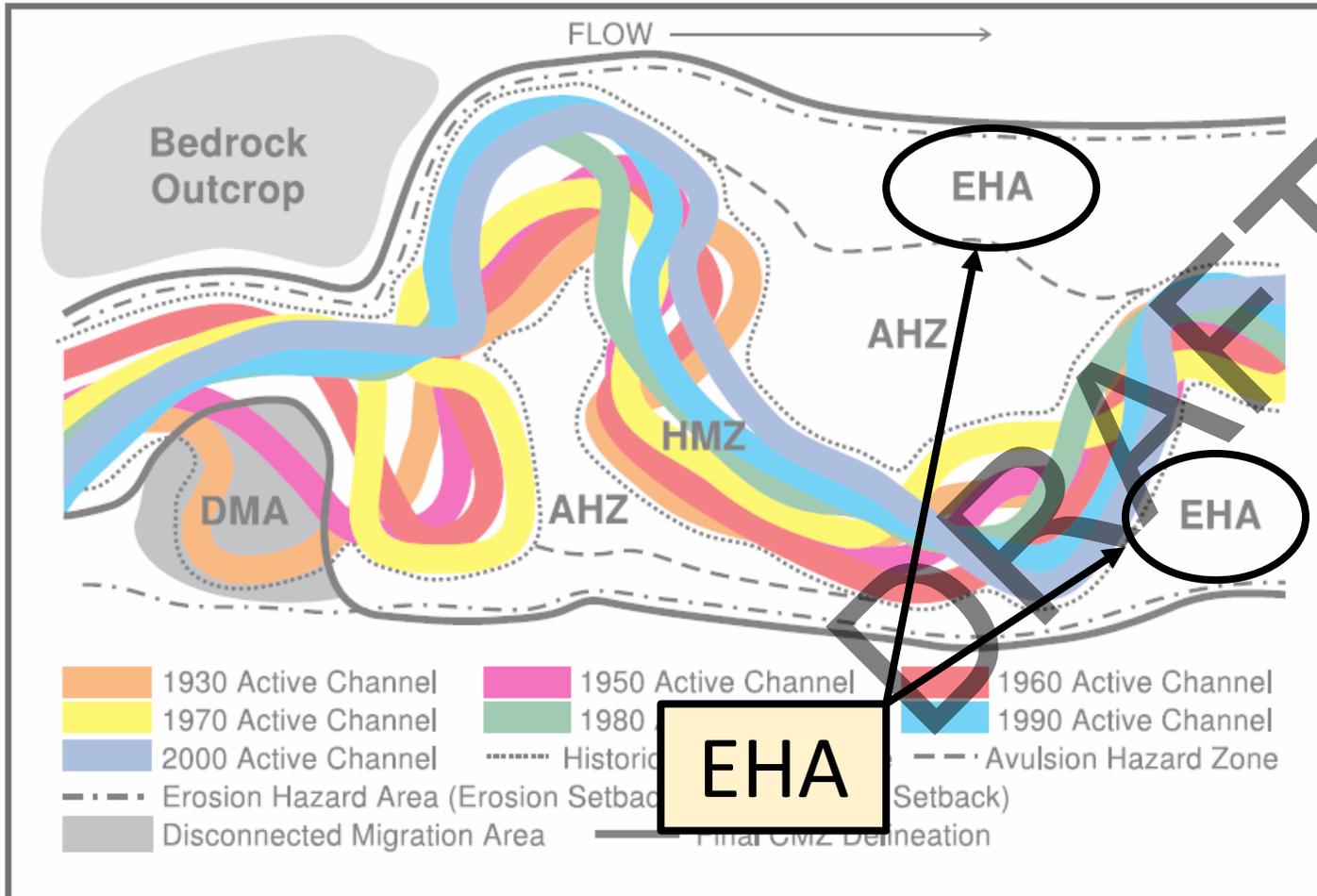


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A Framework for Delineating Channel Migration Zones (Rapp and Abbe, 2003)



The CMZ boundary delineates the area in which channel processes will occur over a specified period of time: 100 years

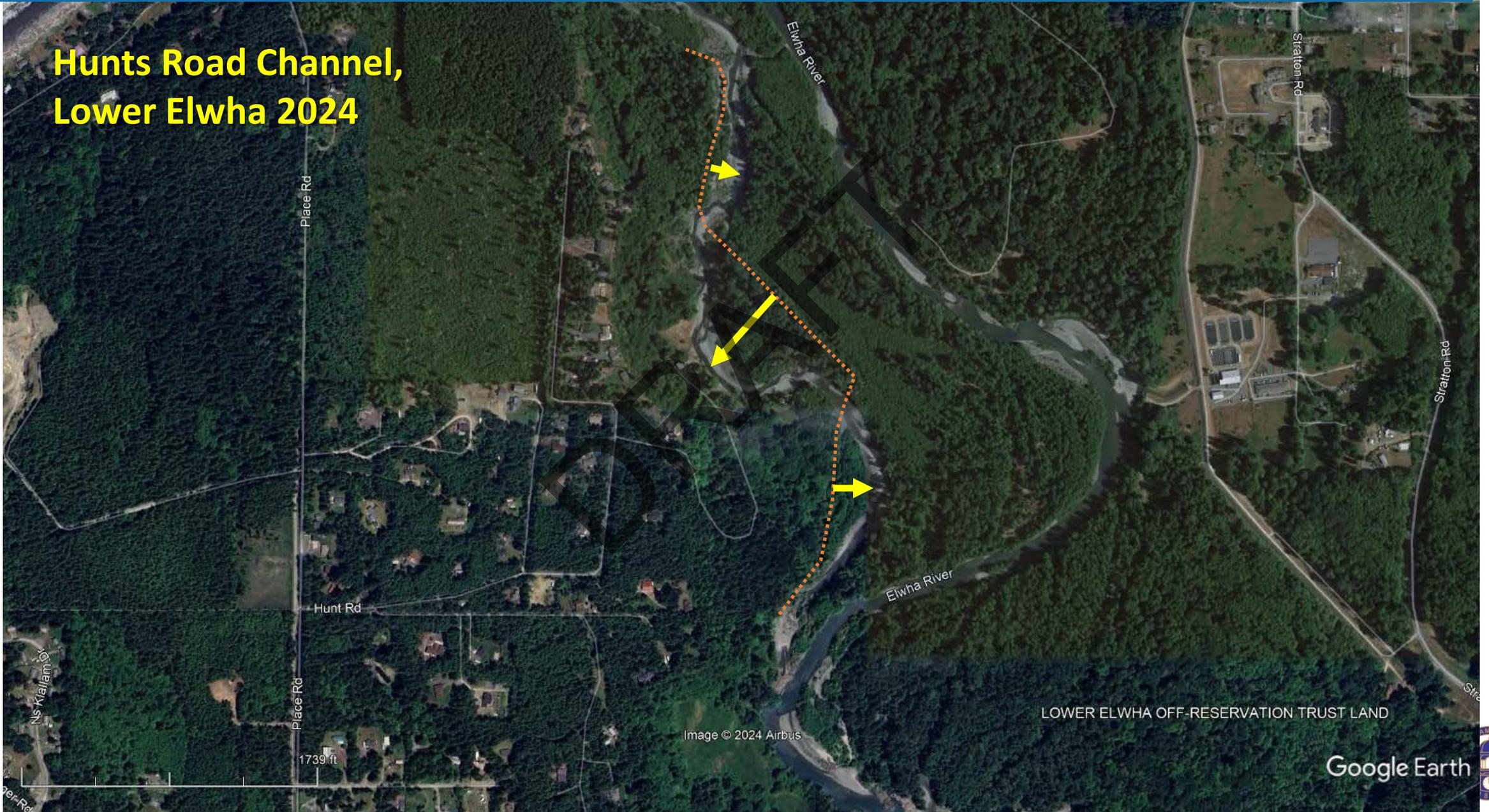
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A Framework for Delineating Channel Migration Zones (Rapp and Abbe, 2003)

