



Chewuch River Mile 17-20 2018-19 Post-Construction Monitoring Report

FEBRUARY 2020

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1. Introduction

This report is the first of three post-construction field-monitoring reports for the Chewuch River Mile 17-20 project. Field work was conducted on October 1, 2019 with the purpose of monitoring the safety, stability, and effectiveness of constructed fish habitat. The project is located on United States Forest Service land between river miles 17 and 20 and was constructed July 2018. The purpose of the project was to increase adult holding and juvenile rearing habitat during low and high flows.

Several log jams were designed and constructed within the reach to meet that purpose.

This report includes a summary of peak flow runoff that occurred during the 2018-19 water year, field observations, photos at each project site, and recommended actions that may be necessary.

Appendix A includes project location, site maps with notes and photo points used for monitoring.

2. Peak Flow Hydrology

The 2018-19 peak flow discharge recorded by the Chewuch River USGS gage 12448000 (Figure 1) was examined to estimate the degree of hydraulic force that was applied to the project. The gage is located approximately 18 miles downstream of the project reach near Winthrop, WA. Records indicate discharge at the gage peaked at 2,630 cubic feet per second (cfs) on May 17, 2019. For reference, a 2-year return peak discharge at the gage is 3,240 cfs and a 100-year return peak discharge is 9,390 cfs.

4. Site Monitoring

4.1 SITE A

The site is stable. The structure is very similar to post construction conditions. Minor pool scour has occurred along the jam edge. Revegetation recovery along the access path to the site is very good.

Recommendations: None. Continue to monitor the site as needed.



Figure 2. Site A. Photo looking east at the jam from existing right bank gravel bar.



Figure 3. Site A. Looking upstream.



Figure 4. Site A. Looking downstream.



Figure 5. Site A. Access path revegetation.

4.2 SITE L

Site L is stable and similar to post construction conditions. Pool depth is 3-4 feet. Very good cover area and pool volume exists within the structure. Revegetation along access path is very good.

Recommendations: None. Continue to monitor the site as needed.



Figure 6. Site L. Looking downstream.



Figure 7. Site L. Looking at the jam face.



Figure 8. Site L. Looking upstream.



Figure 9. Site L. Access path revegetation.

4.3 SITE M

Site M is stable and similar to post construction conditions. Internal pool depth beneath the jam has been maintained. A small sand bar has formed at the downstream end of the jam along the right bank. Pool depth is between 3-4 feet. Revegetation is in good condition.

Recommendations: None. Continue to monitor the site as needed.



Figure 10. Site M. Looking upstream.



Figure 11. Site M. Face view.



Figure 12. Site M. Looking downstream.



Figure 13. Site M. Back of the jam and revegetation within excavated area.

4.4 SITE N

Site N is stable. The structure is similar to post construction conditions. There has been good pool maintenance with additional scour along the outside edge of the jam. Internal pool volume is 3-4 feet. Downstream of the structure, pea gravel has accumulated within the cobble bed substrate. Revegetation throughout the access path to the site is very good.

Recommendations: None. Continue to monitor the site as needed.



Figure 14. Site N. Looking downstream.



Figure 15. Site N. Face view.



Figure 16. Site N. Looking upstream.



Figure 17. Site N. Revegetation along access path to the site.

4.5 SITE O

Site O is stable. Pool depth is 2-feet along the jam face. A 10 X 20-foot gravel patch has deposited downstream of the jam and one recent salmon redd was observed within it.

Recommendations: None. Continue to monitor the site as needed.



Figure 18. Site O. Looking upstream. Blue arrow indicates salmon red in gravel deposited behind the new structure.



Figure 19. Site O. Face view.



Figure 20. Site O. Looking downstream.



Figure 21. Site O. Redd located in new gravel at the downstream end of the structure.



Figure 22. Site O. Revegetation conditions along access path to the site.

4.6 SITE P

Site P is stable and similar to post construction conditions. The pool at the jam face is 2-3 feet deep. Revegetation throughout access to the site is in good condition.

Recommendations: None. Continue to monitor the site as needed.



Figure 23. Site P. Looking upstream.



Figure 24. Site P. Face view.



Figure 25. Site P. Looking downstream.



Figure 26. Site P. Revegetation within excavated area and access path.

4.7 SITE Q

Site Q is stable. The wood has not moved and provides similar cover habitat as it did last year.

Recommendations: None. Continue to monitor the site as needed.



Figure 27. Site Q Looking downstream.



Figure 28. Site Q. Face view.



Figure 29. Site Q. Looking upstream.

4.8 SITE S

Site S is stable. Site S is unchanged from original construction. No native LW accumulation has occurred at the jam face. The wood structure is functioning as designed. The access path to the site is recovering.

Recommendations: None. Continue to monitor the site as needed.



Figure 30. Site S. Looking upstream.



Figure 31. Site S. Looking downstream.



Figure 32. Site S. Looking from the west chewuch road.

4.9 SITE T

Site T is stable. The site is similar to post construction conditions. A small volume of native slash has accumulated at the jam face. Pool depth is approximately 3 feet deep. Revegetation is in good condition given the dry site conditions.

Recommendations: None. Continue to monitor the site as needed.



Figure 33. Site T. Face view from the old bridge footing.



Figure 34. Site T. Looking downstream.



Figure 35. Site T. View from right bank looking downstream.

4.10 SITE U

Site U is stable. Pool depths under the jam are greater than 4-feet. Revegetation is very good. Cedar tree plantings are showing stress (dry site). The rest of the revegetation has a near 100% survival.

Recommendations: None. Continue to monitor the site as needed.



Figure 36. Site U. Looking upstream.



Figure 37. Site U. Face view.

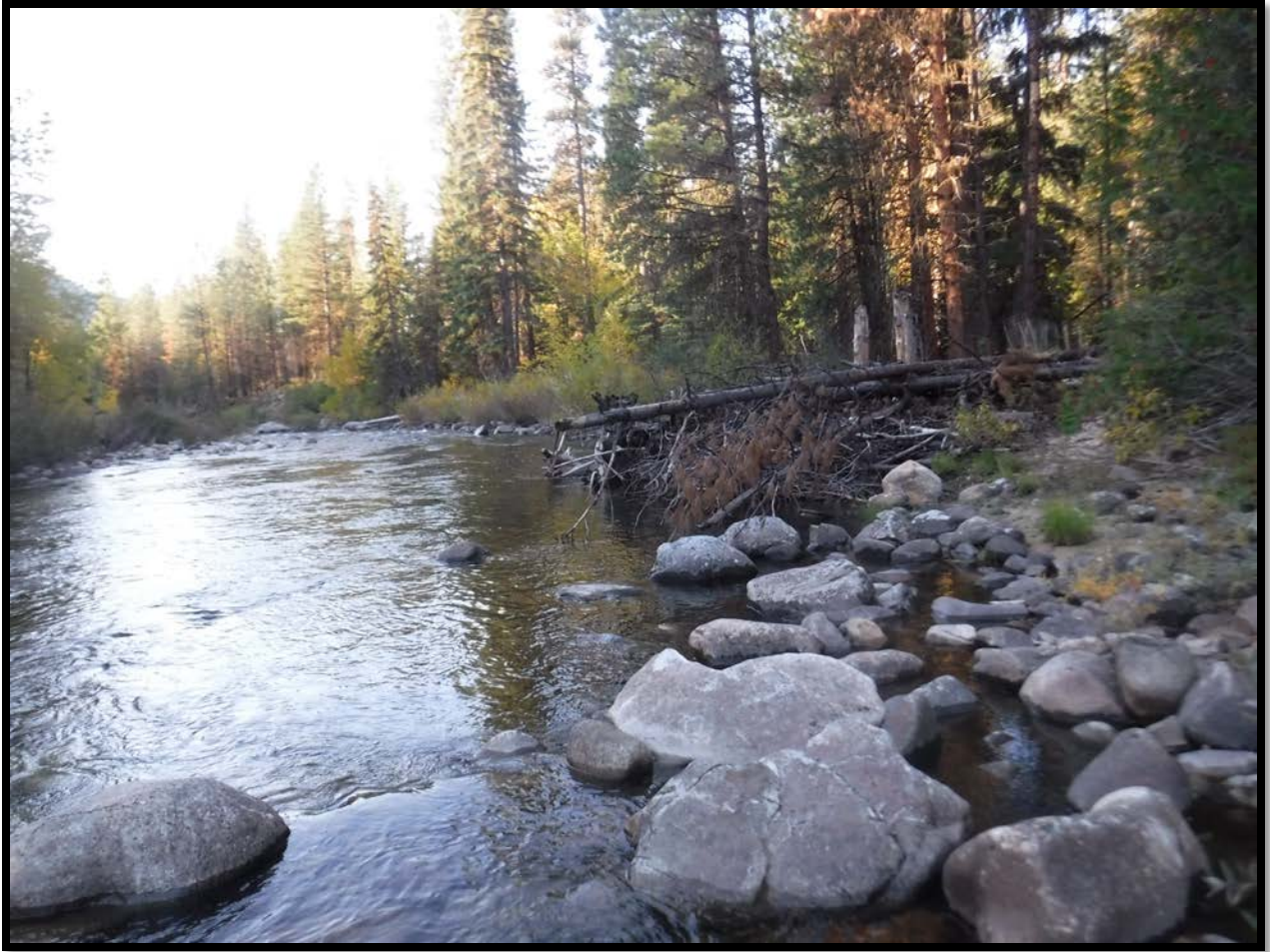


Figure 38. Site U. Looking downstream.



Figure 39. Site U. Revegetation along access path to the site.

