

Appendix F

Pilot Channel Optimization Presentation

Upper Wenatchee River RM 35.6-38.6

Floodplain Design Coordination Meeting

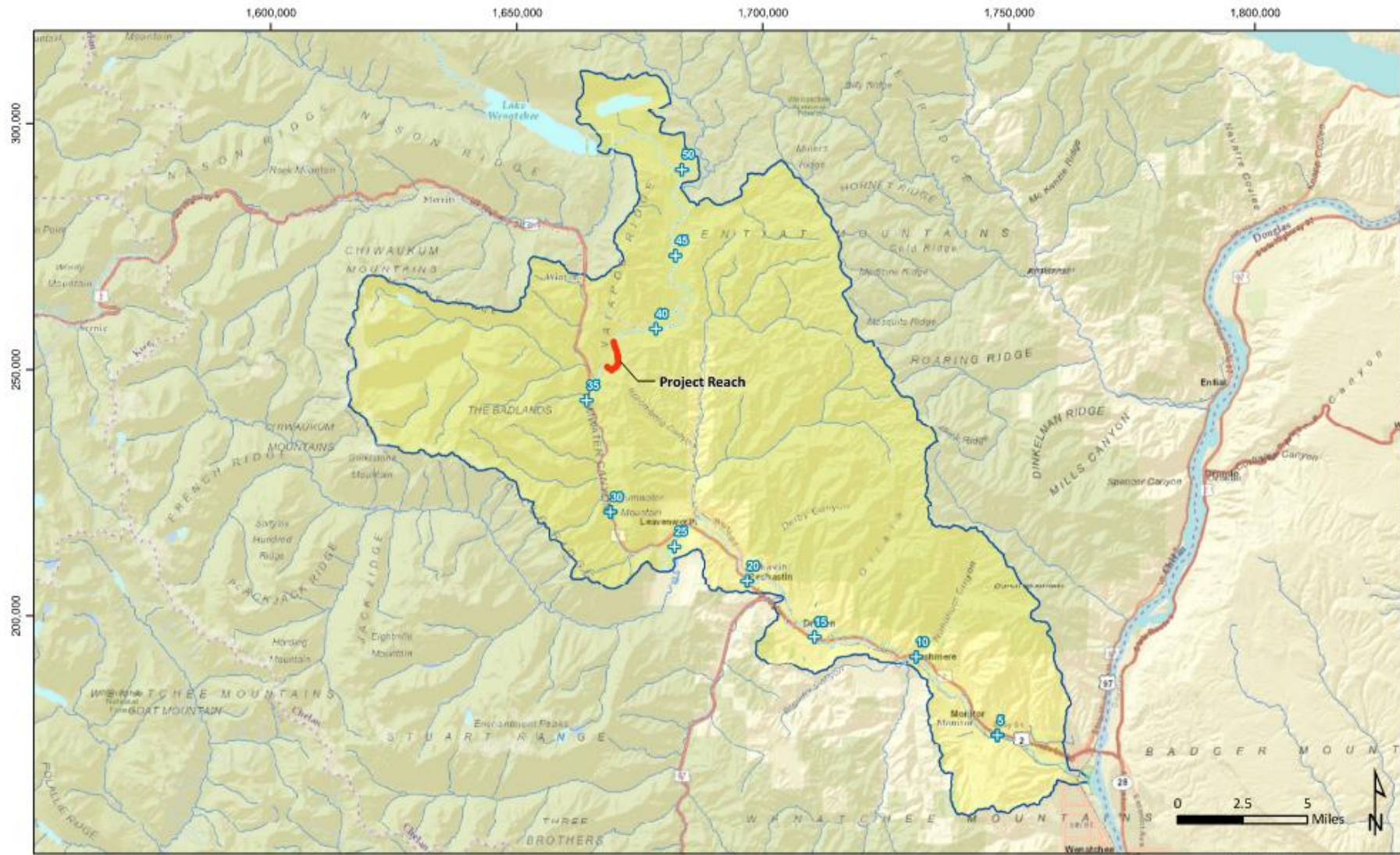
Chelan County Natural Resource Department

Bonneville Power Administration

US Forest Service

10/17/2022





Author: Stratton MSJ Date: 11/11/2020 Path: P:\Projects\Chehalis County\Upper Wenatchee RM 36\GIS\mxd\560_Figures\Fig1_Vicinity.mxd