Avulsion Hazard Zone (AHZ)

Hunts Road Channel, Lower Elwha 2024

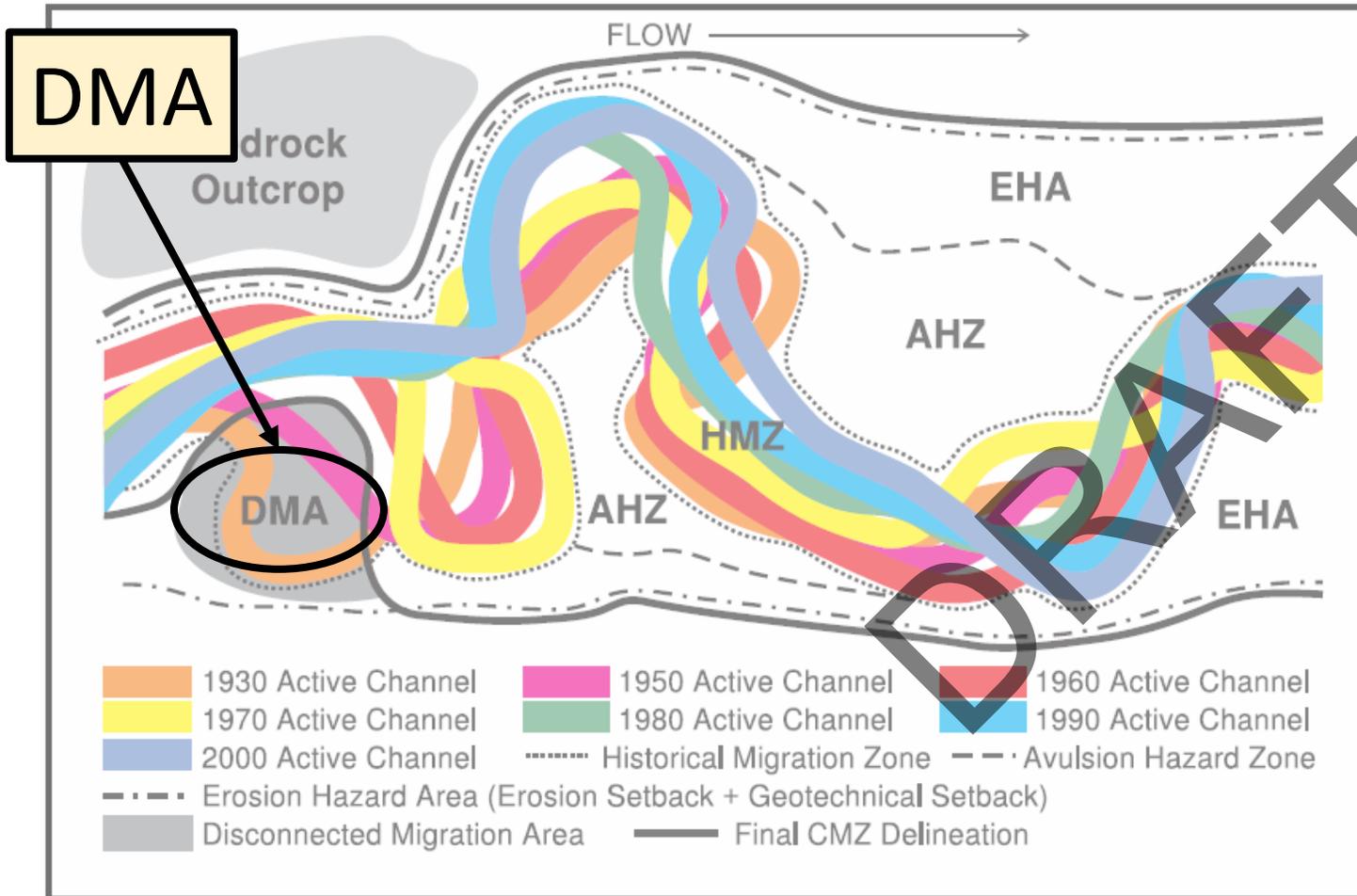


LOWER ELWHA OFF-RESERVATION TRUST LAND

Image © 2024 Airbus



**Channel Avulsion
along Hot Springs
Road, Upper Elwha
1/12/2016**



The CMZ boundary delineates the area in which channel processes will occur over a specified period of time: 100 years