Appendix A - Monitoring Maps

10/11/19 8AM

CHEWUCH RIVER MILE 17-20

FISH HABITAT ENHANCEMENT PROJECT

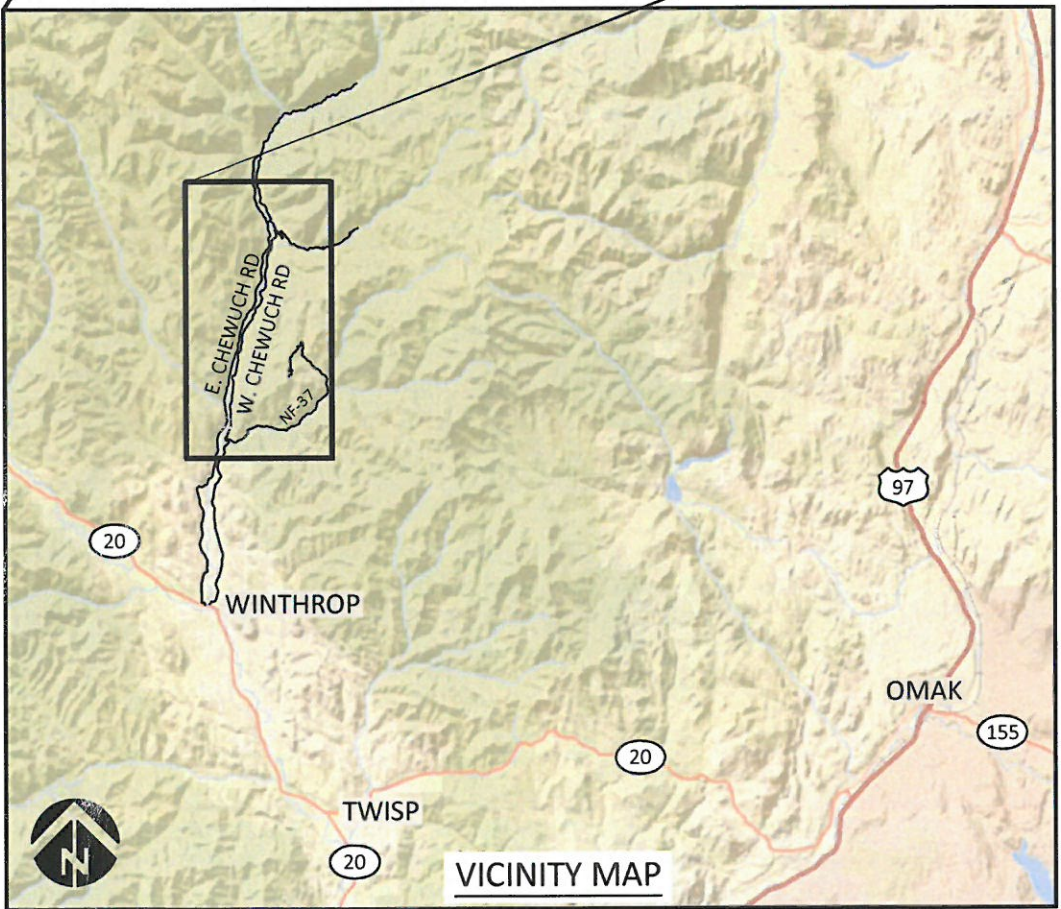
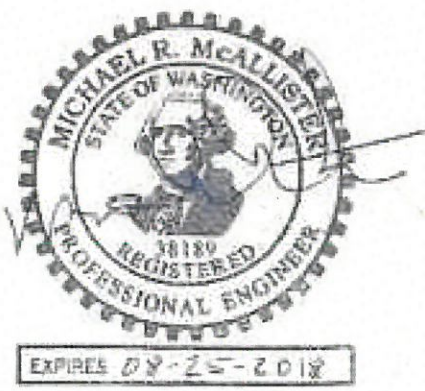
AsBuilt



YAKAMA NATION FISHERIES
2 JOHNSON LANE
WINTHROP WA, 98862

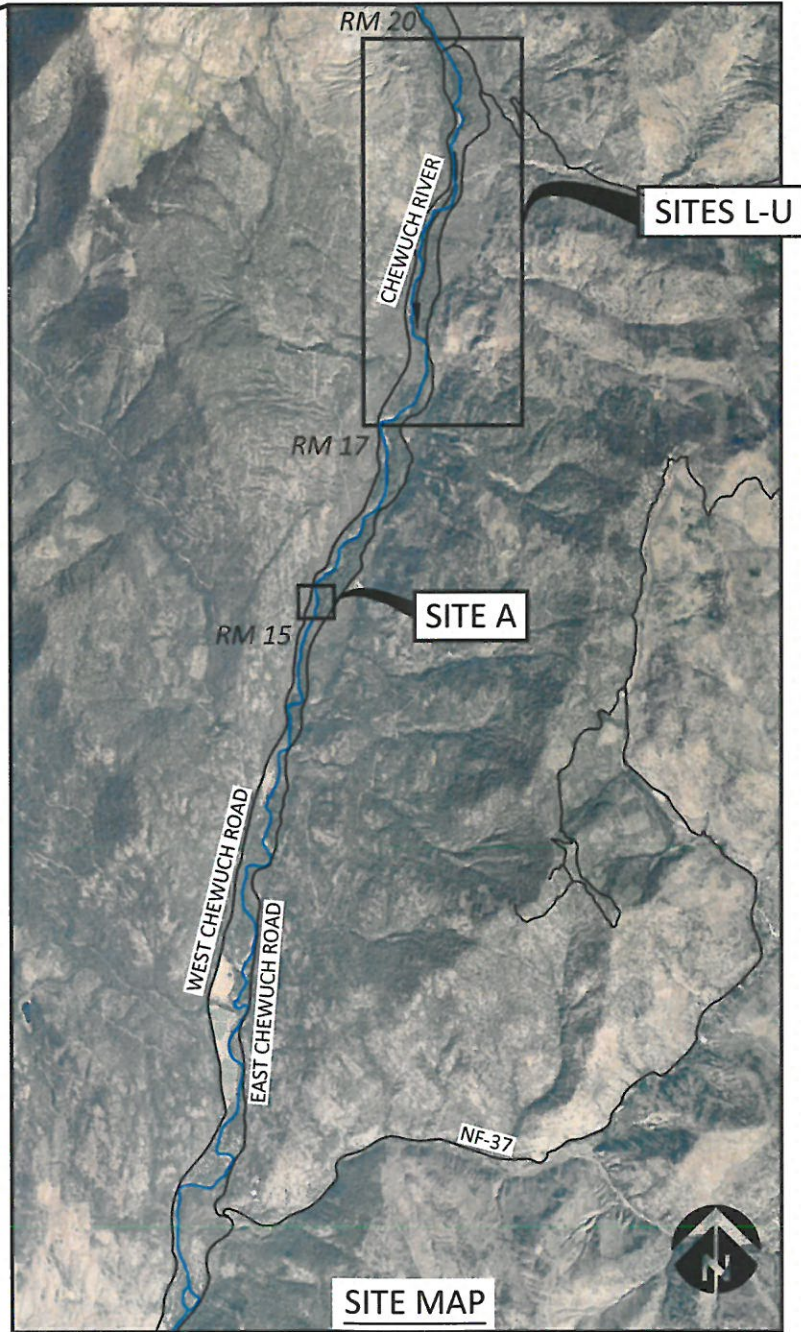
SHEET LIST

- 1 COVER SHEET, VICINITY MAPS, SHEET LIST
- 2 PROJECT SITES OVERVIEW
- 3 SITE A
- 4 SITE L
- 5 SITE M
- 6 SITE N
- 7 SITE O
- 8 SITE P
- 9 SITE Q
- 10 SITE S
- 11 SITE T
- 12 SITE U



SITE LOCATION:
LATITUDE: 48°39'27"
LONGITUDE: -120°08'30"
OKANOGAN COUNTY, WASHINGTON

WATERBODY: CHEWUCH RIVER
TRIBUTARY OF: METHOW RIVER



WINTHROP, 11 MILES

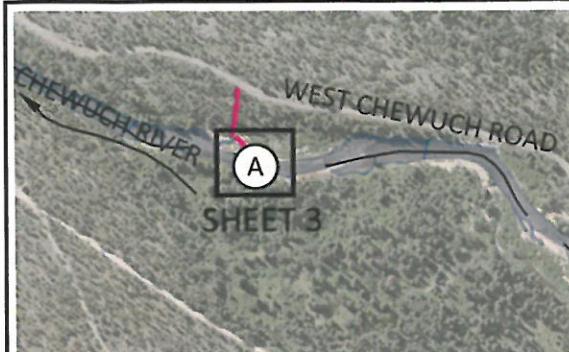
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COVER SHEET, VICINITY MAPS,
SHEET LIST