Vicinity Map

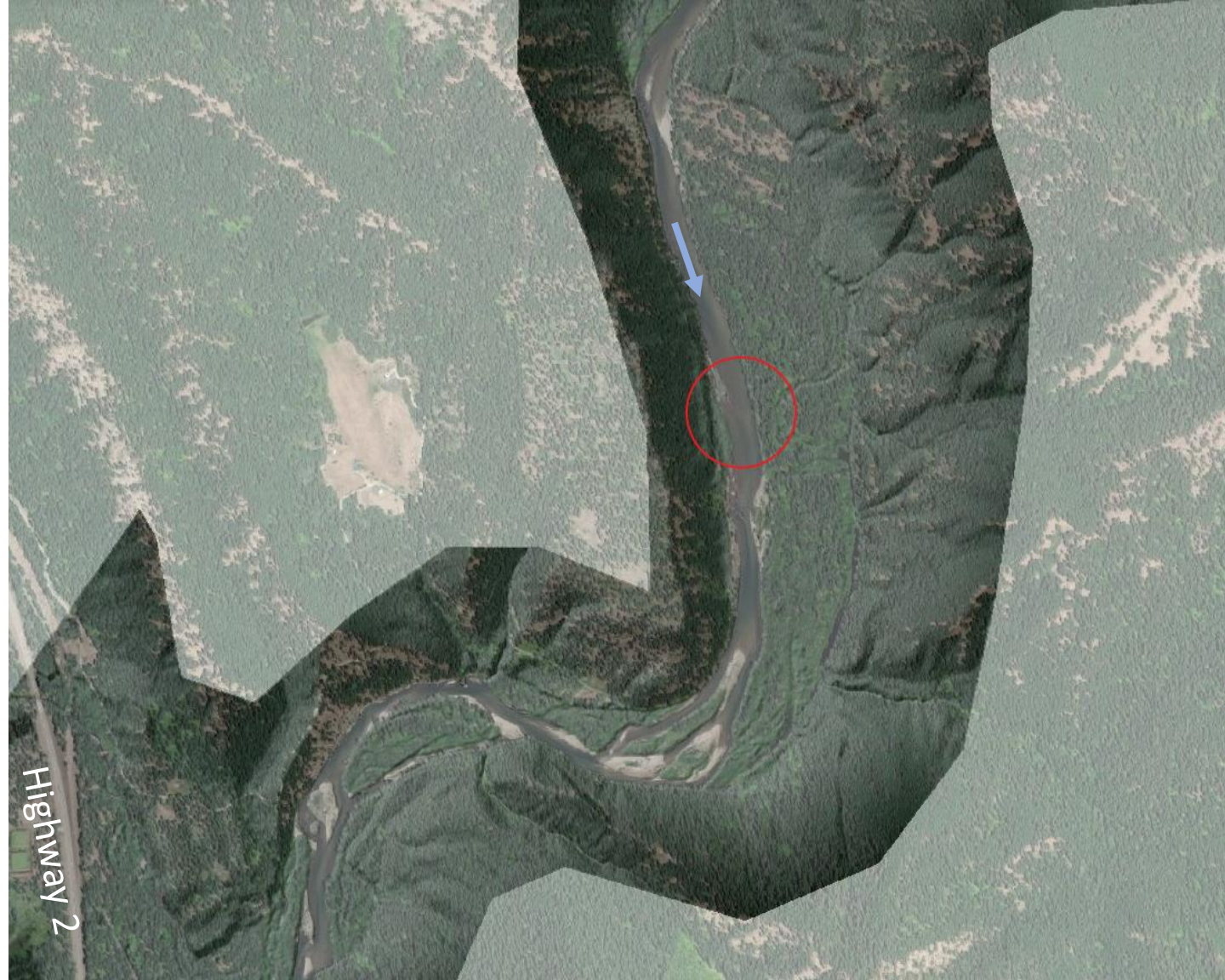


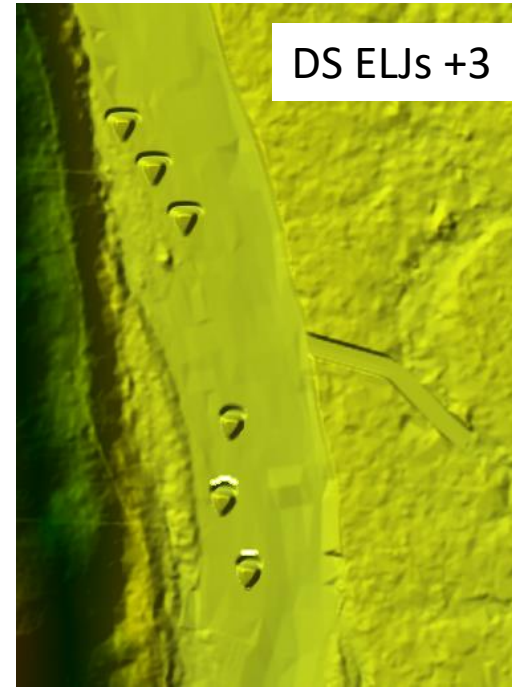
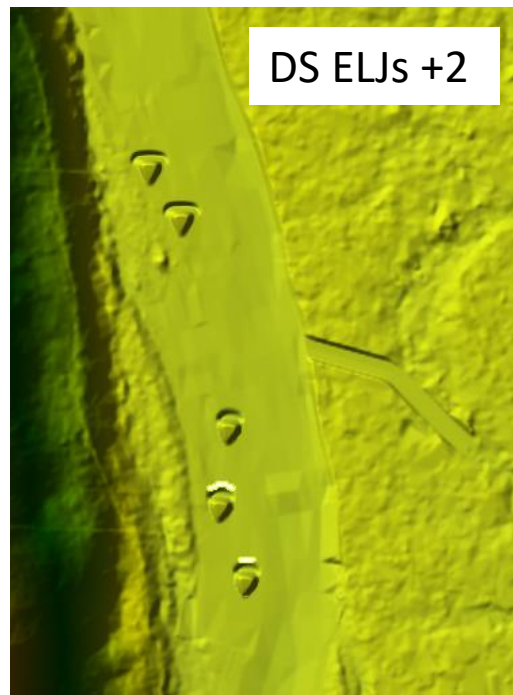
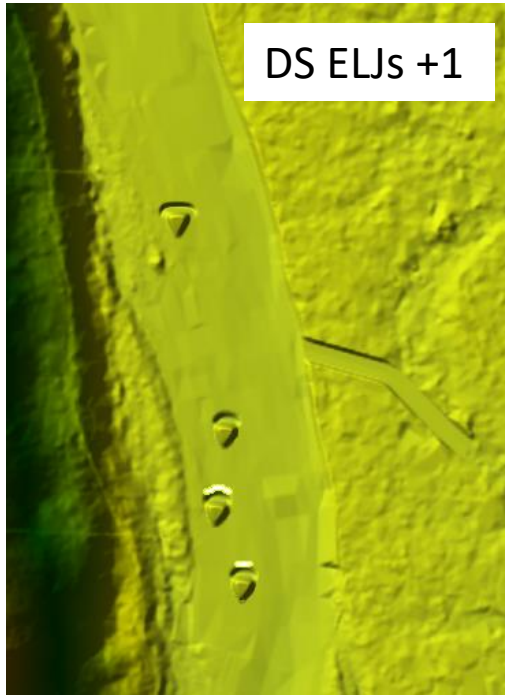
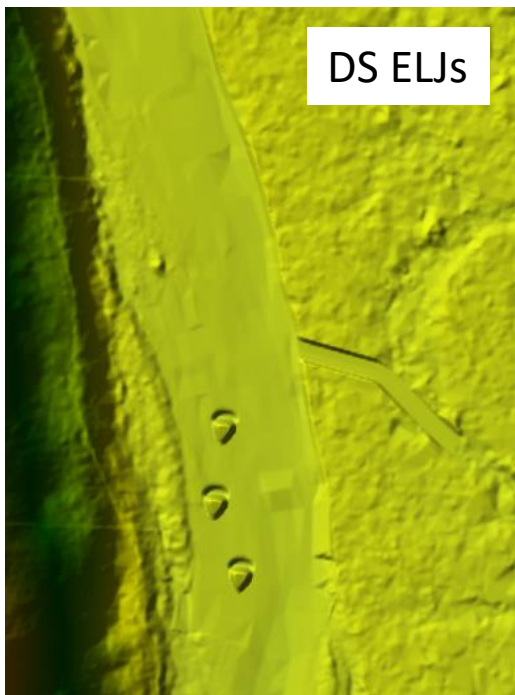