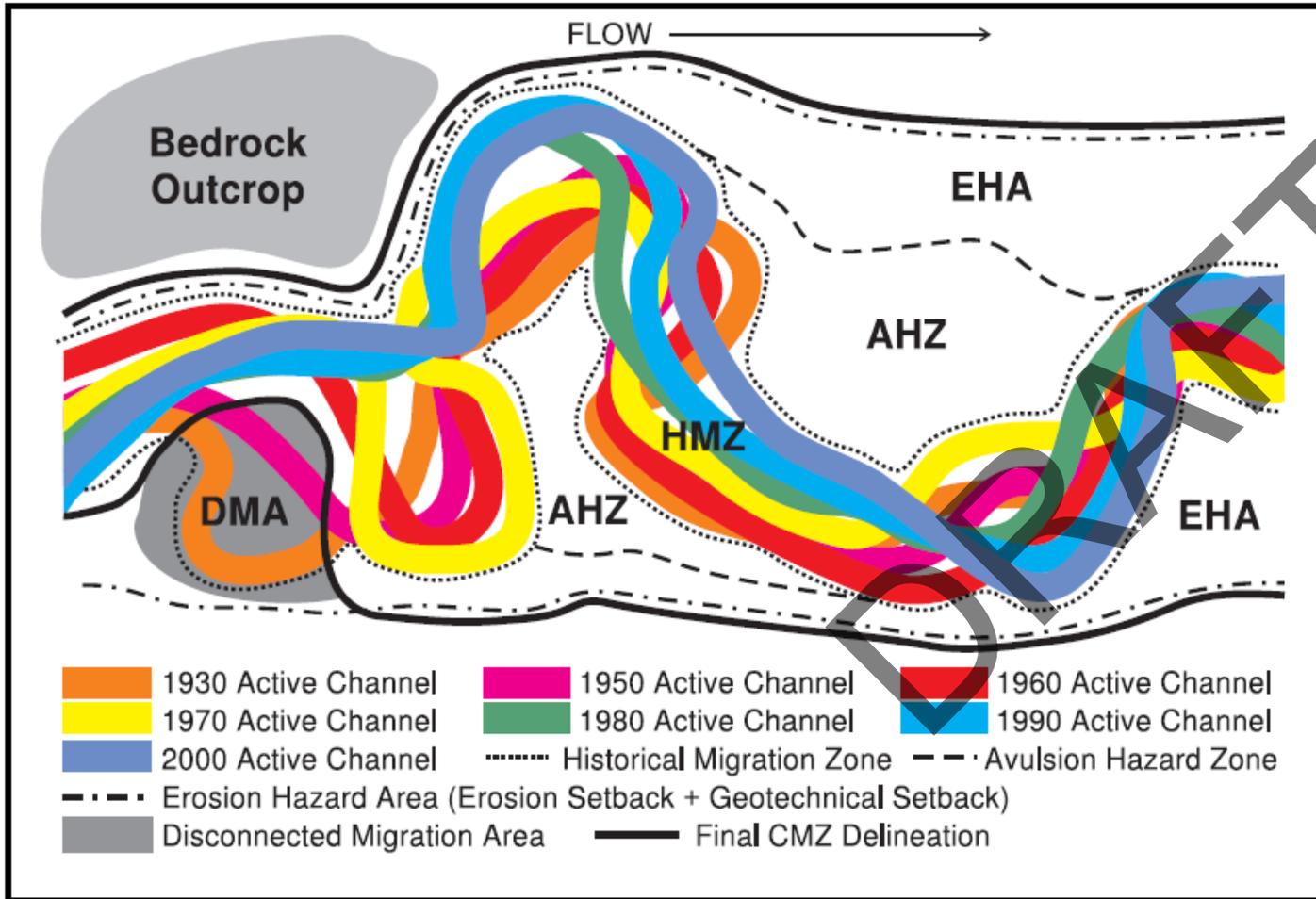
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- Disconnected Migration Area (DMA)

$$\text{CMZ} = \text{HMZ} + \text{AHZ} + \text{EHA} - \text{DMA}$$

A Framework for Delineating Channel Migration Zones (Rapp and Abbe, 2003)

Disconnected Migration Area





The CMZ boundary delineates the area in which channel processes will occur over a specified period of time: 100 years

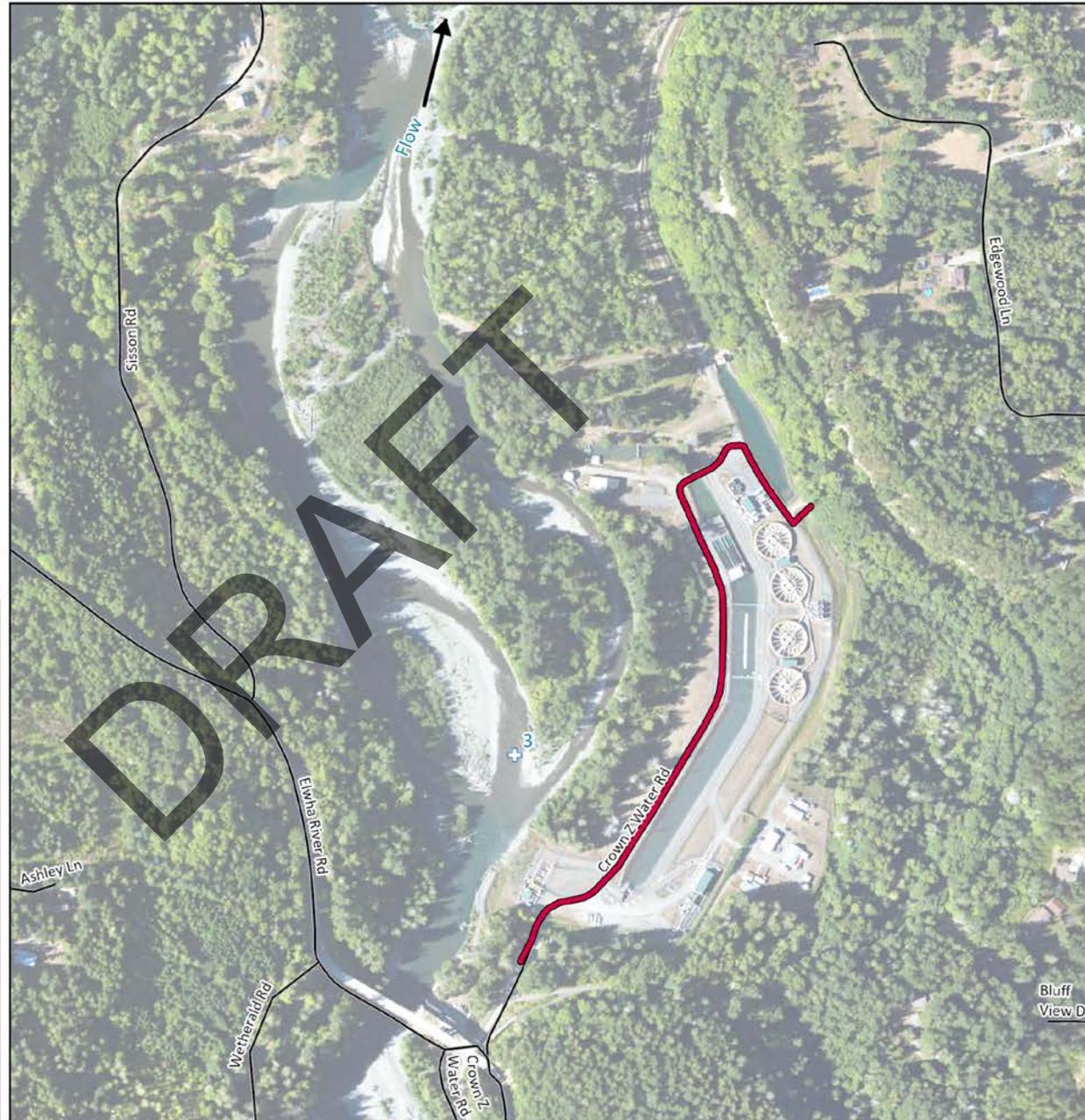
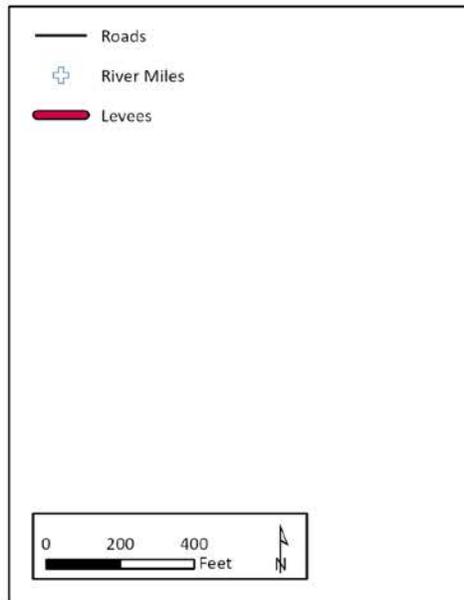
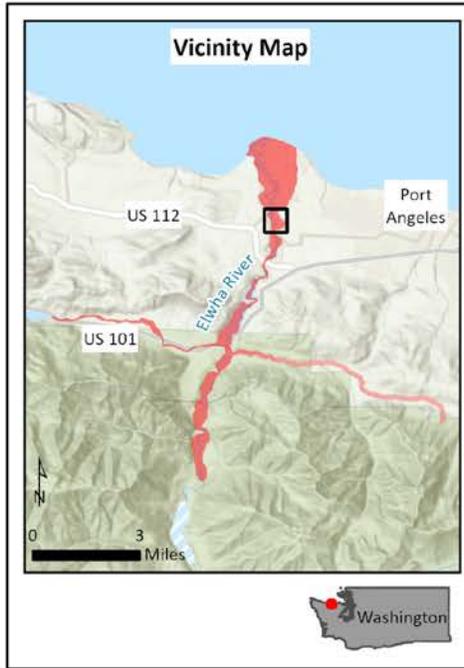
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- Erosion Hazard Area (EHA)
- Disconnected Migration Area (DMA)