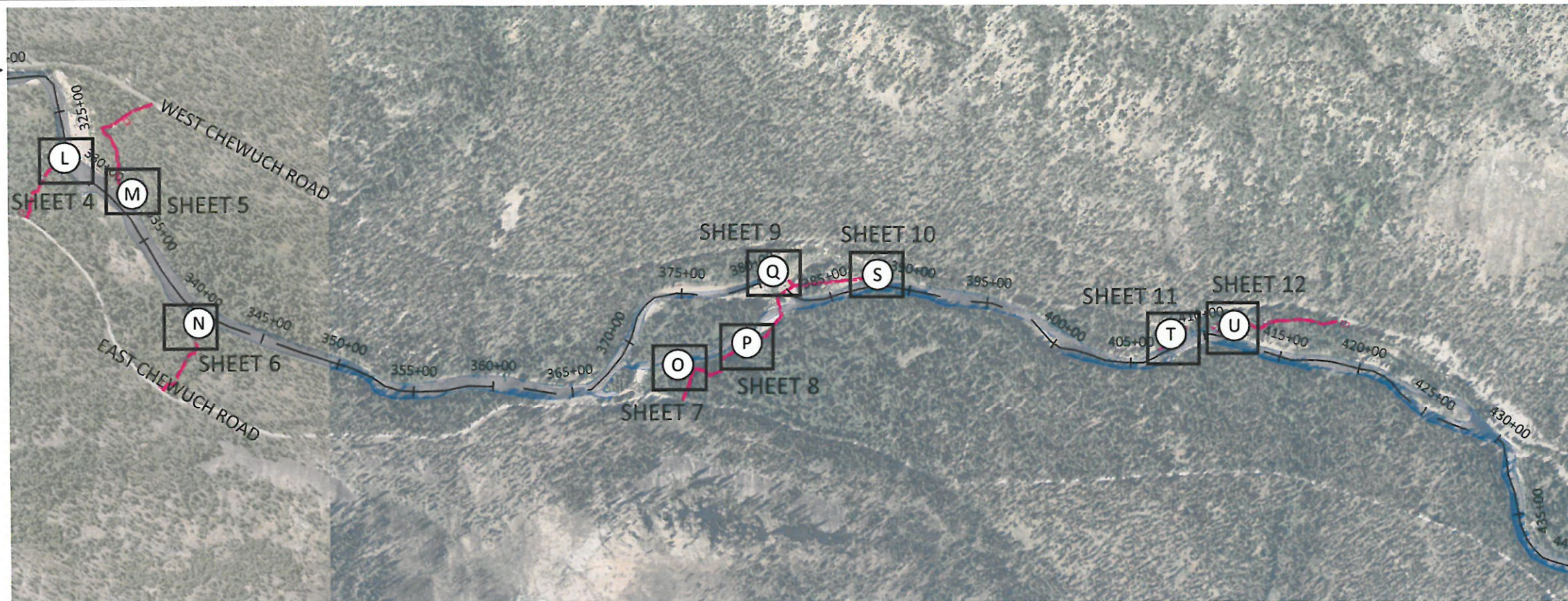
1.5 MILES

LEGEND

245+00 MAIN CHANNEL ALIGNMENT
TEMPORARY ACCESS



0 800 1600
SCALE IN FEET



SITE OVERVIEW

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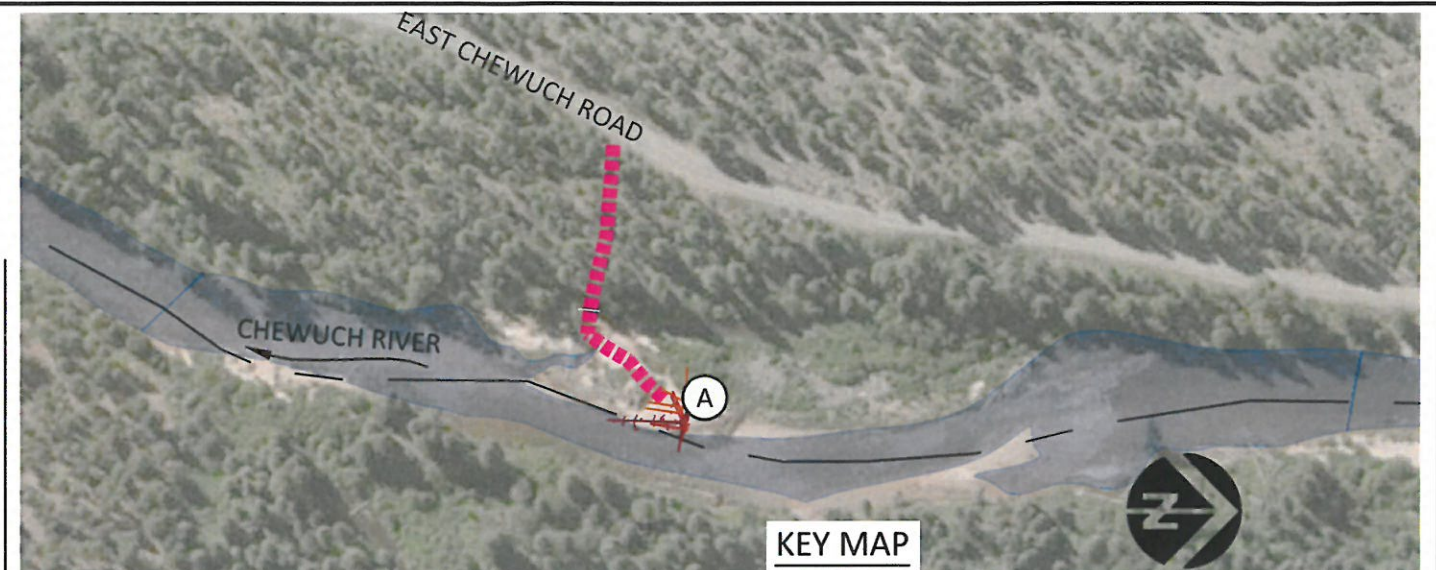
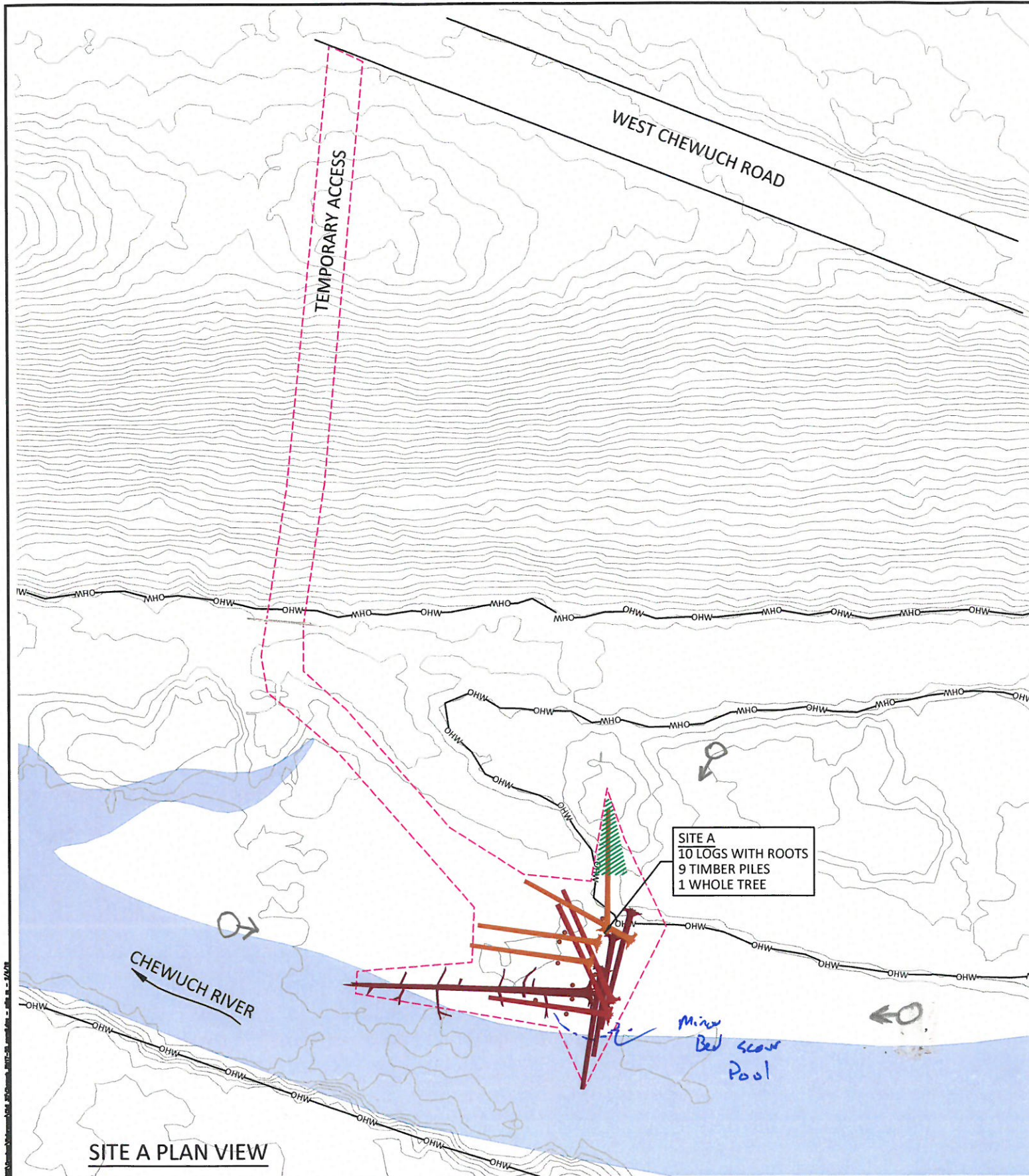
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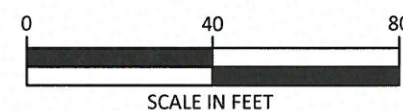
PROJECT SITES OVERVIEW

SHEET
2 OF 12



LEGEND

- ORDINARY HIGH WATER
- TYPICAL LOW WATER LINE
- LARGE WOODY MATERIAL



- site is stable
- Revegetation Recovery Excellent ~100%
- Very similar to construction - no additional Native Cnr likely due to upstream apron.
- minor bed scour on join edge.

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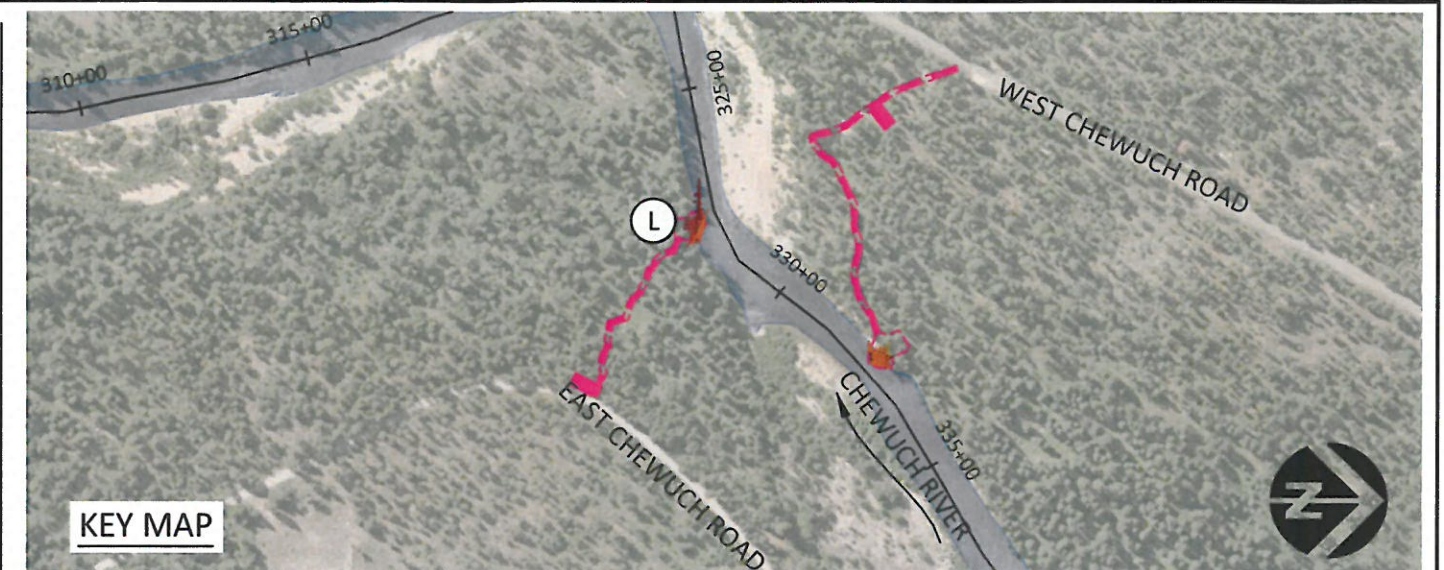
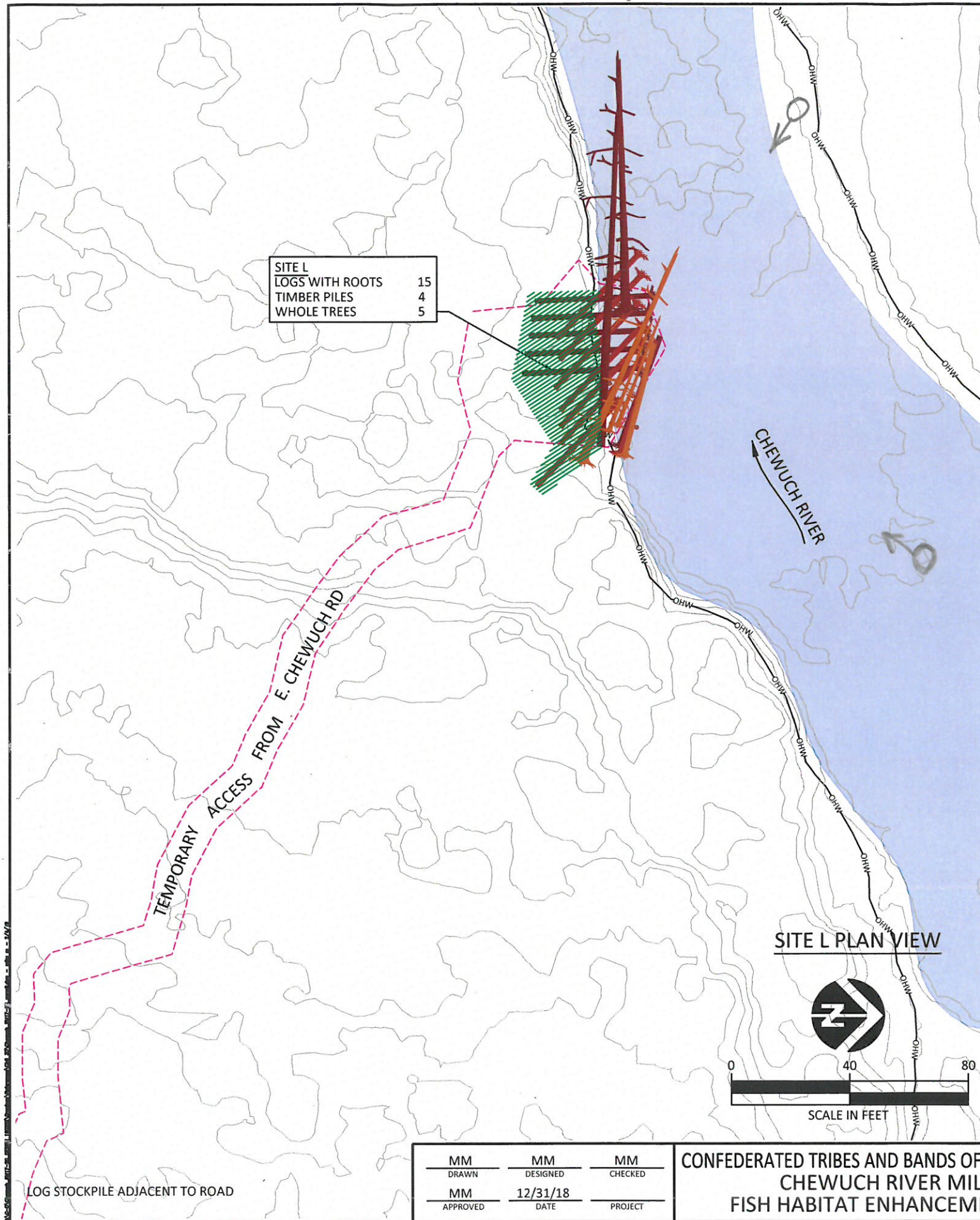