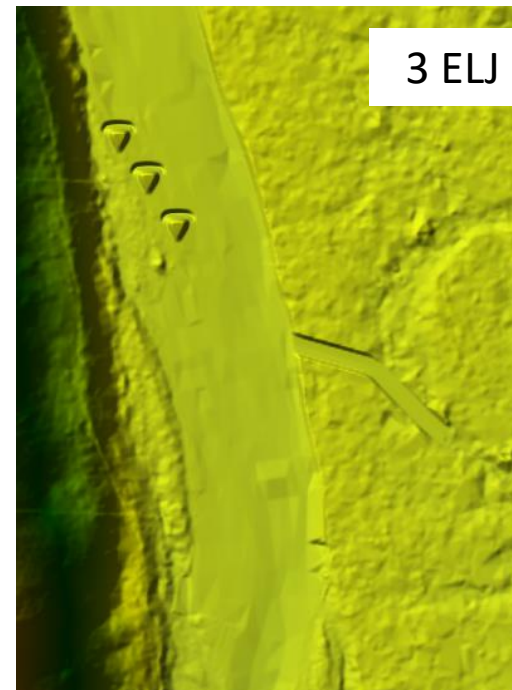
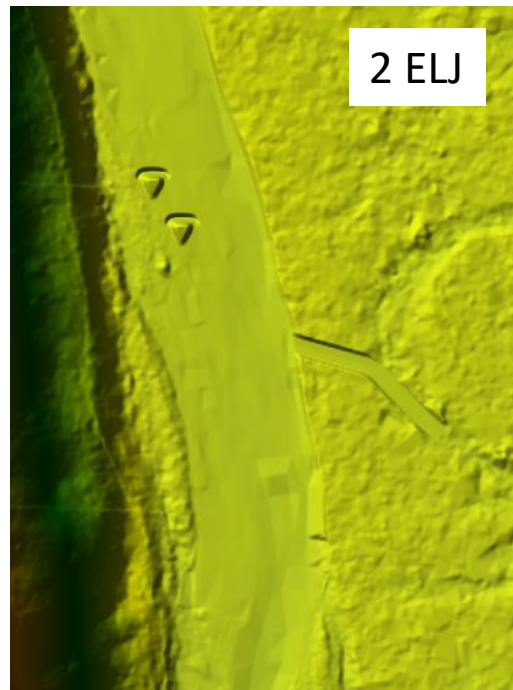
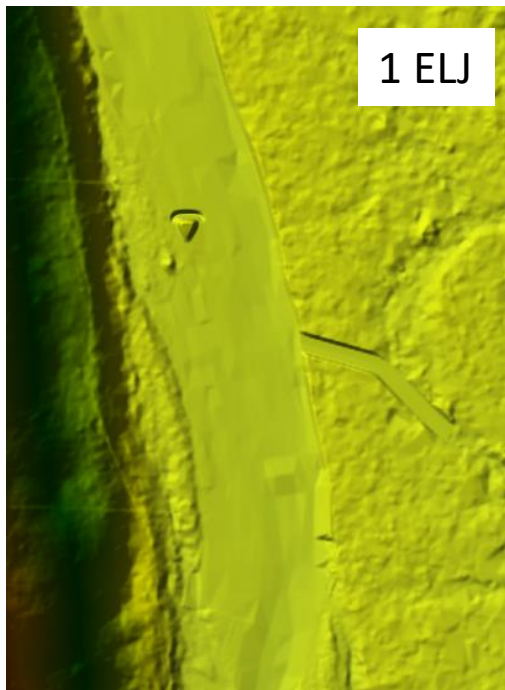
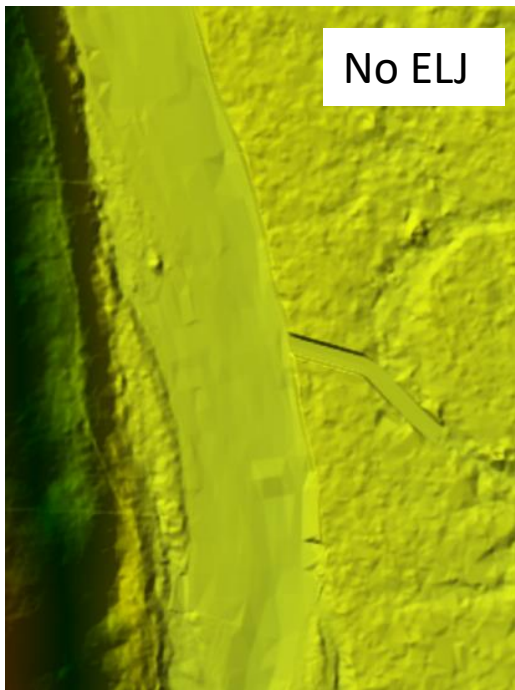
**Upper Wenatchee River RM 37 Restoration Project
Project Location**