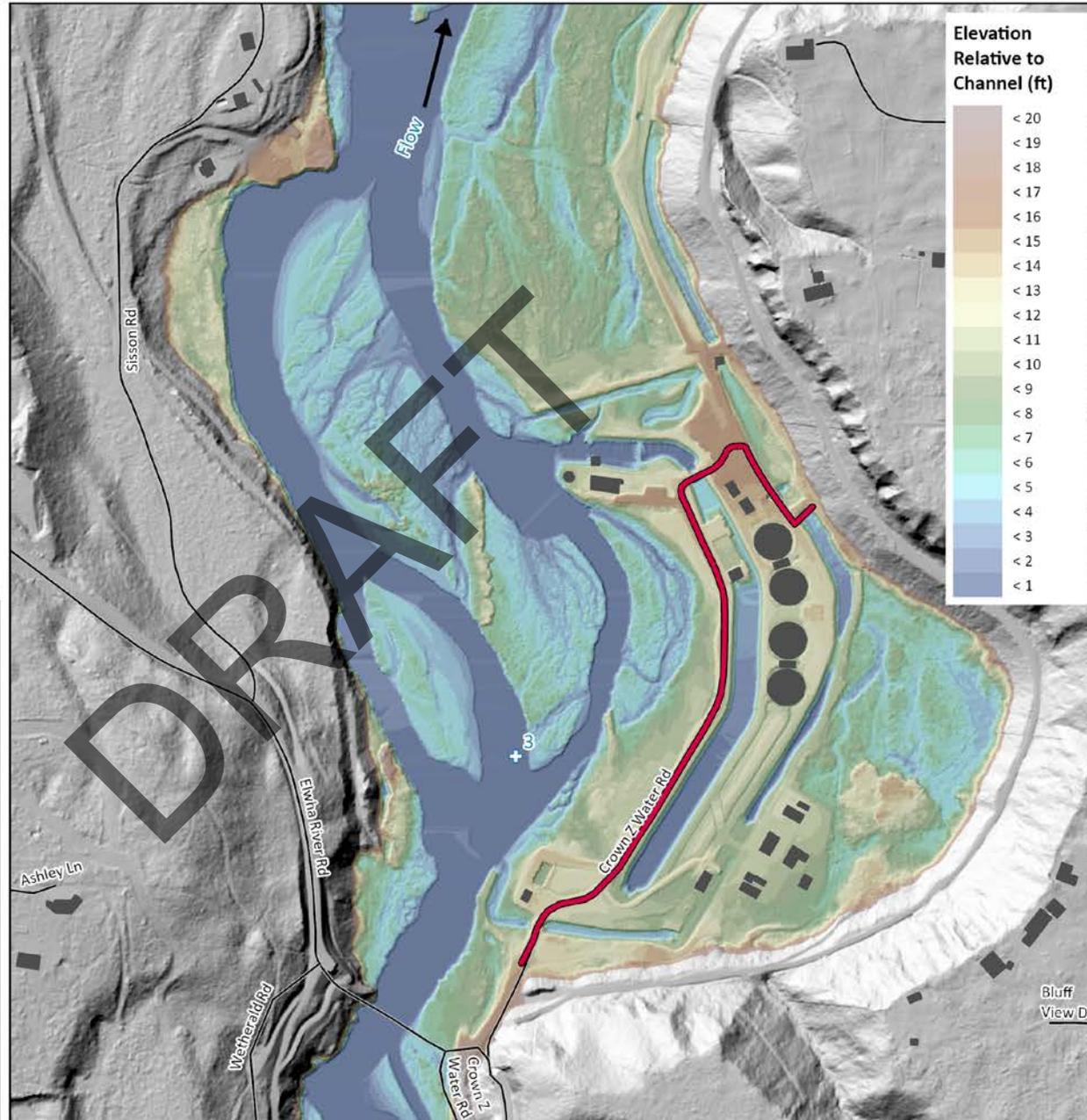
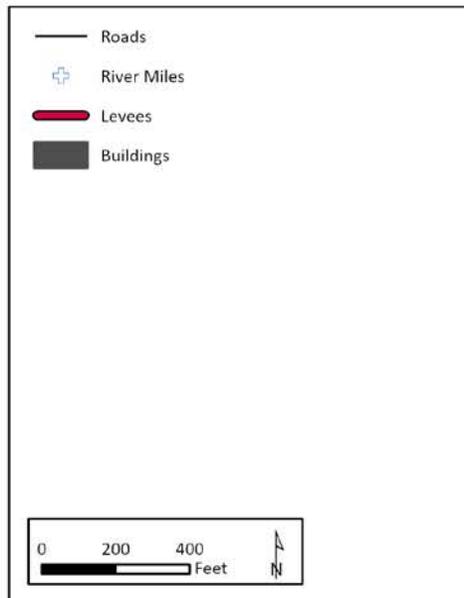
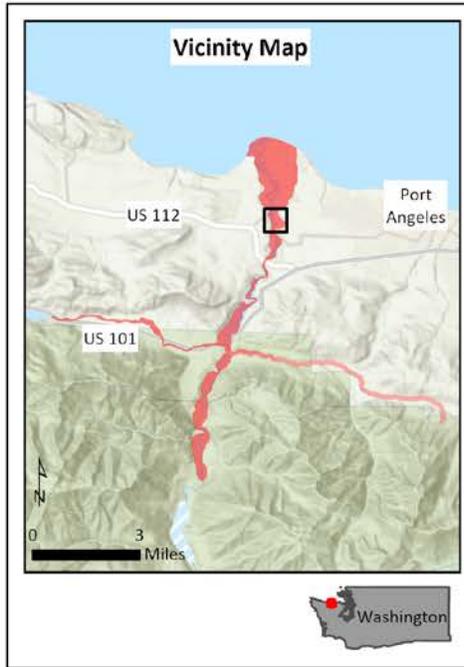
$$\text{CMZ} = \text{HMZ} + \text{AHZ} + \text{EHA} - \text{DMA}$$