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SITE A

SHEET

3 OF 12



- Site is stable
- Very similar to post constructed condition
- Pool depth 3-4' - ~~10~~
- Very good vegetation conditions
- it - Great cover area/volume.

LEGEND

- OHW — ORDINARY HIGH WATER
- TYPICAL LOW WATER
- - - LIMITS OF DISTURBANCE
- LARGE WOODY MATERIAL
- LWD BURIAL

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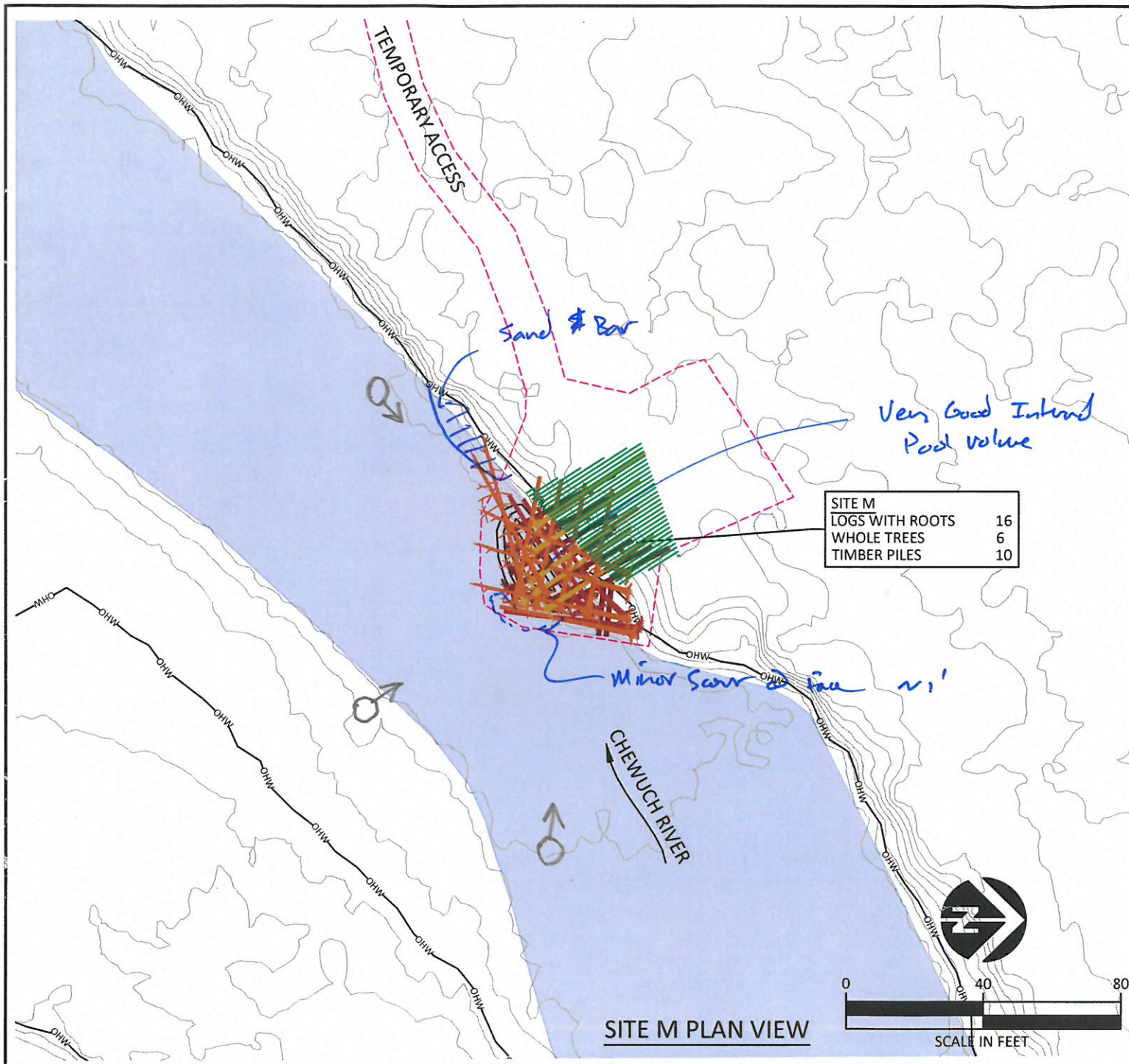


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SITE L

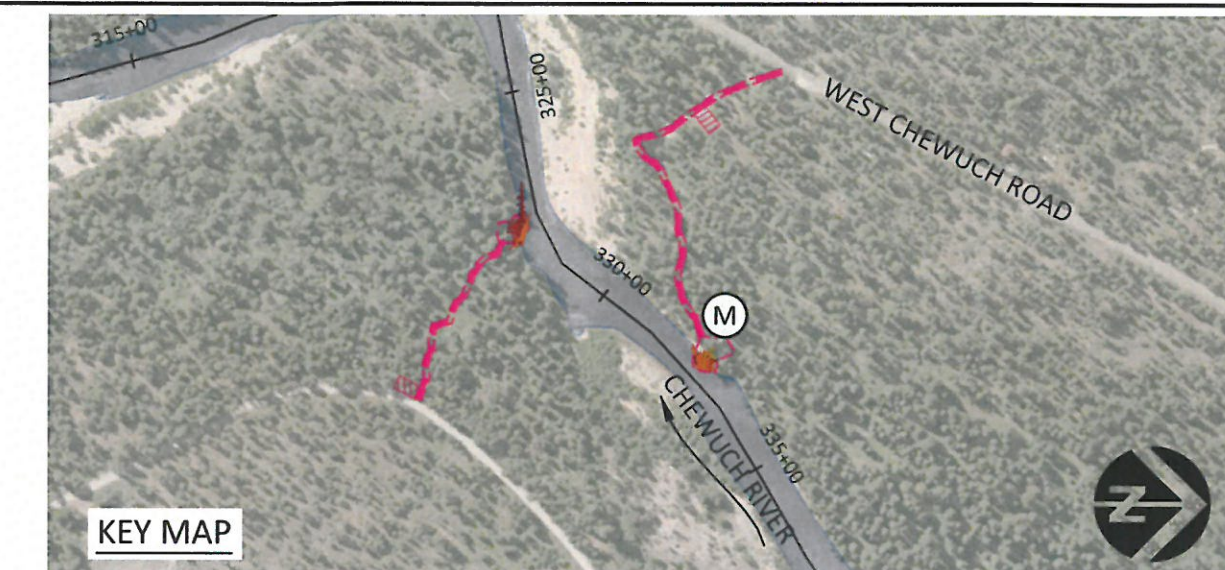
SHEET

4 OF 12



LEGEND

	TYPICAL LOW WATER		LARGE WOODY MATERIAL
	ORDINARY HIGH WATER		LWD BURIAL
	LIMITS OF DISTURBANCE		



- Site is stable
- very similar to post construct conditions
- Inland pool depth has been maintained
a small sand bar has formed at the D/S end
along the right bank.
- Regeneration is very good (80-90%)