NAD 1983 StatePlane Washington North FIPS 4601 Feet
 Basemap: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
 Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community



Hydraulic Modeling Results





All 40'
wide
pilot
channel

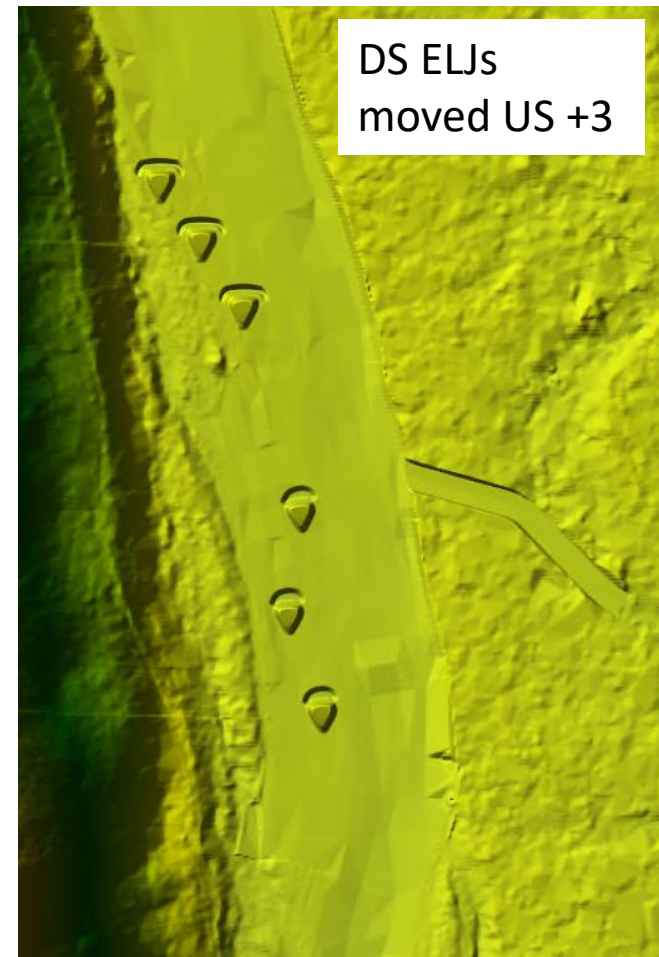
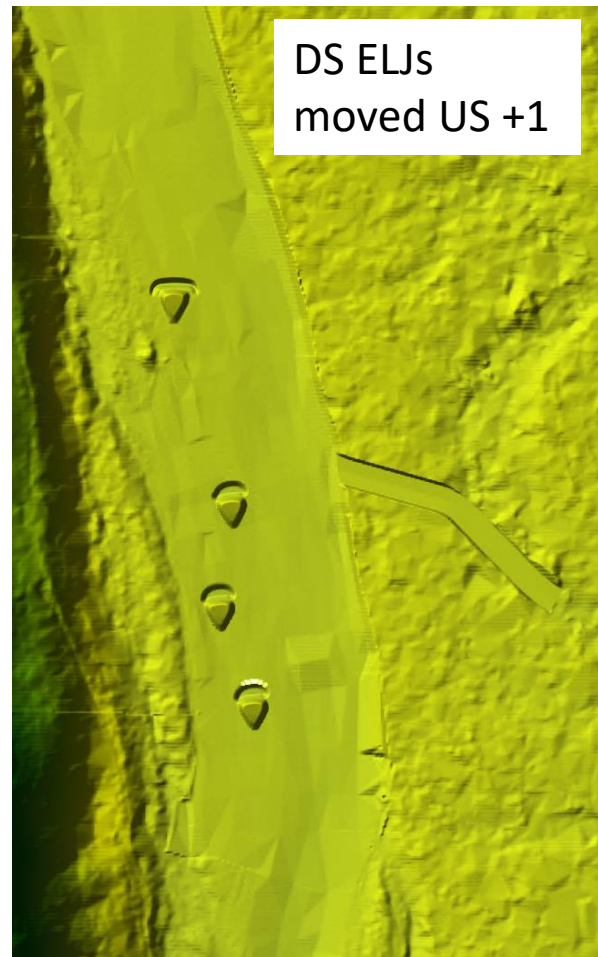
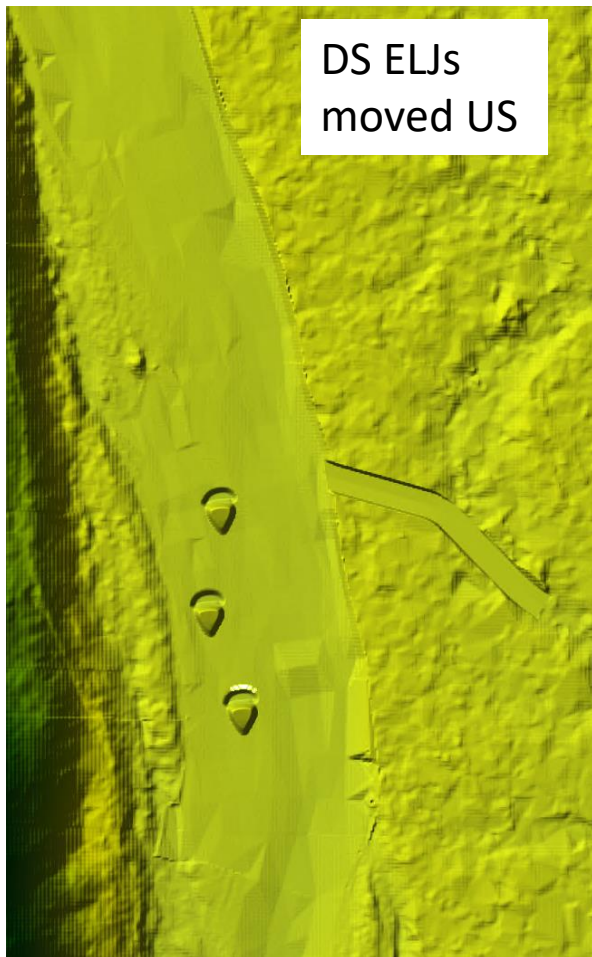
All 40' wide pilot channel