A Framework for Delineating Channel Migration Zones (Rapp and Abbe, 2003)

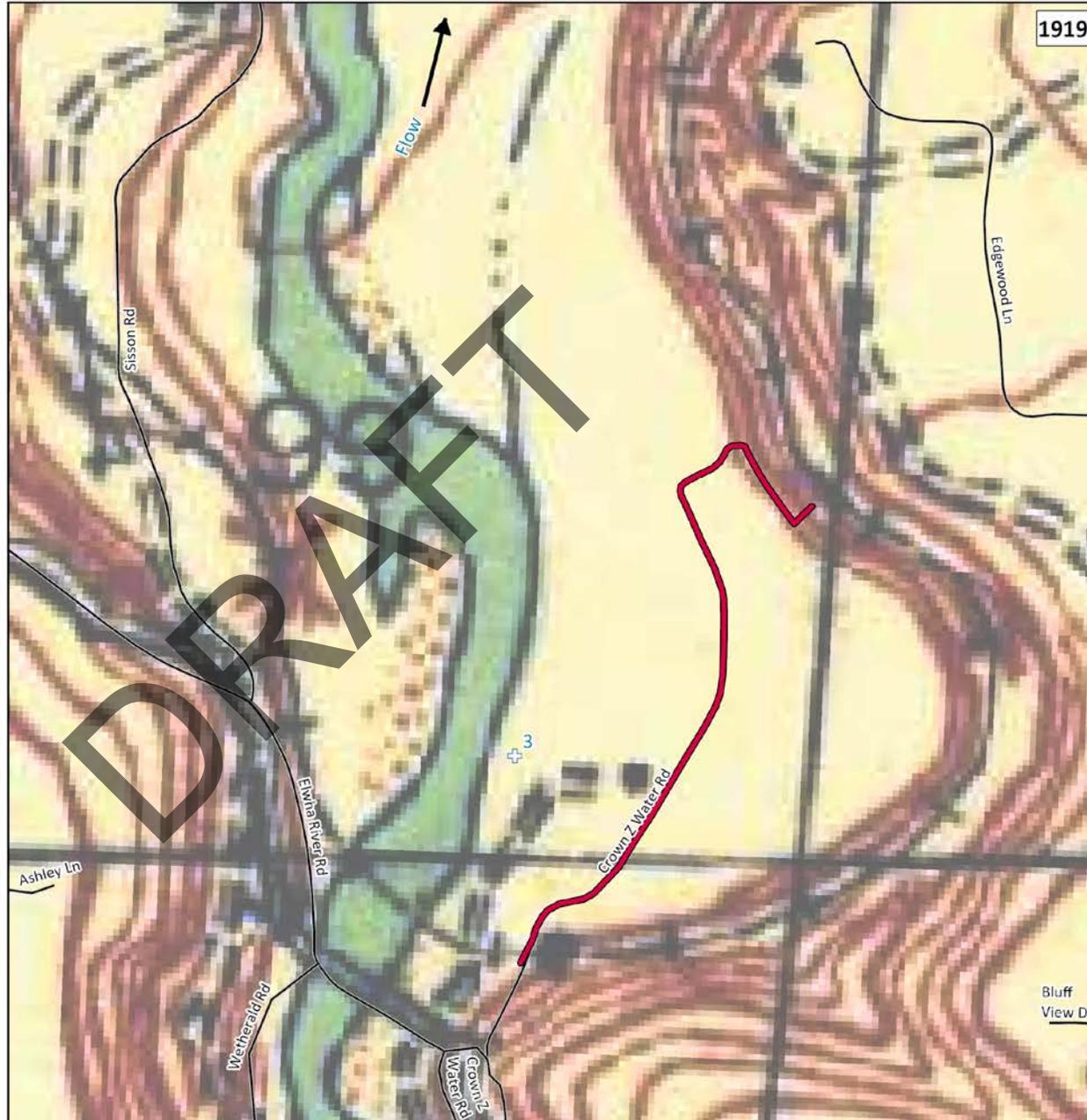
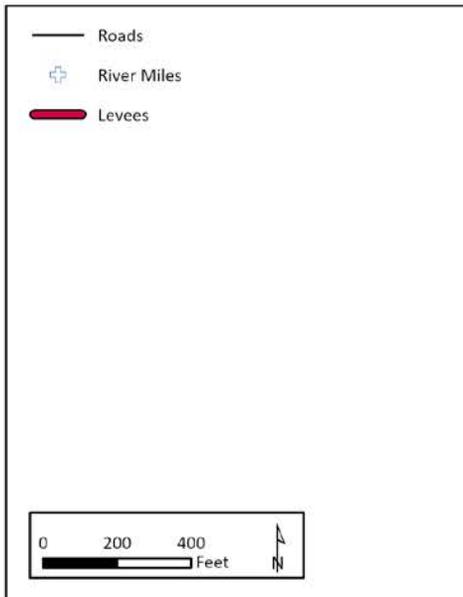
CMZ Mapping Example

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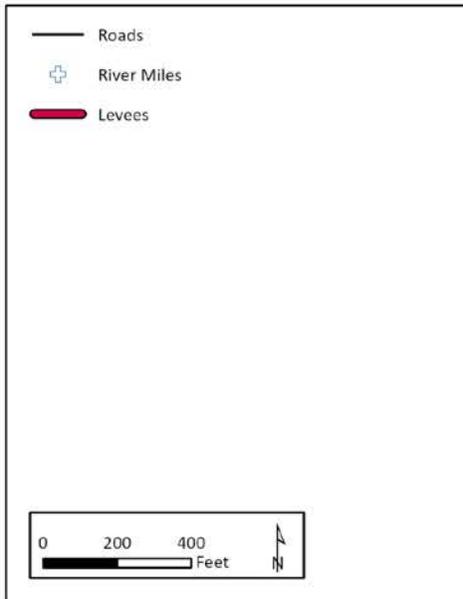
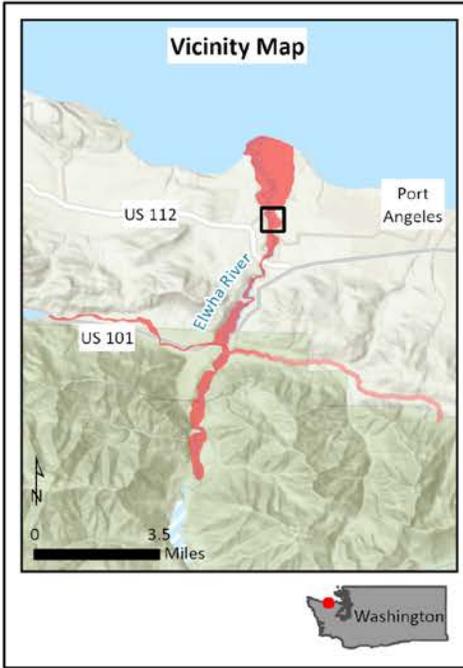