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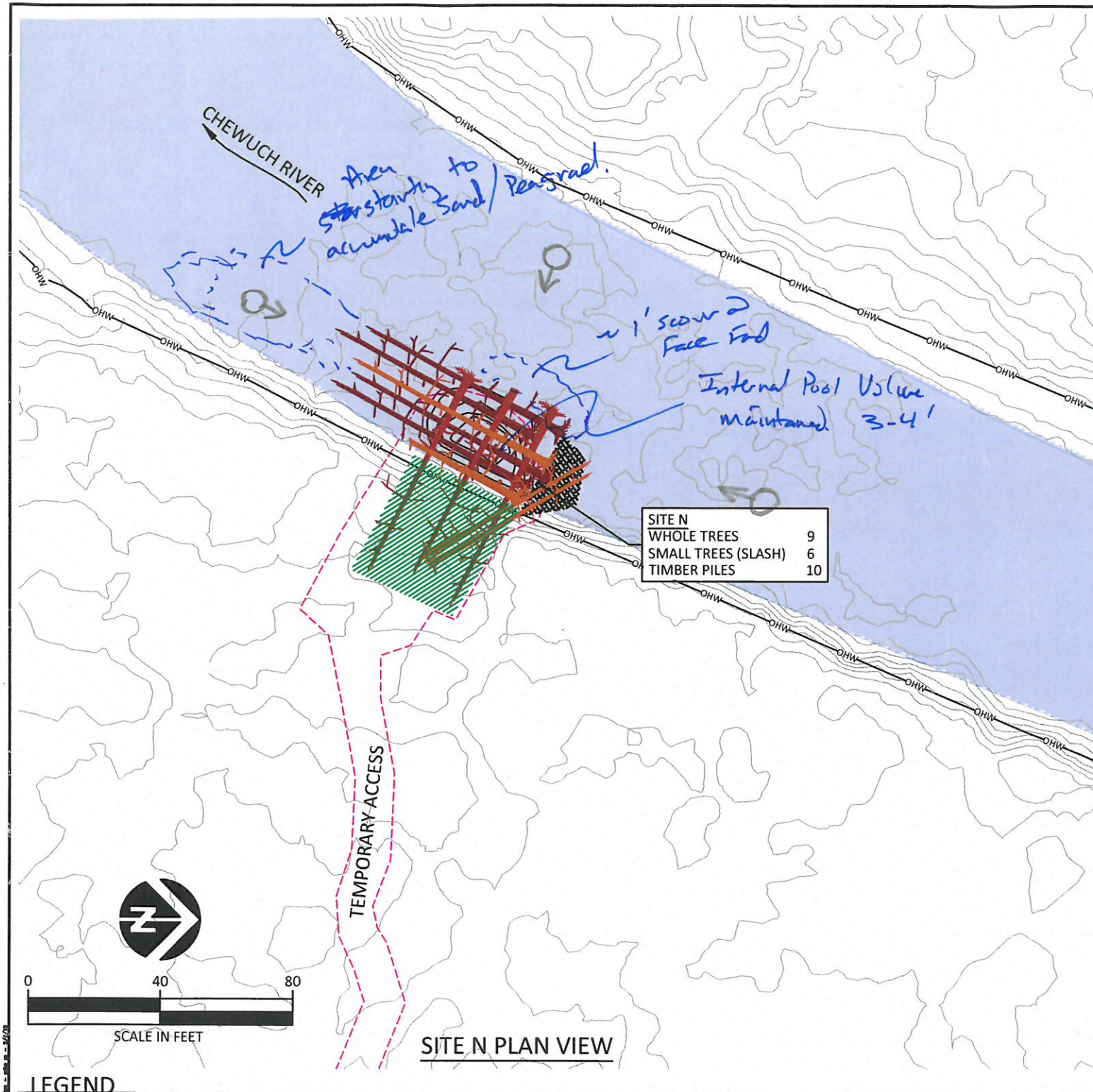
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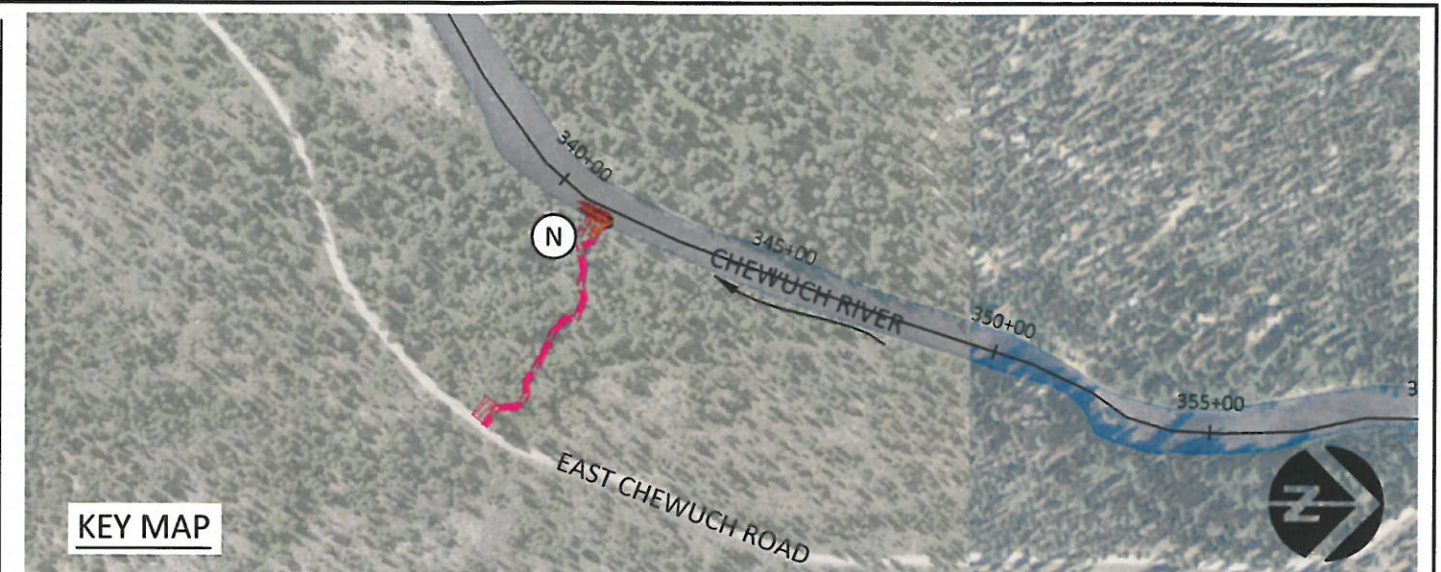
SITE M

SHEET
5 OF 12



LEGEND

	TYPICAL LOW WATER		LARGE WOODY MATERIAL
	ORDINARY HIGH WATER		LWD BURIAL
	LIMITS OF DISTURBANCE		



- Site is stable
- Very similar to post constructed condition
- No Notice wood accumulation at face
- Minor scour along outside edge and good pool volume maintenance.
- Regeneration is good throughout. (80-90%)

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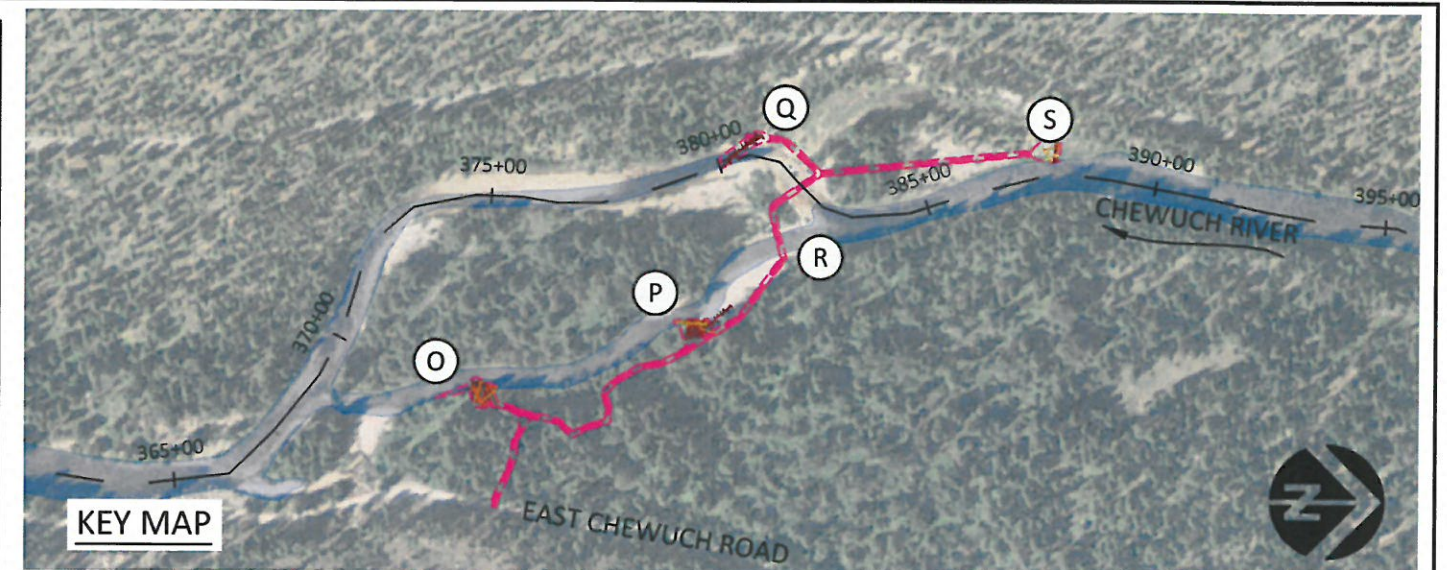
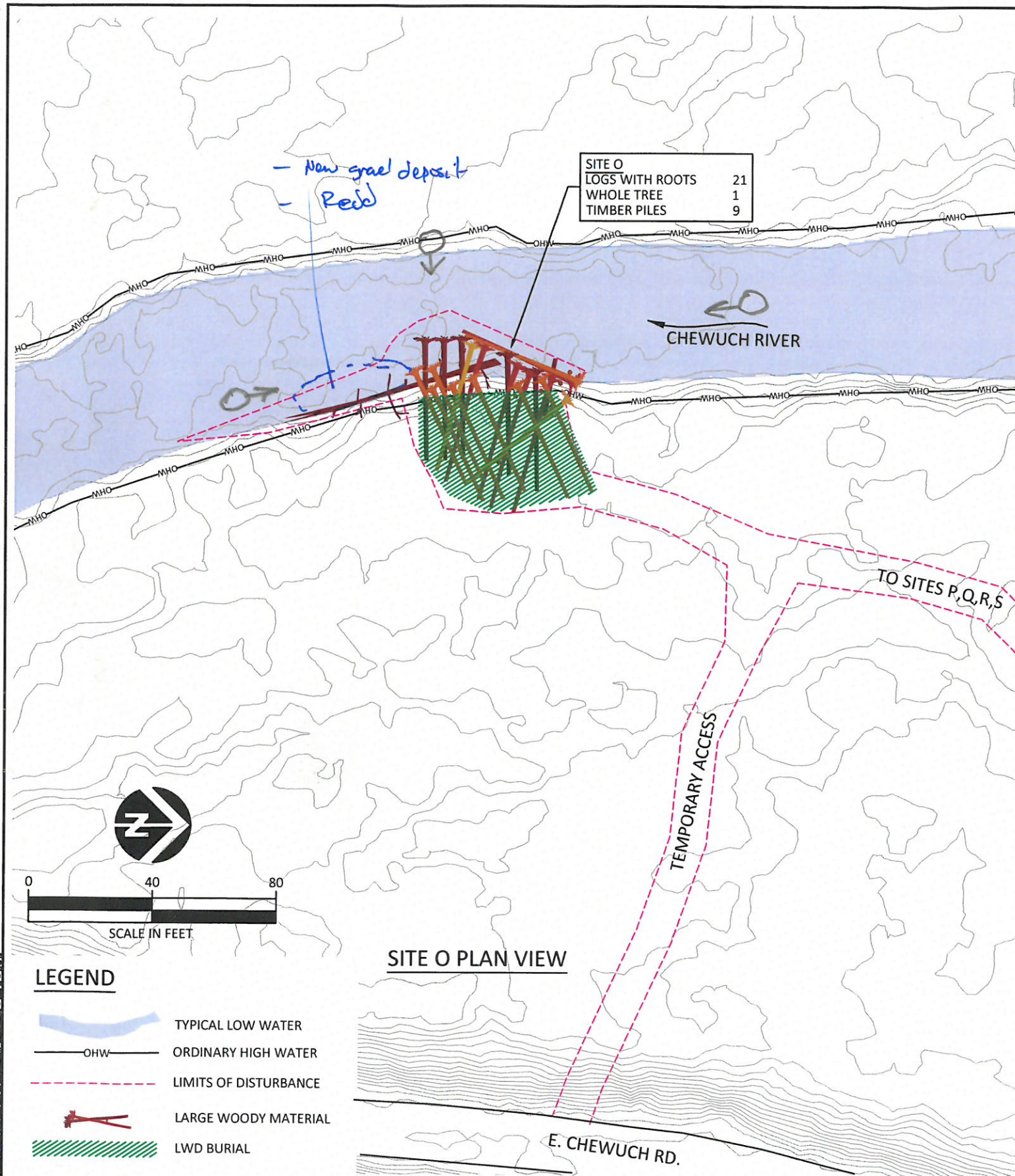


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SITE N

SHEET

6 OF 12



- Site is stable
- Very good revegetation ~ 100%
- conditions are similar to post construction.
- Pool Depth ~ 2' @ face
- A E 10X20' patch of spawning gravel deposited DS of main jam w/ recent Redd.