DS ELJs
moved US

DS ELJs
moved US +1

DS ELJs
moved US +2

DS ELJs
moved US +3



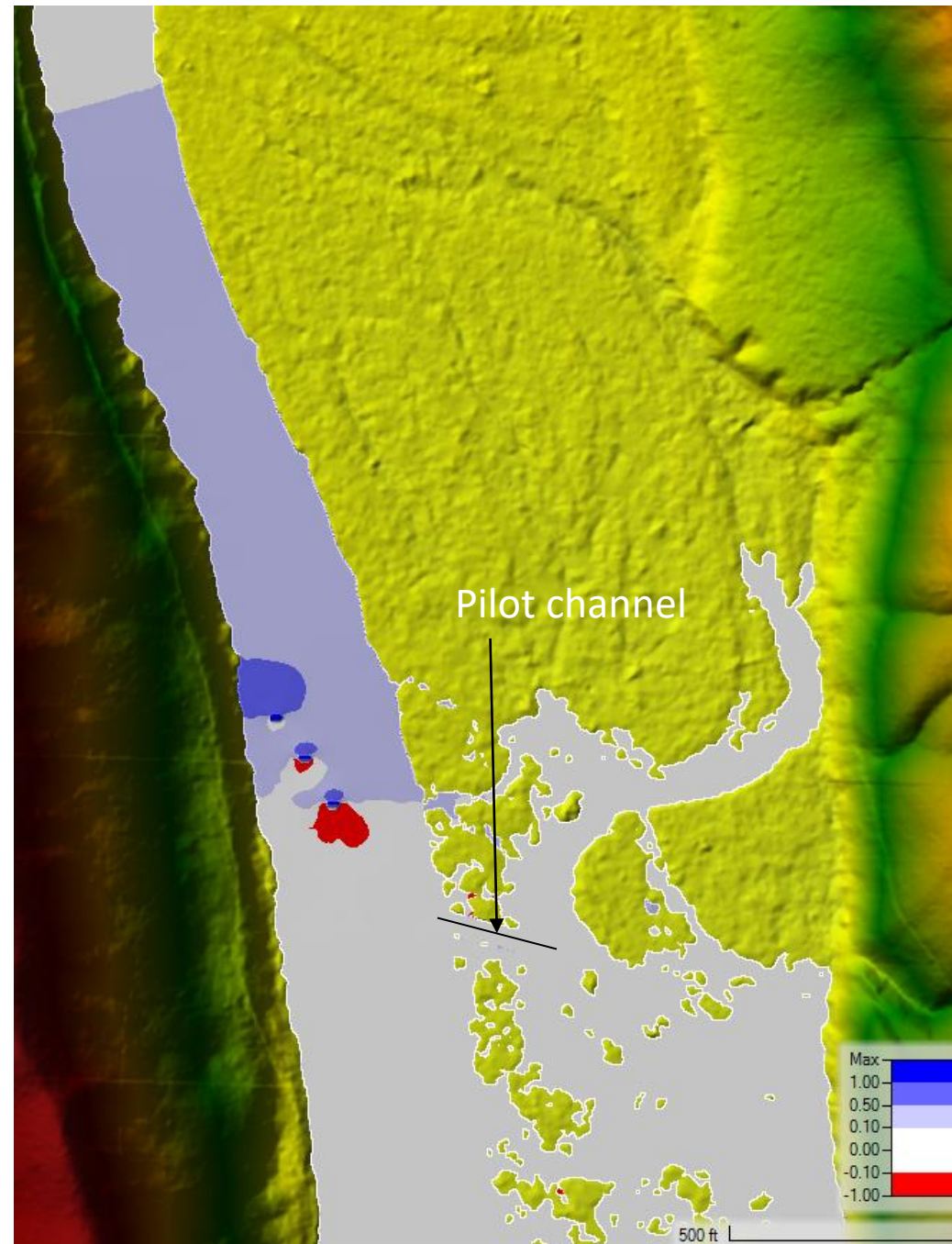
Pilot Channel Flow – 40' wide

	1 yr (cfs)	2 yr (cfs)
Main Channel	6,110	11,890
No ELJs	404	1,021
3 ELJ	340	1,012
DS ELJs +3	404	1,195
DS ELJs moved US +3	405	1,189