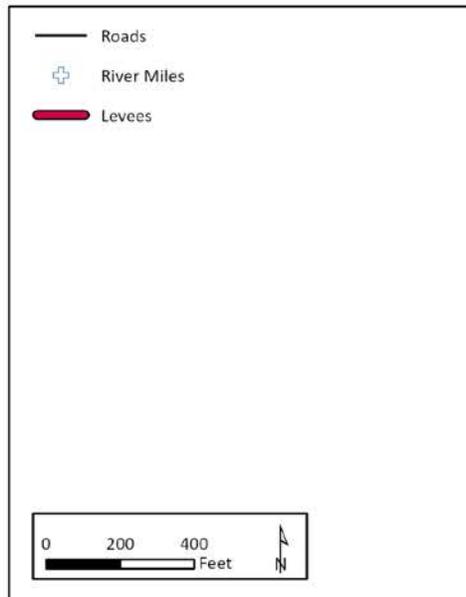
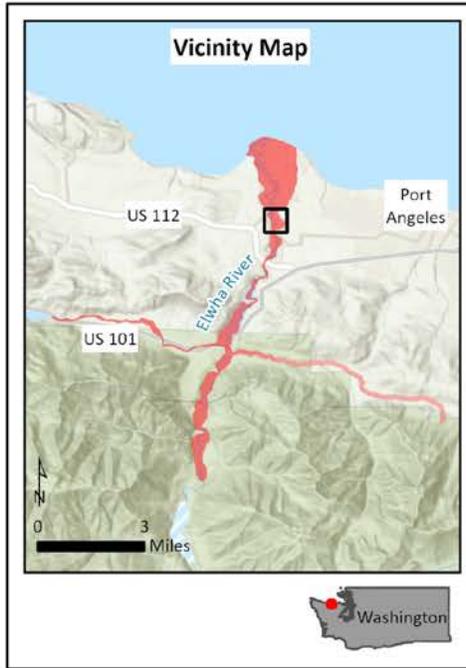
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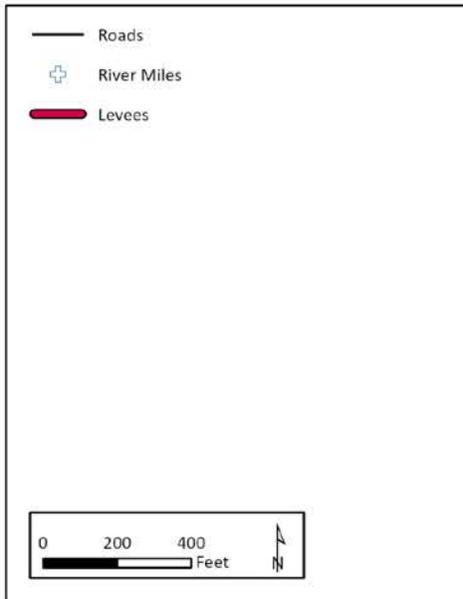


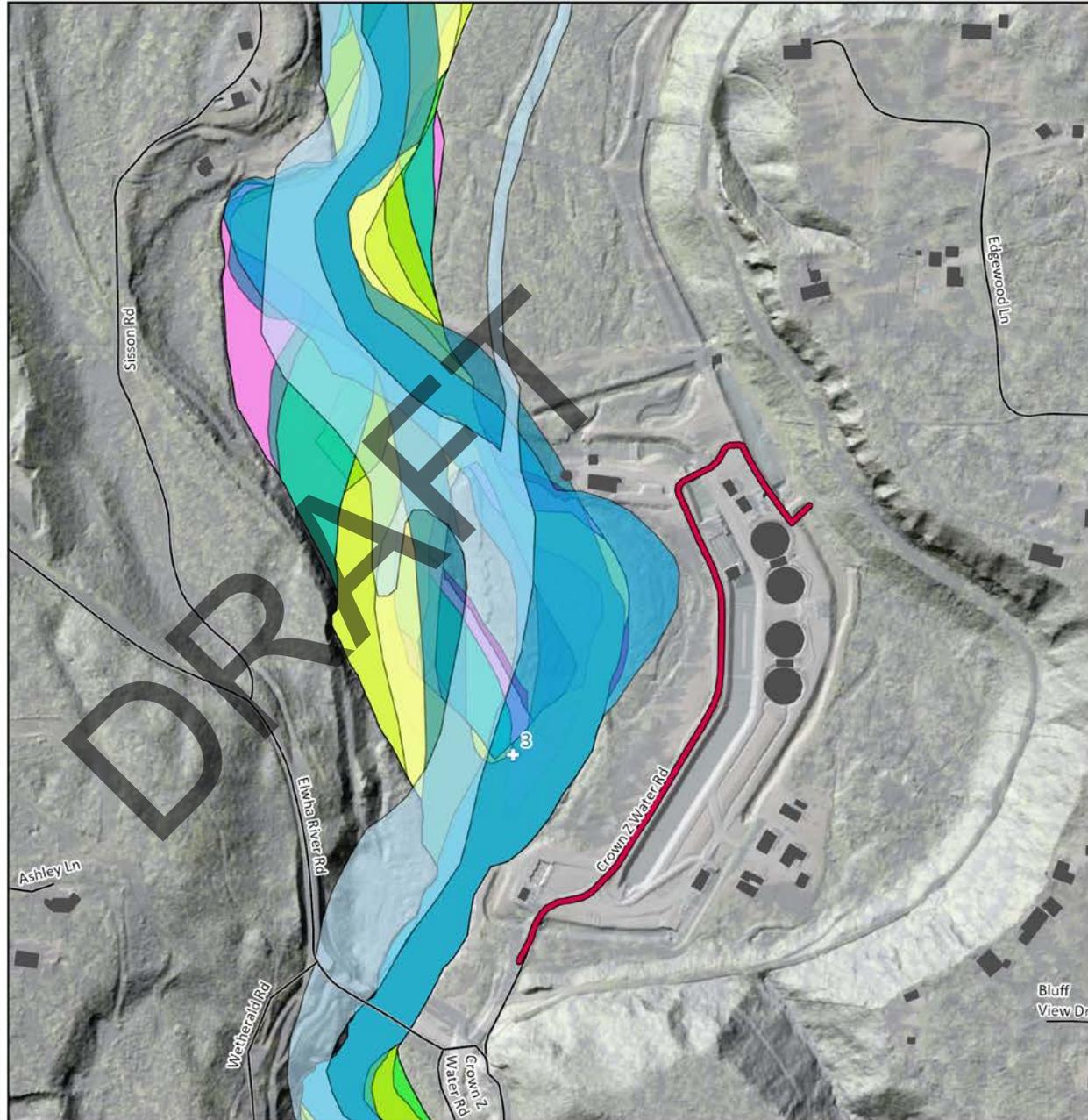
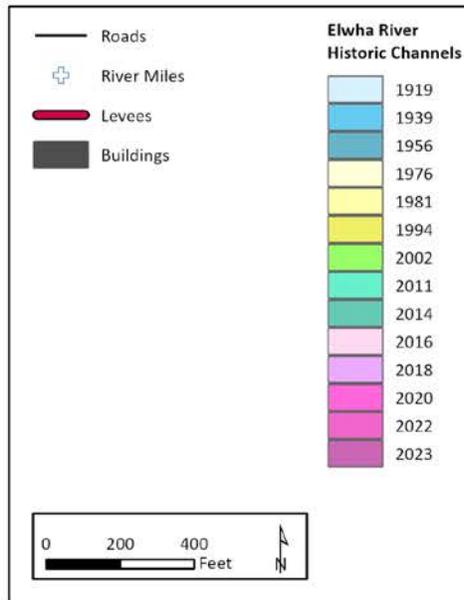
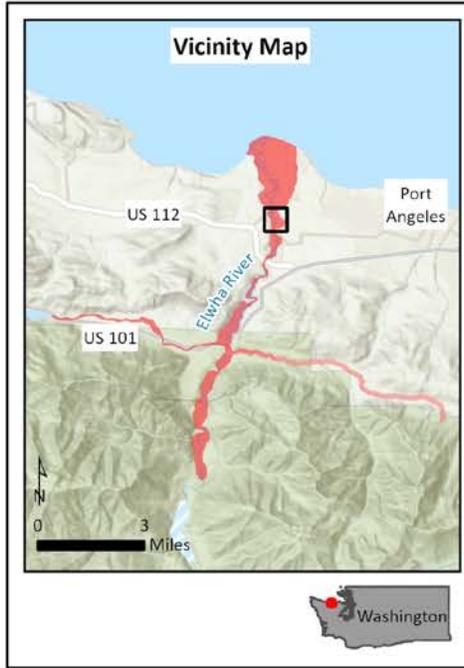
1939