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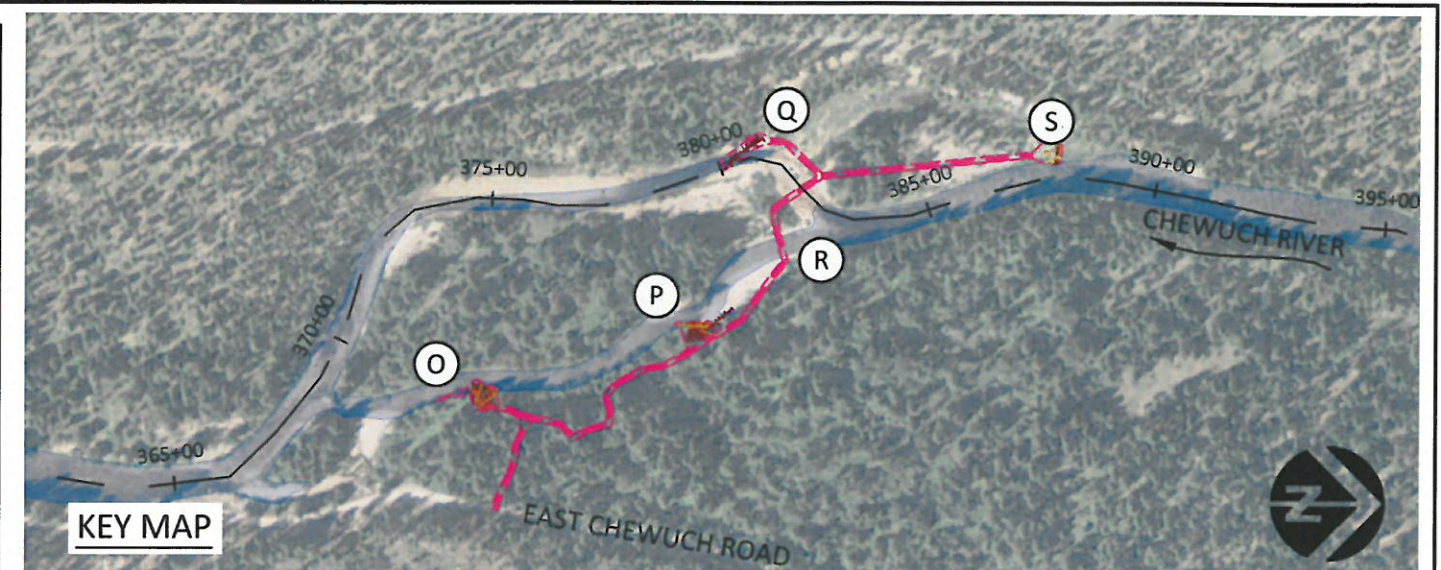
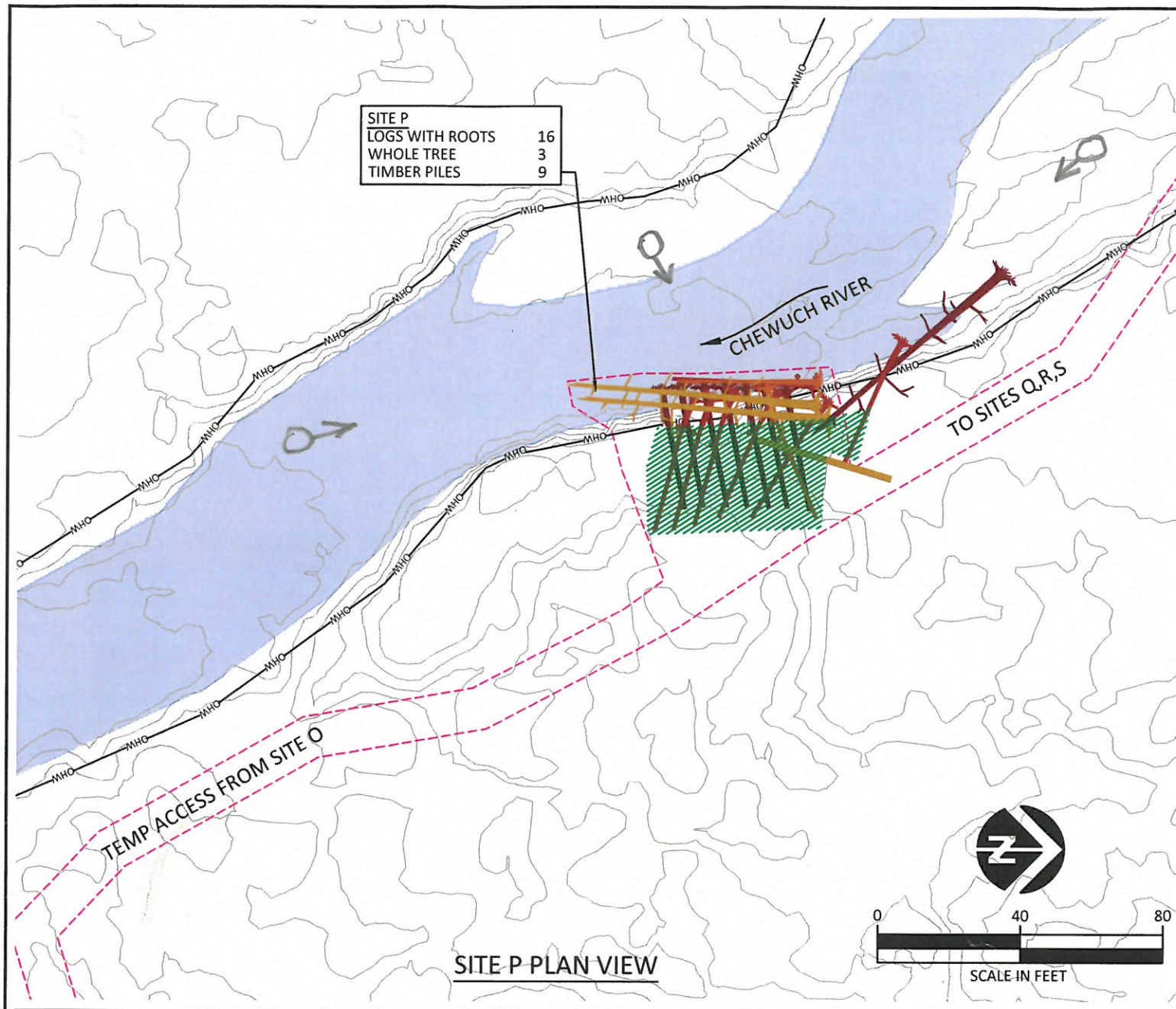


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SITE O

SHEET

7 OF 12



- Site is stable
- Similar to Post Const. condition.
- Revegetation thru-stake is ~ 100%
- Pool depth 2-3'