Water surface elevation change for 2-year flow between 3 ELJs and no ELJs

Creates backwater effect instead of increasing flow to pilot channel

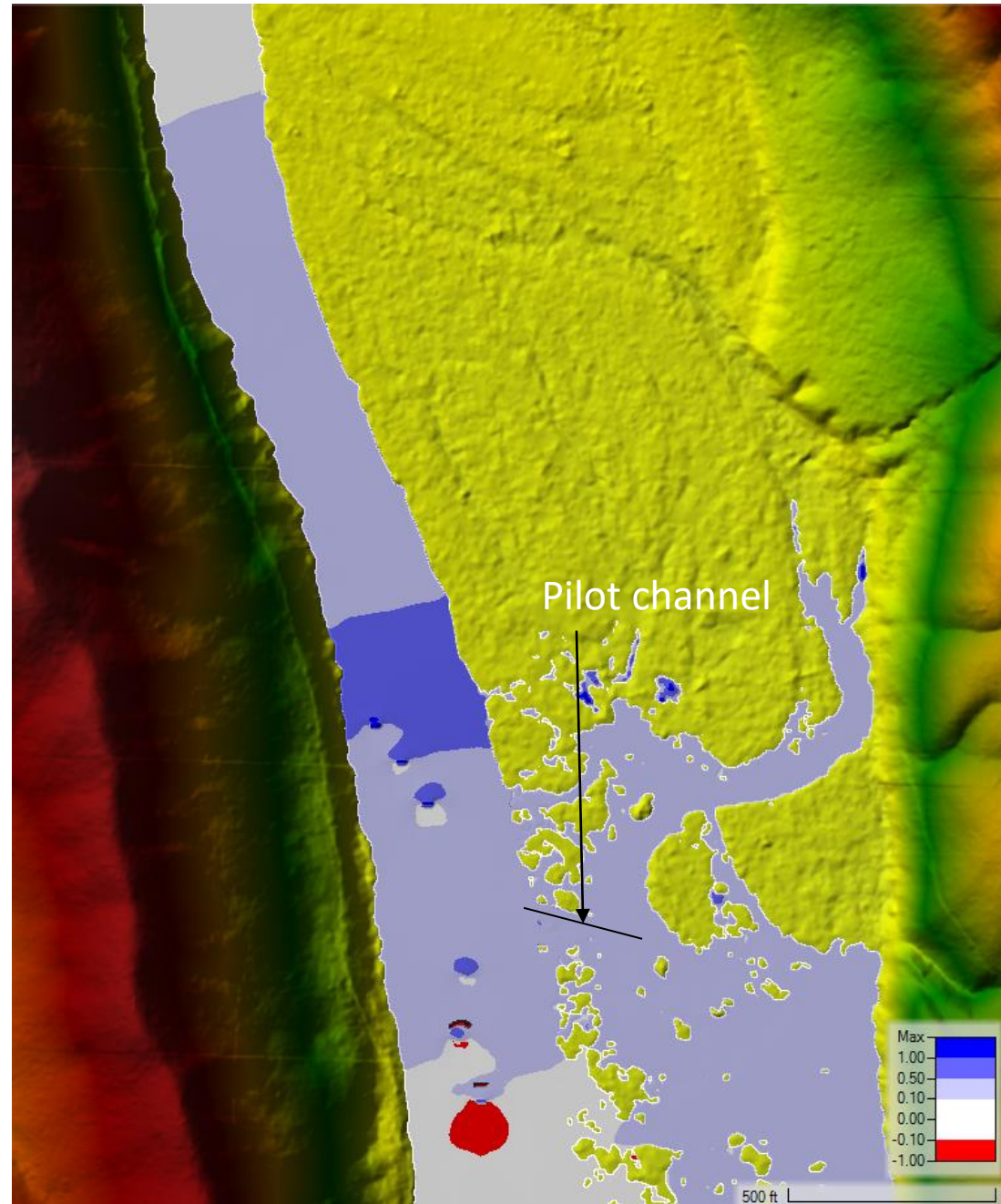
	1 yr (cfs)	2 yr (cfs)
No ELJs	404	1,021
3 ELJ	340	1,012



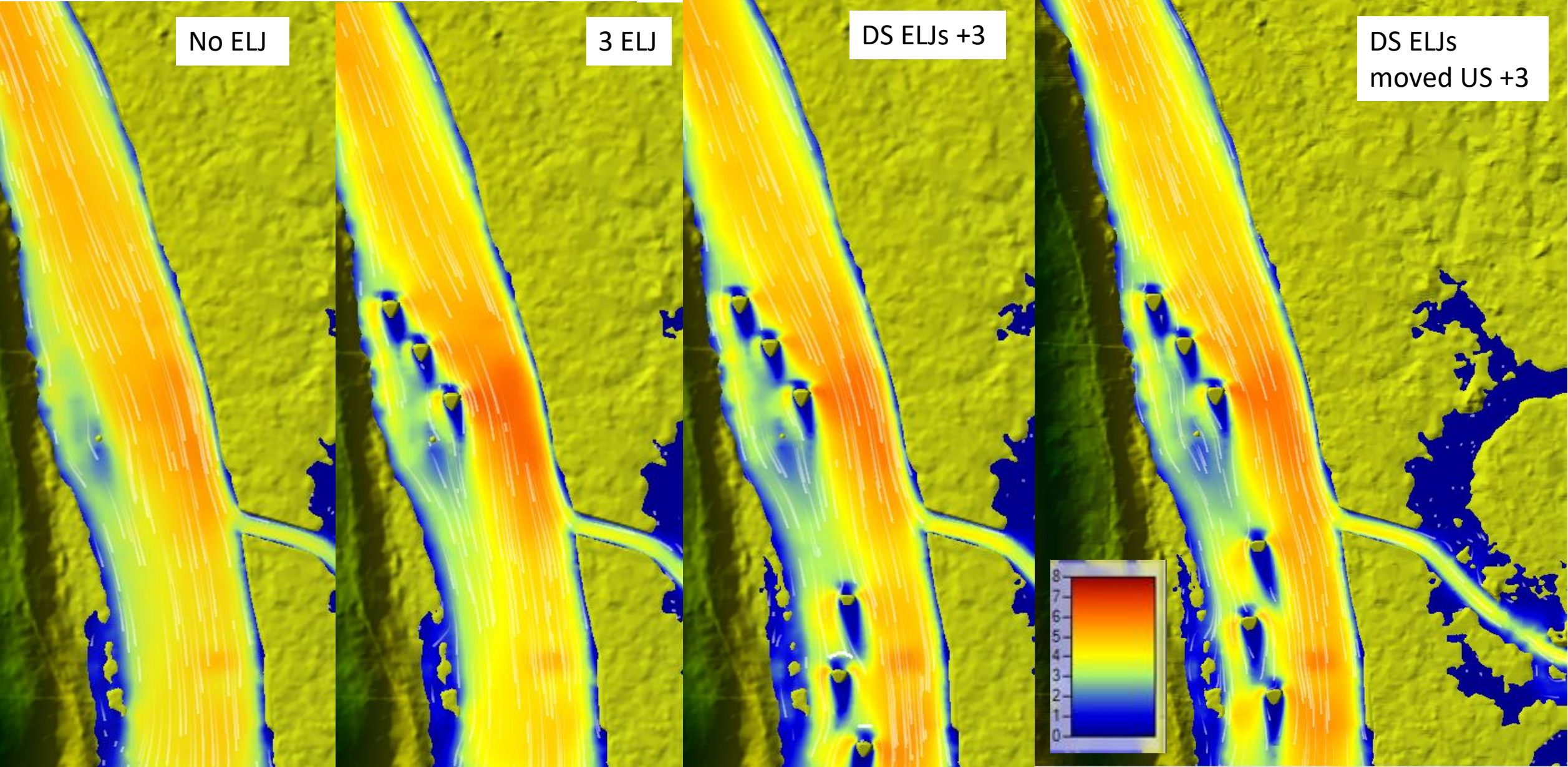
Water surface elevation change for 2-year flow between DS ELJs +3 and no ELJs

Creates backwater effect and increases flow to pilot channel and floodplain

	1 yr (cfs)	2 yr (cfs)
No ELJs	404	1,021
DS ELJs +3	404	1,195



1-year Velocity (fps)



2-year Velocity (fps)