1994



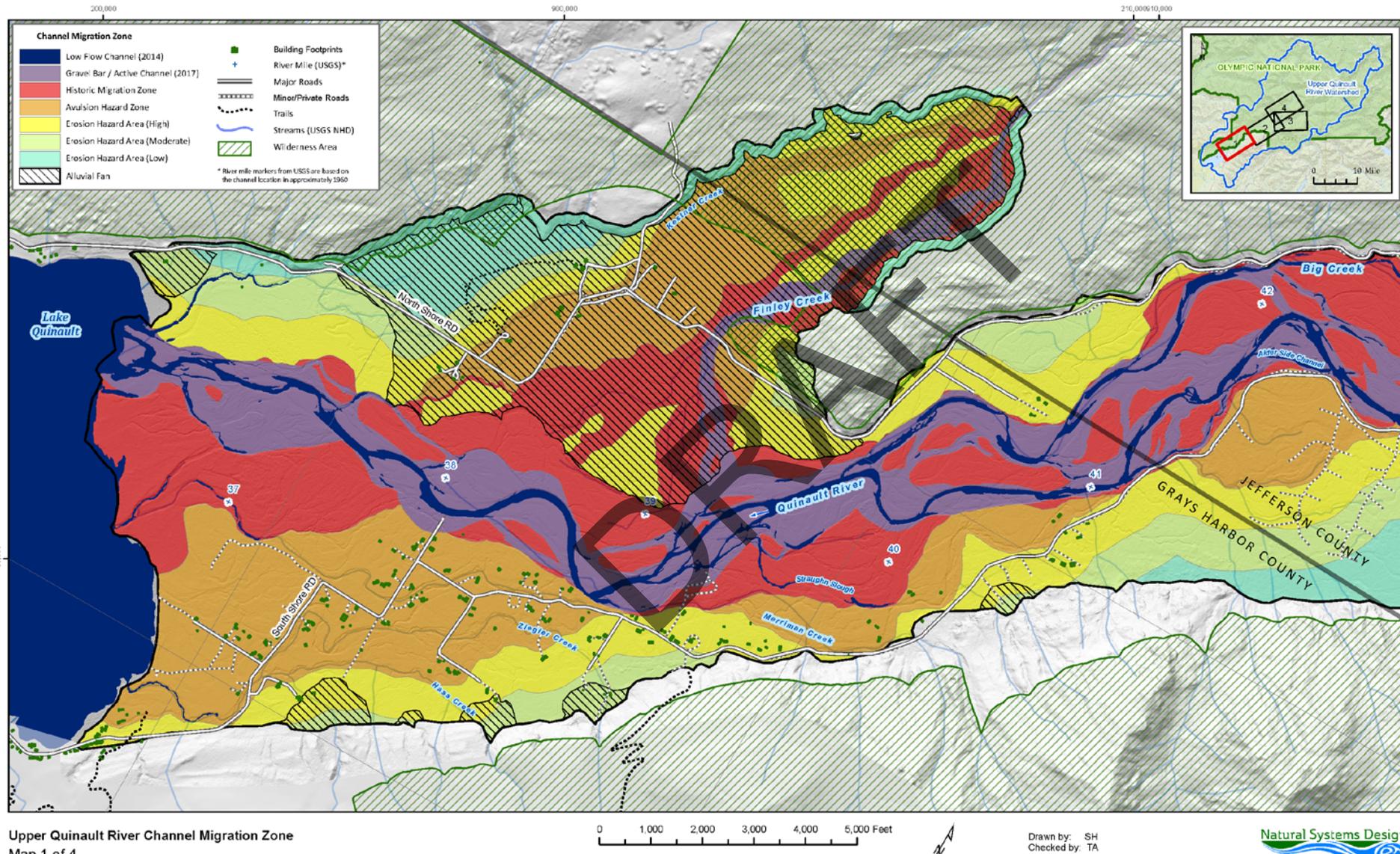




Additional CMZ Examples

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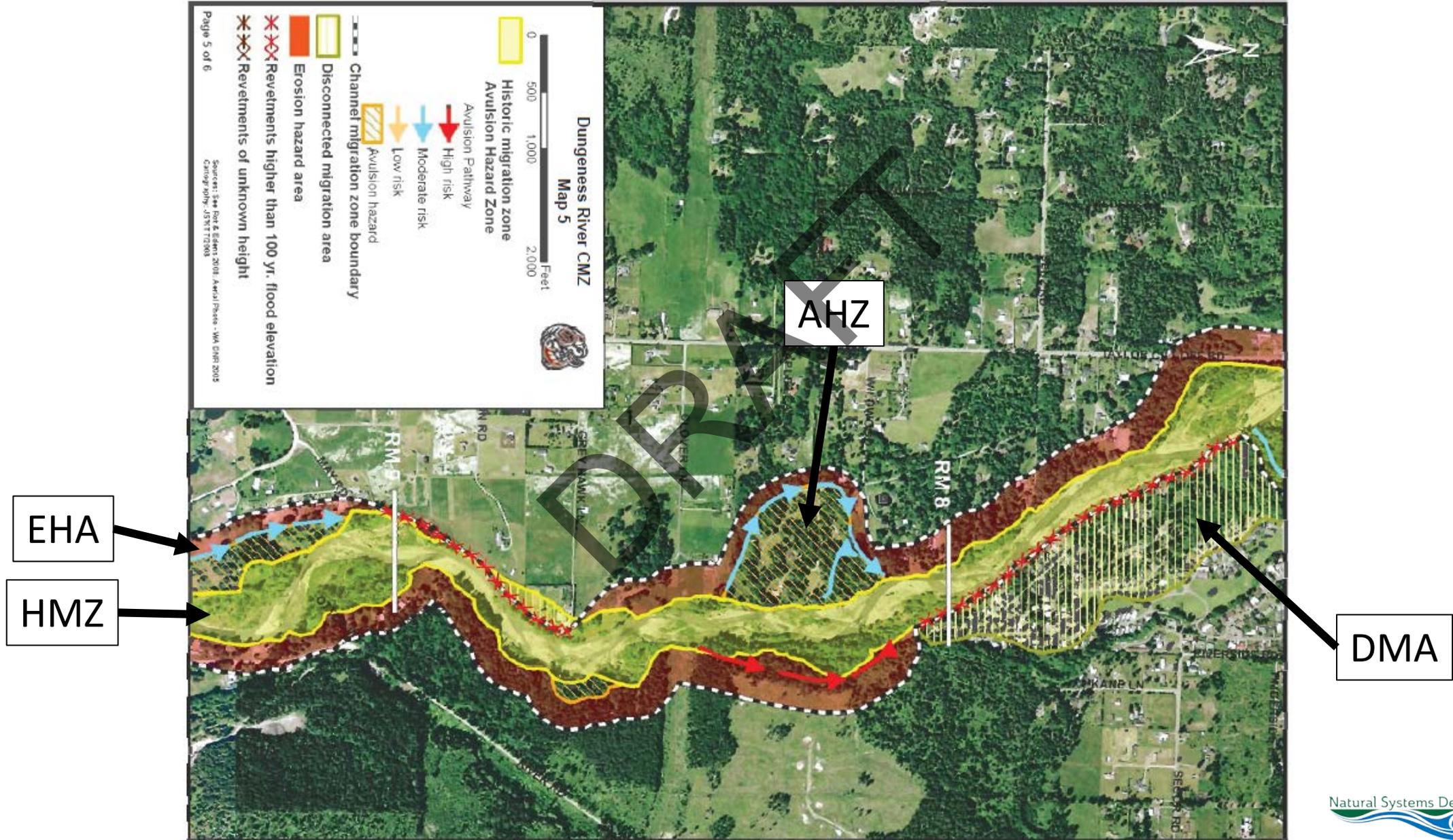
Example CMZ Mapping – Quinault River



Upper Quinault River Channel Migration Zone
Map 1 of 4



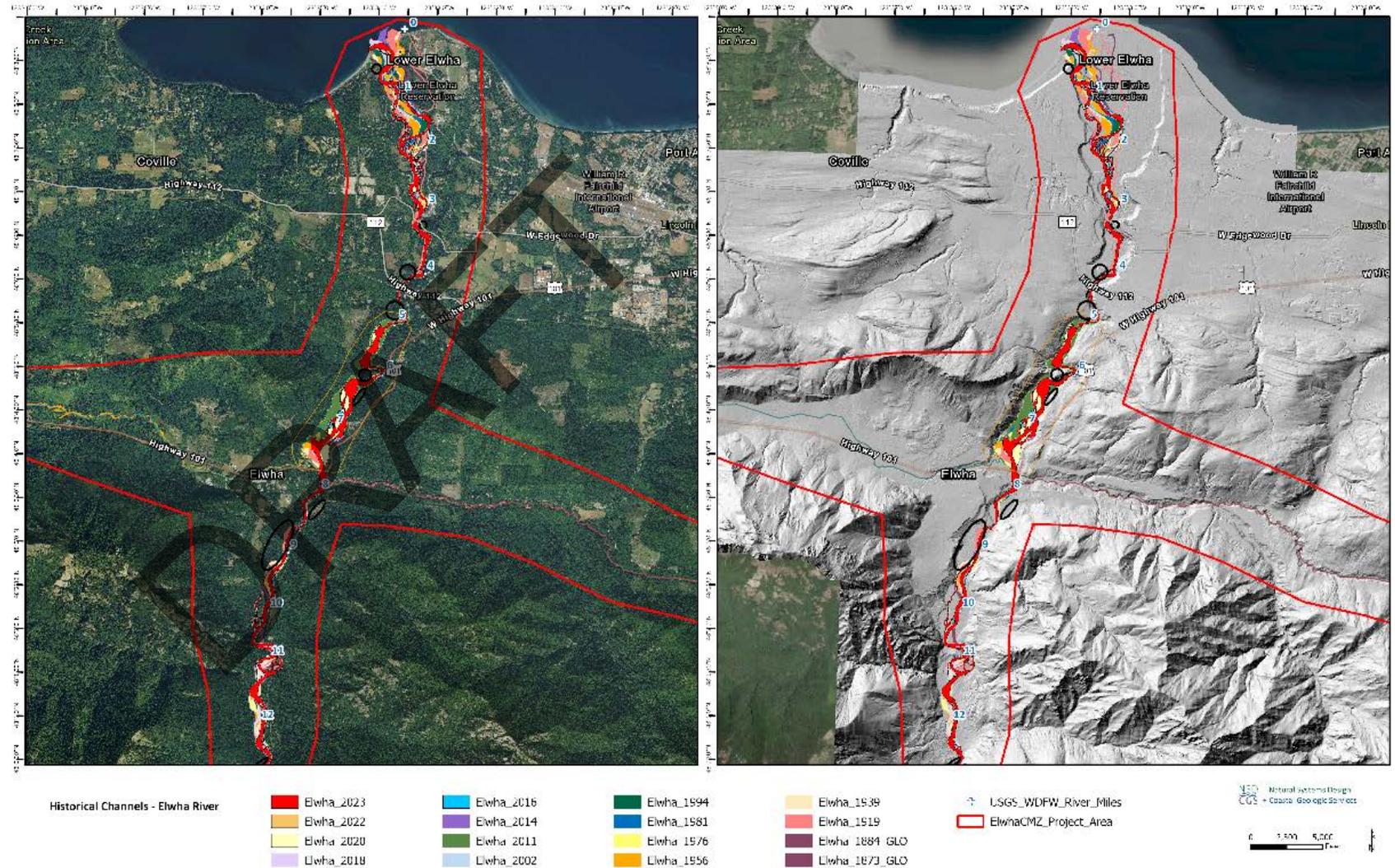
Example CMZ Mapping – Dungeness River



Questions?

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1. **Conduct draft CMZ mapping for Elwha R., Little R., Indian Cr.** (ongoing)
2. **Collect input from Community, Co-Managers, Stakeholders** (ongoing)
3. **Revise draft CMZ maps** (early 2025)
4. **Presentation of final CMZ maps** (late Spring 2025)



1. Interactive mapping session - Today
2. Online Questionnaire
3. Website link: <https://www.clallamcountywa.gov/1827/Elwha-River-Channel-Migration-Zone-Delin>

QR Code to take
Questionnaire



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