LEGEND

- TYPICAL LOW WATER
- ORDINARY HIGH WATER
- LIMITS OF DISTURBANCE
- LARGE WOODY MATERIAL
- LWD BURIAL

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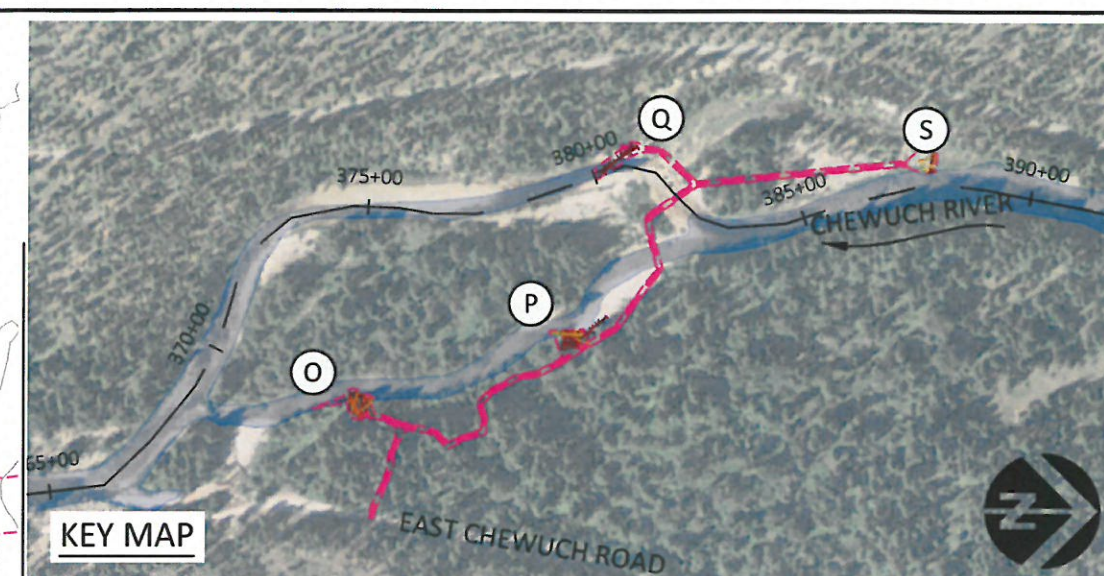
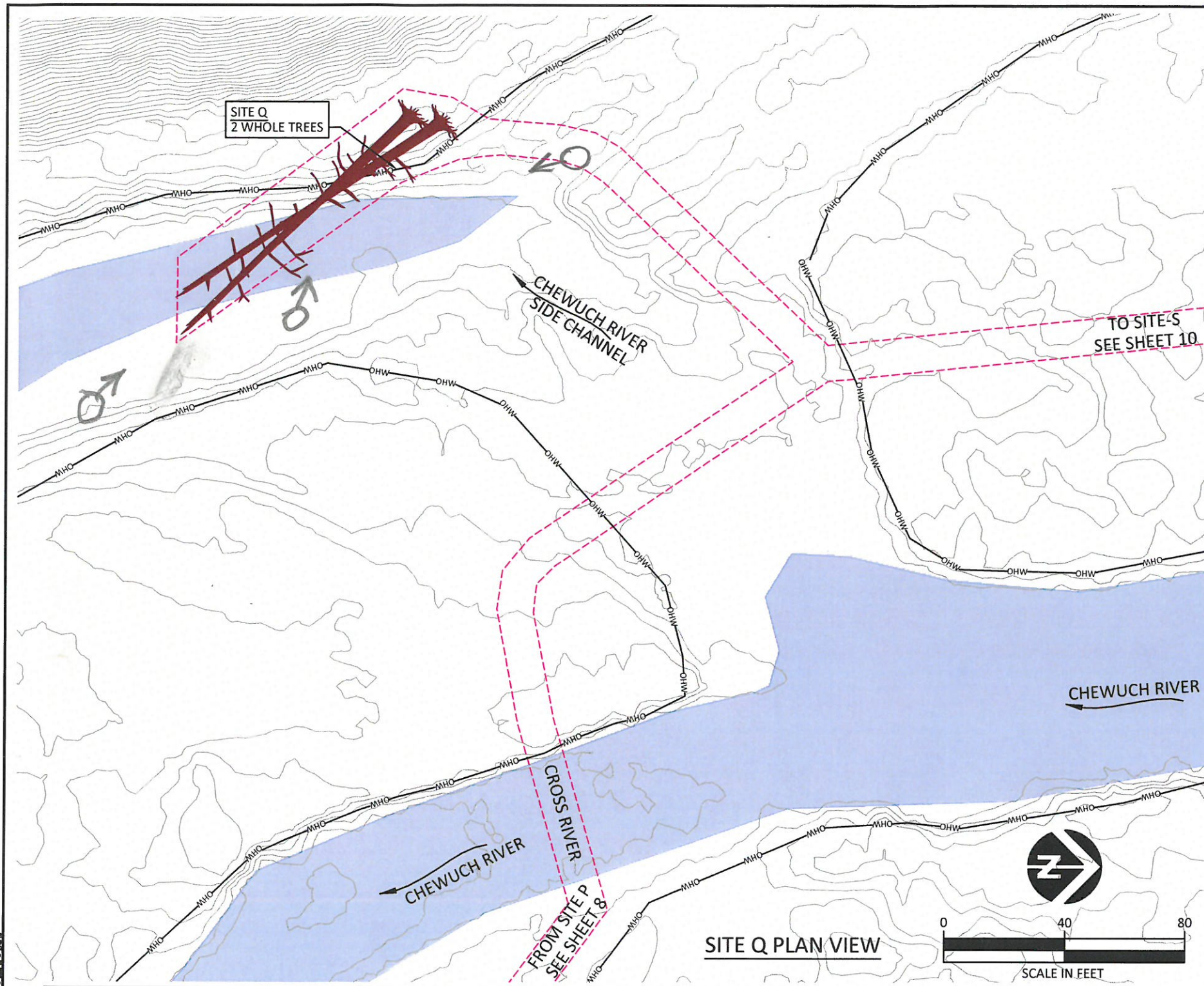


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SITE P

SHEET

8 OF 12



- Placed wood has not moved
- Provides similar cover habitat as it did last year.
- na - Remains stable.

LEGEND

- TYPICAL LOW WATER
- ORDINARY HIGH WATER
- LIMITS OF DISTURBANCE
- LARGE WOODY MATERIAL

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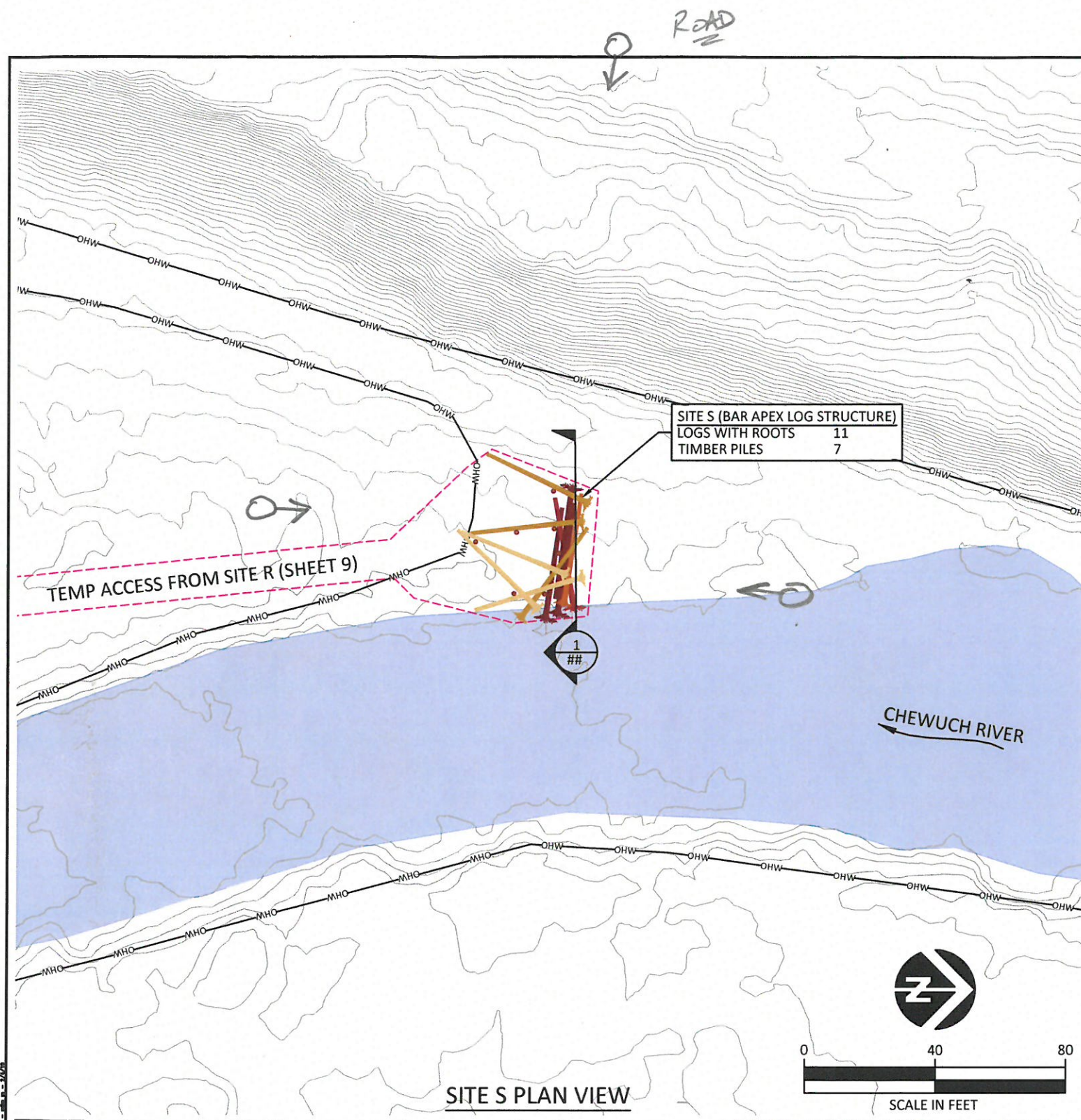
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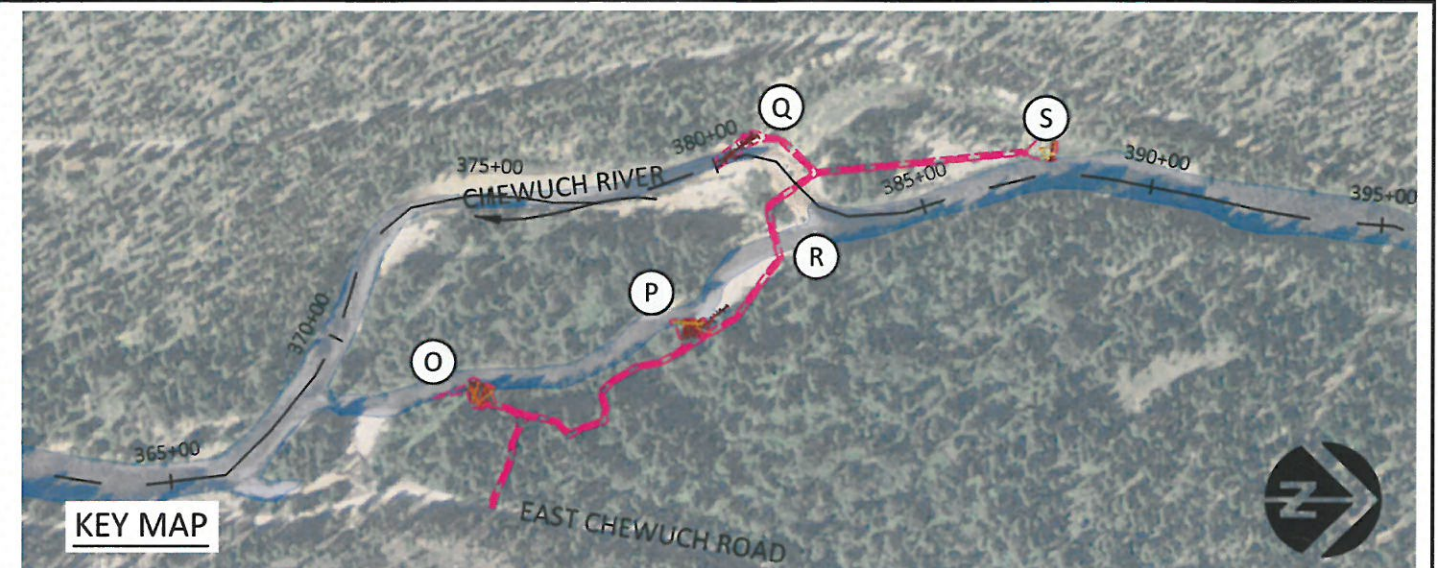
SITE Q

SHEET
9 OF 12



LEGEND

- TYPICAL LOW WATER
- ORDINARY HIGH WATER
- LIMITS OF DISTURBANCE
- LARGE WOODY MATERIAL



REFER TO ACCESS SEQUENCE, SHEET 9.

- Site is stable
- Unchanged from original construction
- No Native ~~W~~ accumulation
- Revegetation along access is good.
- Functions as Designed.