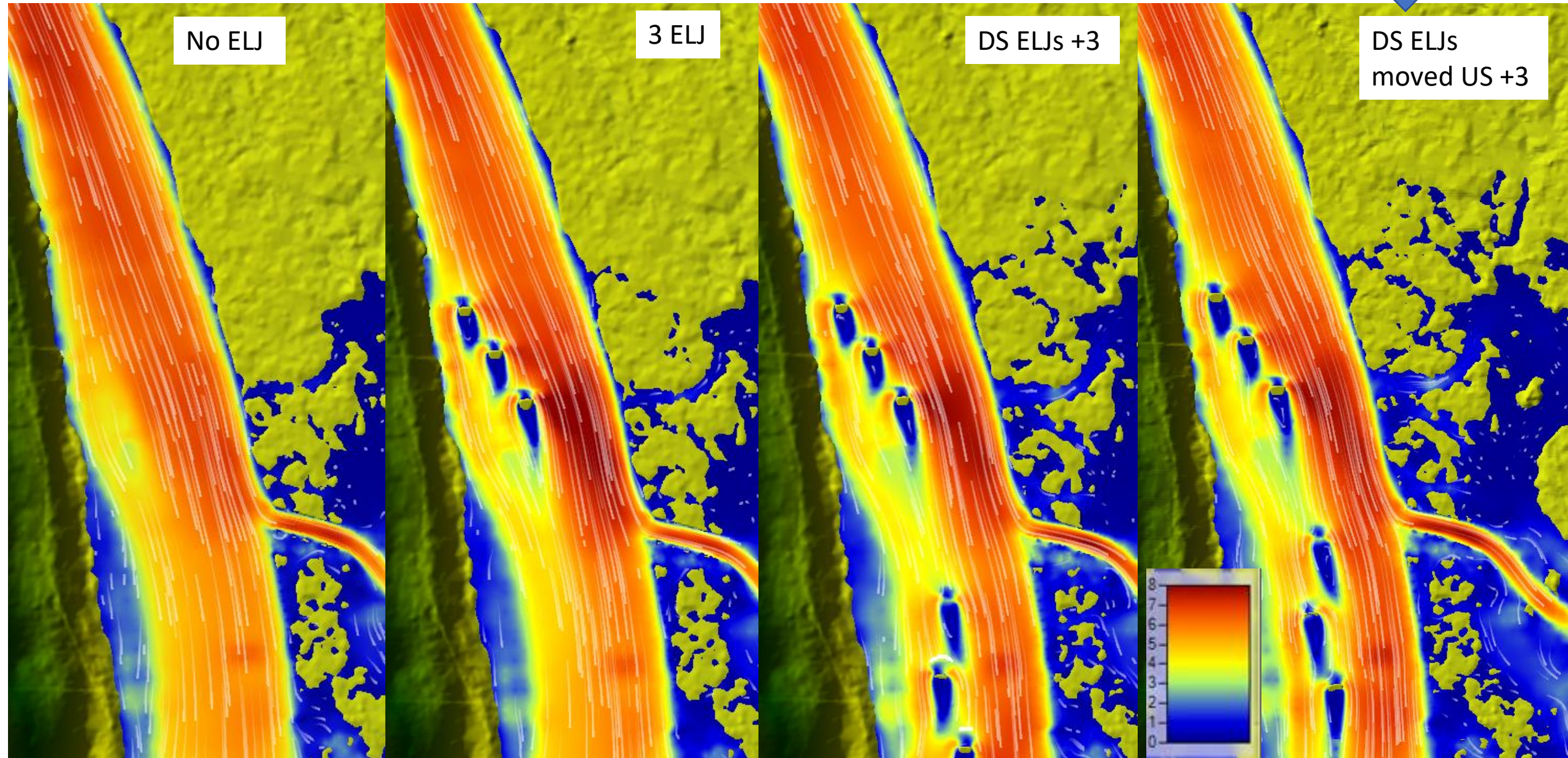


No ELJ

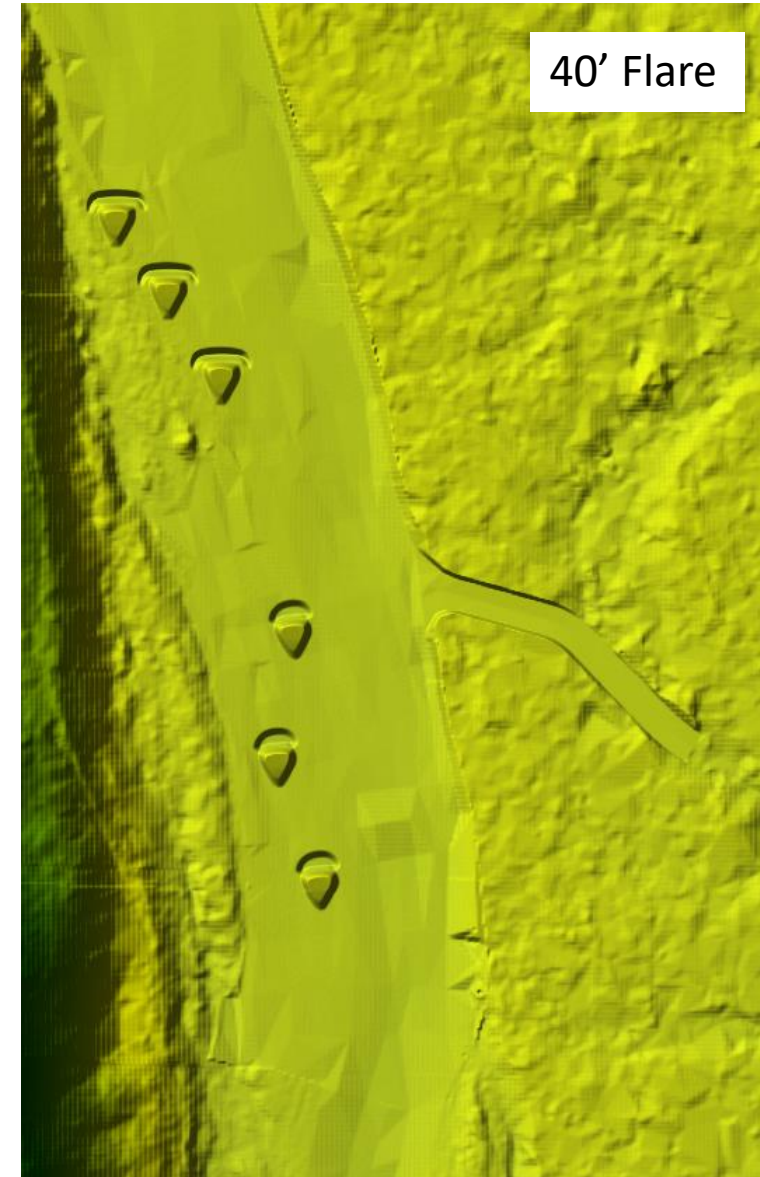
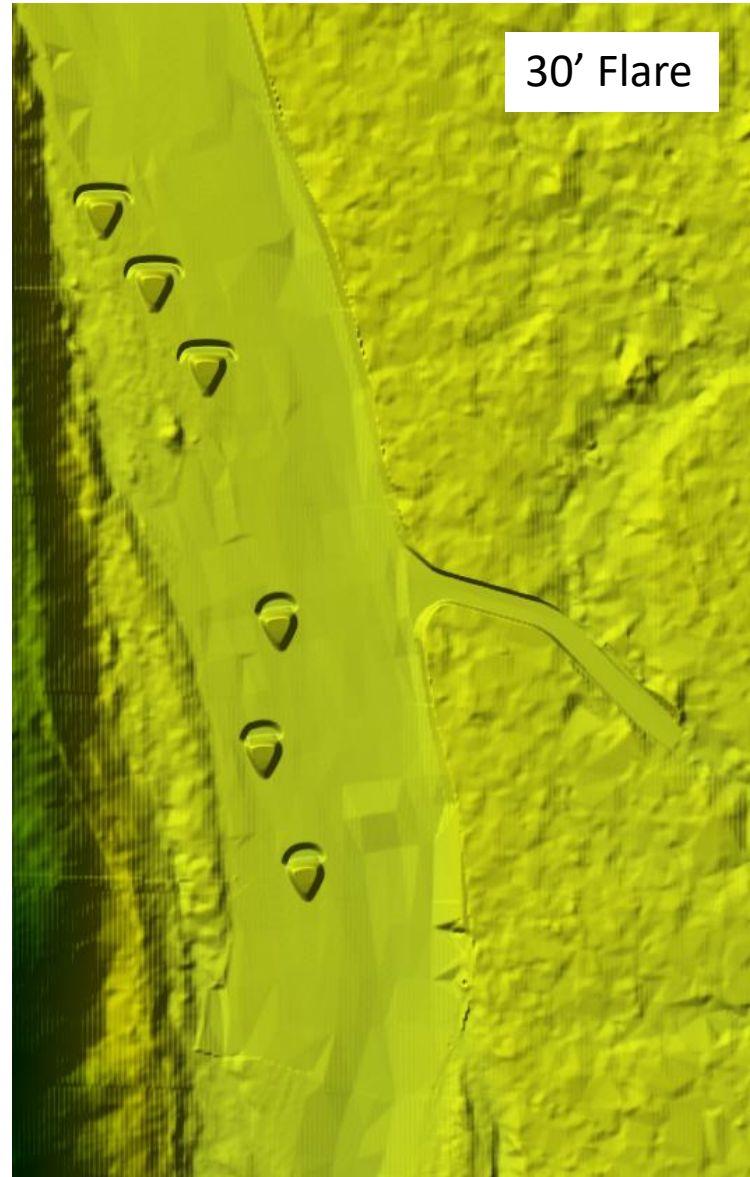
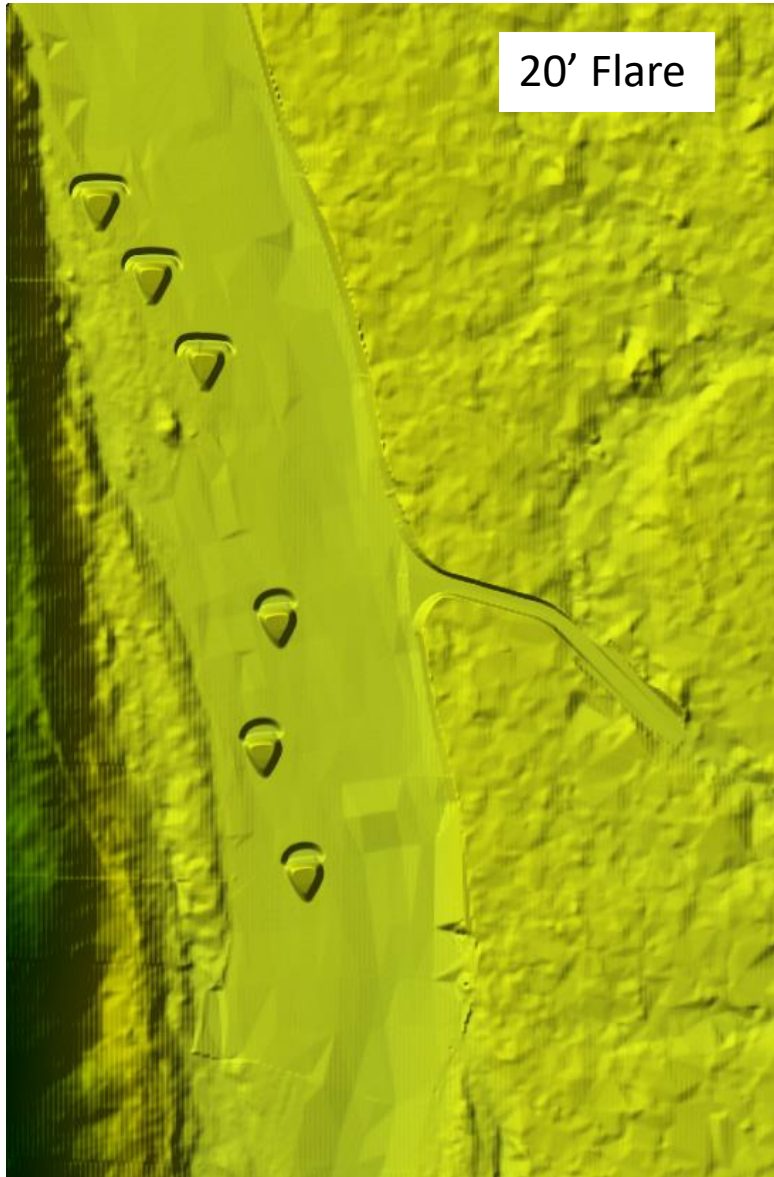
3 ELJ