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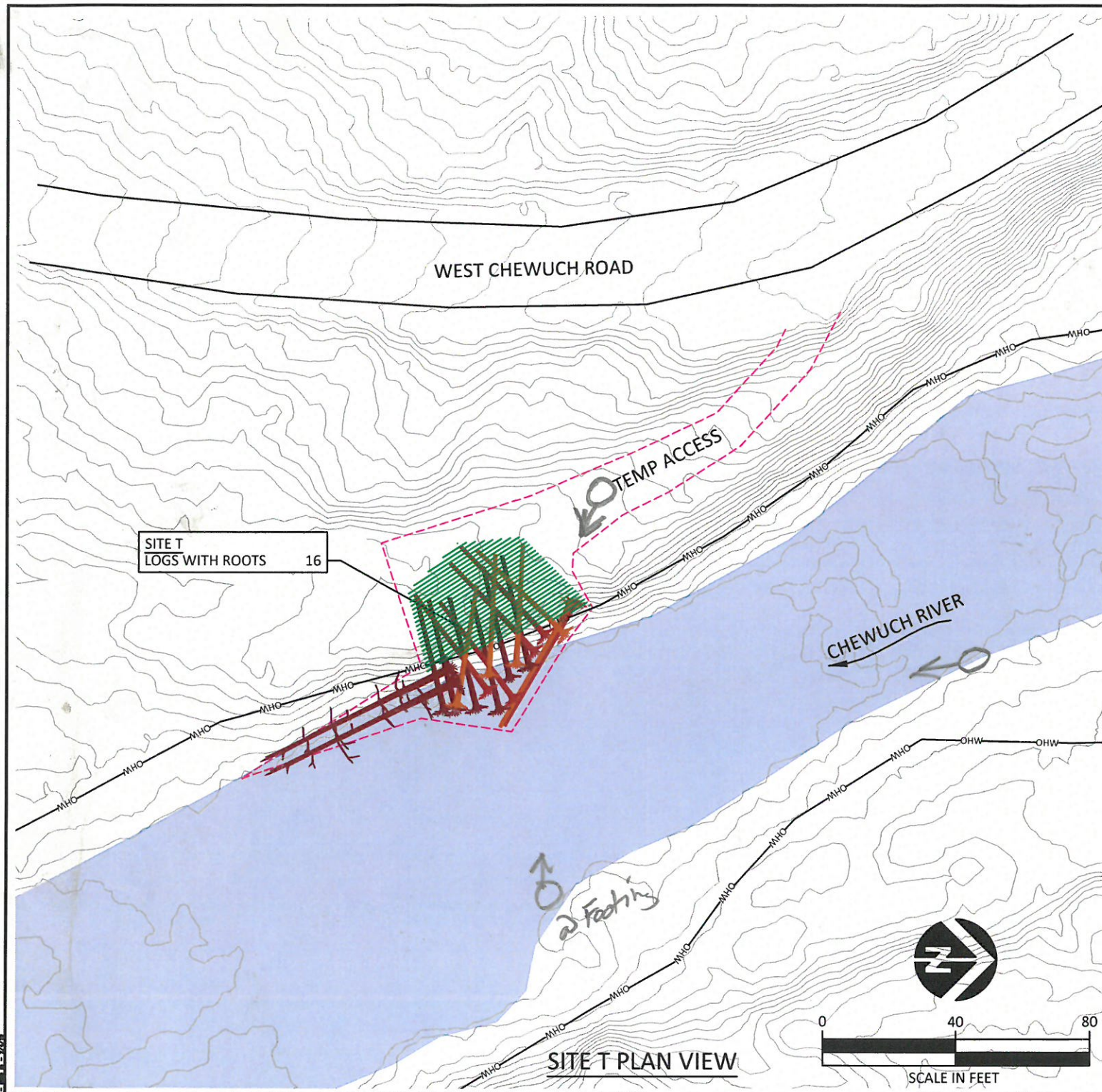
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SITE S

SHEET
10 OF 12



LEGEND

	TYPICAL LOW WATER		LARGE WOODY MATERIAL
	ORDINARY HIGH WATER		LWD BURIAL
	LIMITS OF DISTURBANCE		



- Site is stable.
- ~~Min~~ minor notch slash 2 Jan face.
- 3' pool depth
- ↳ New logs revegetation.
- very similar to post construct conditions.

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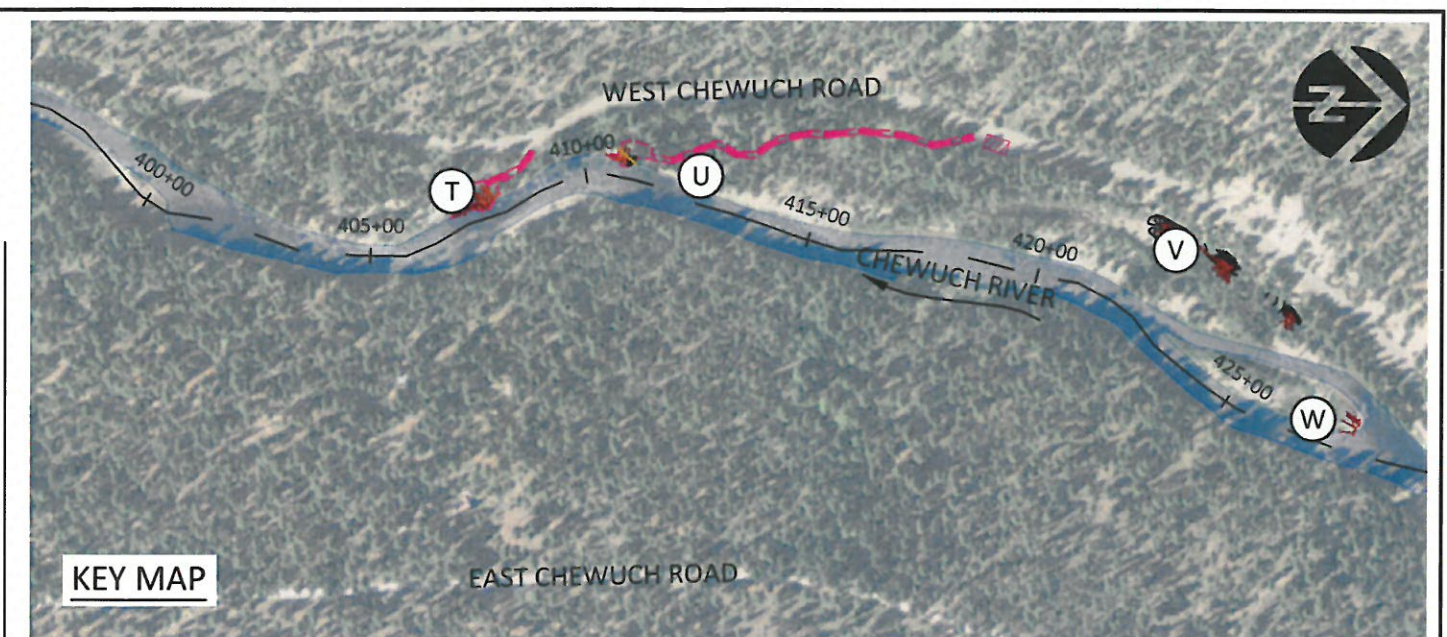
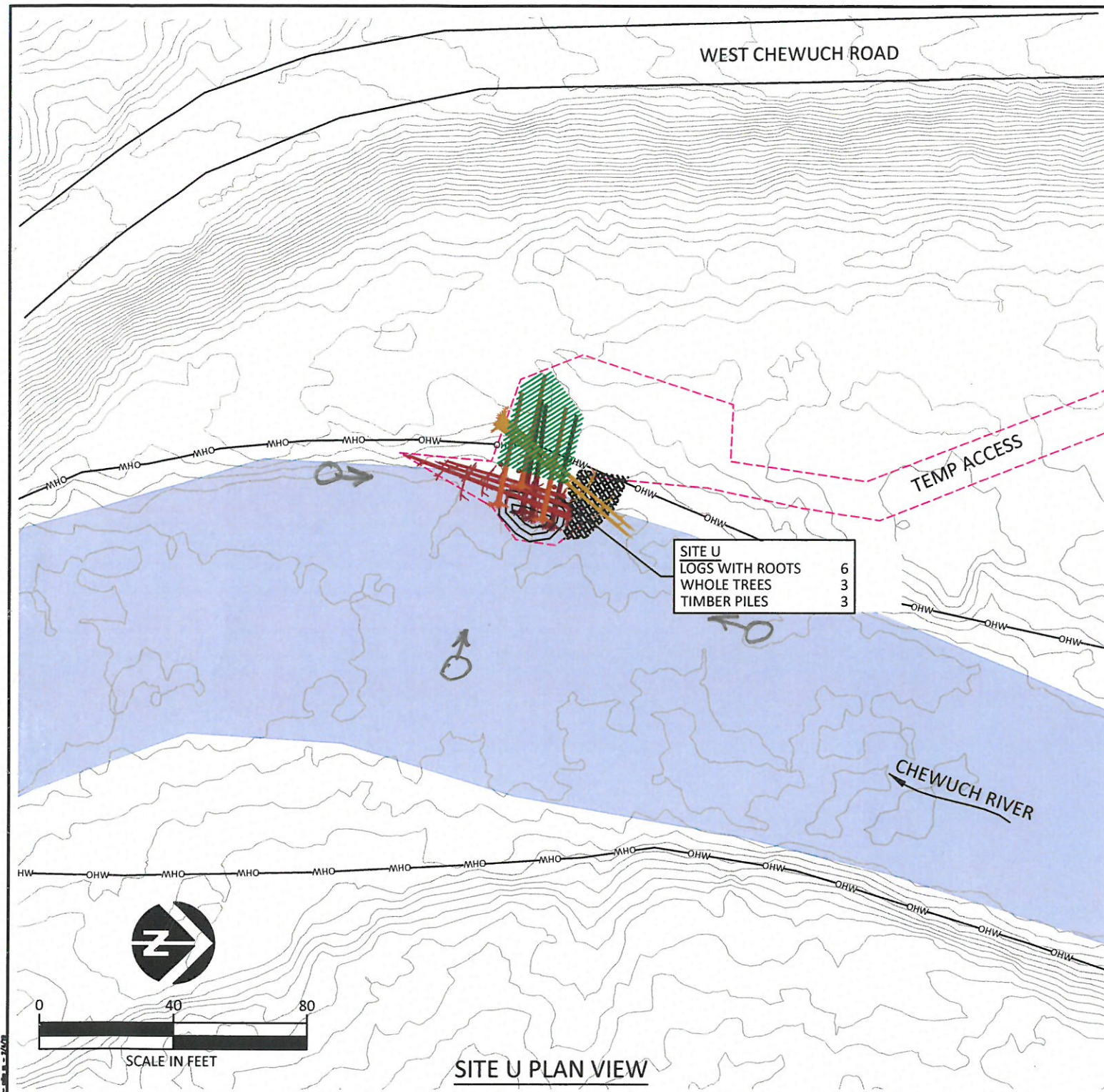
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SITE T

SHEET
11 OF 12



Site is stable.
 No additional Native wood accumulation @ jam face.
 Pool depths are good +4' under the jam.
 Revegetation is very good throughout access.
 Cedar tree plantings show stress. The Rest near 100%