DS ELJs +3

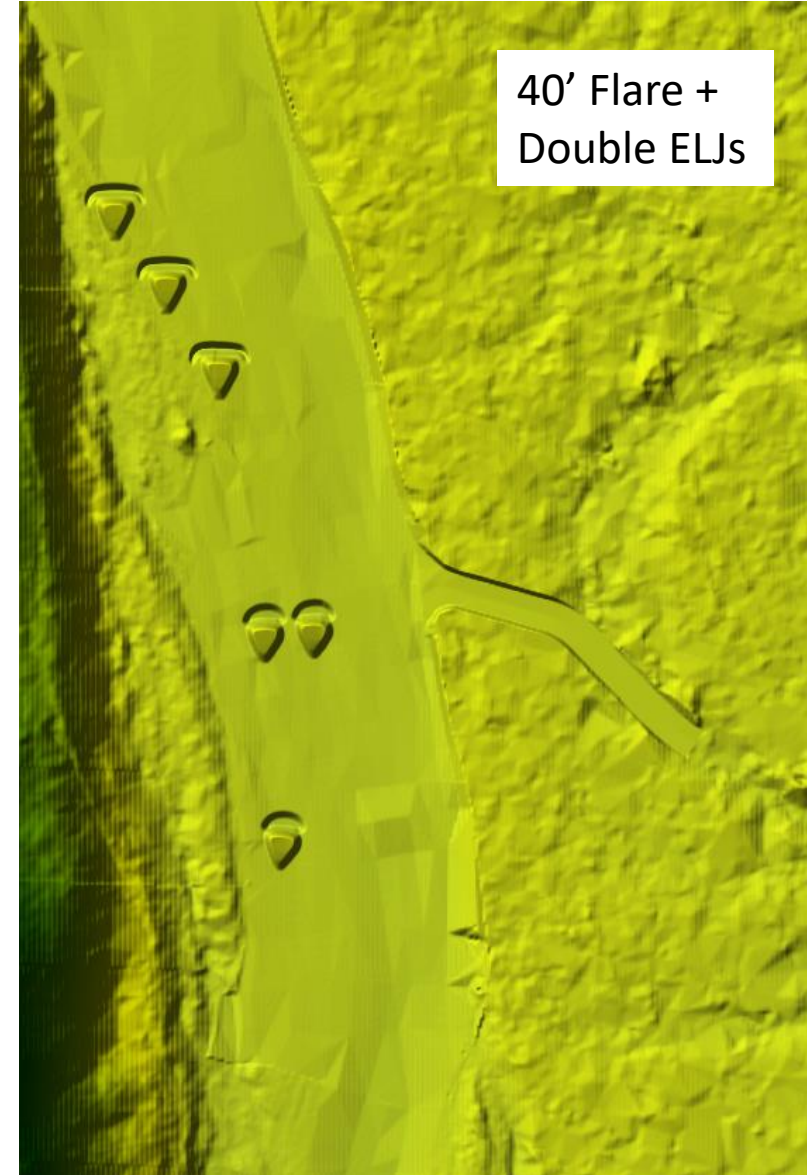
DS ELJs
moved US +3



Varied Pilot channel widths



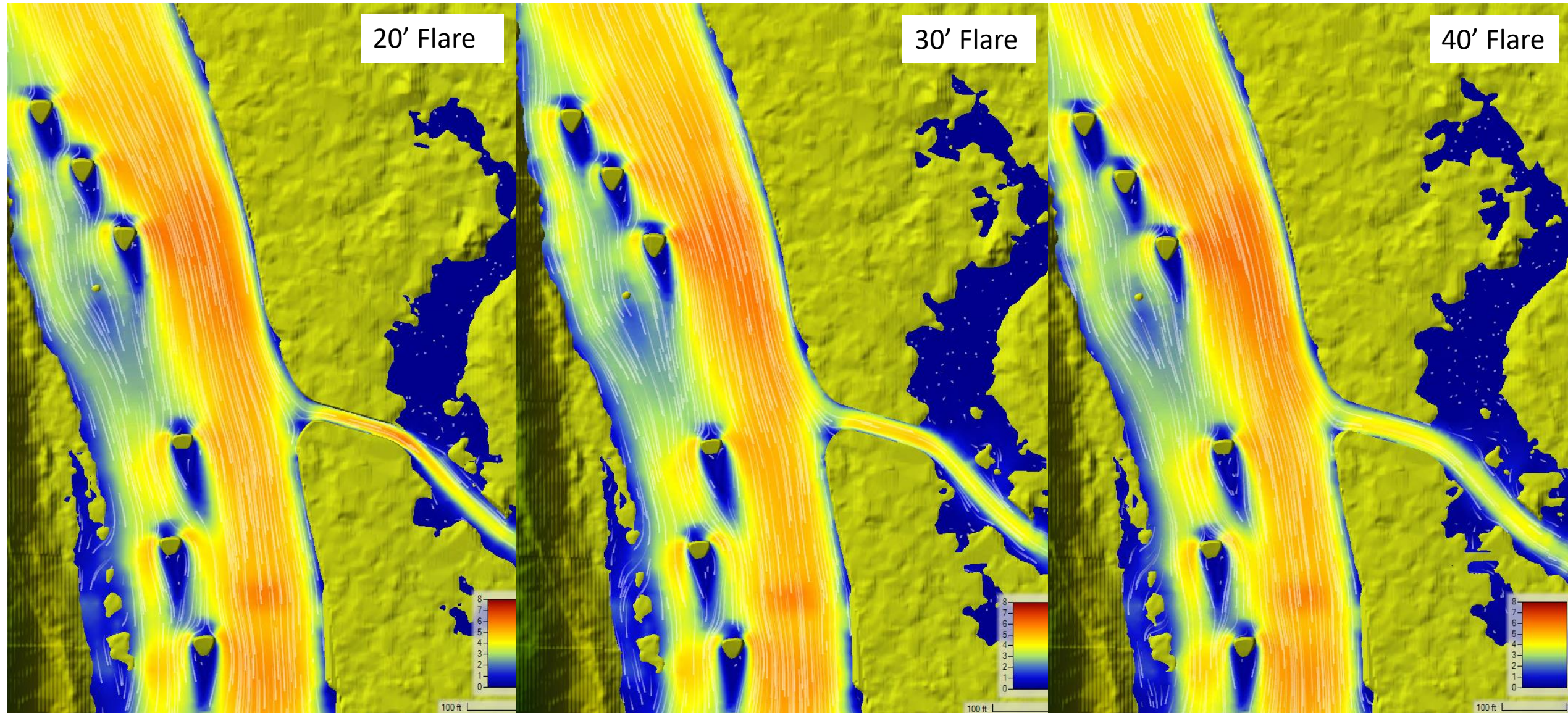
Varied Pilot channel widths with Double ELJs



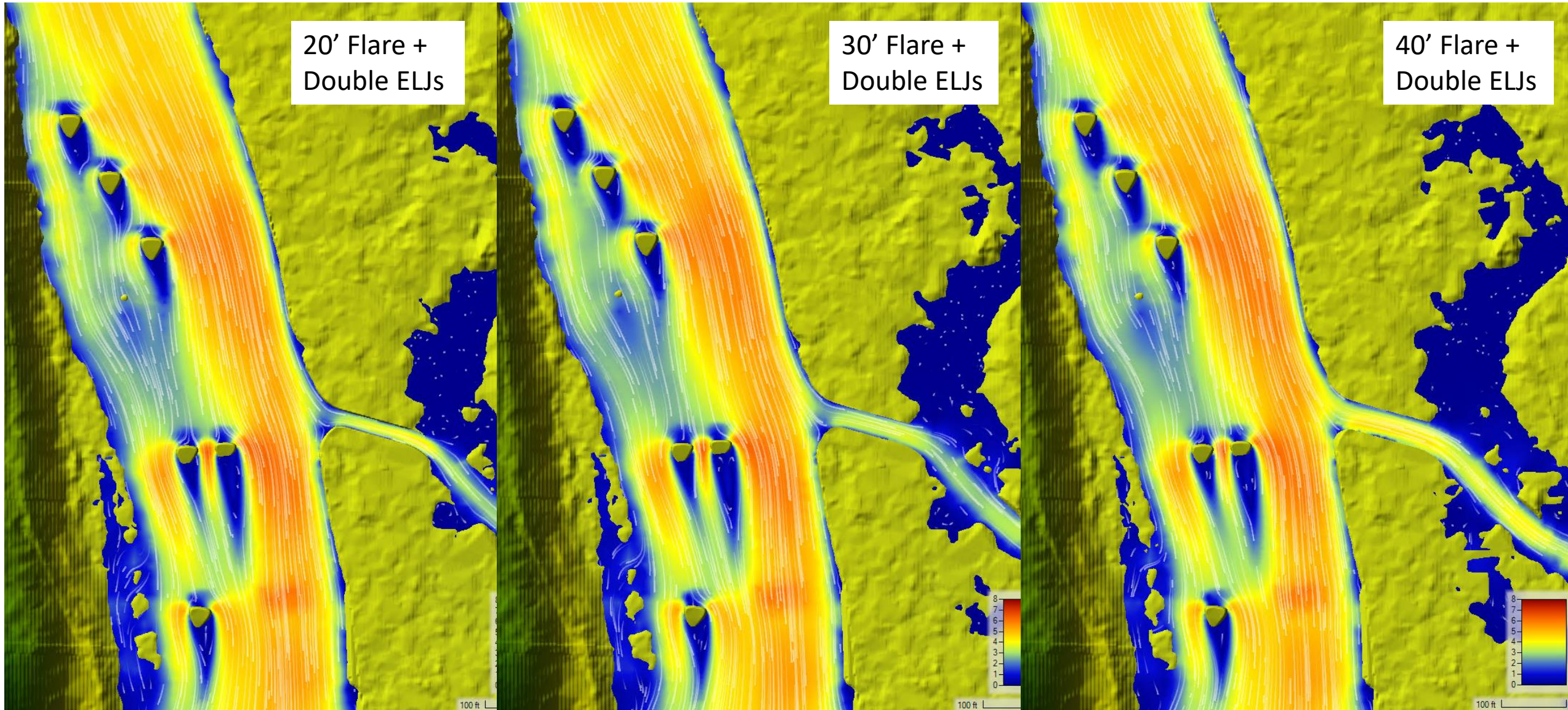
Pilot Channel Flow – Double ELJs

	1 yr (cfs)	2 yr (cfs)
Main Channel	6,110	11,890
40' No Flare (DS ELJs moved US +3)	405	1,189
40' Flare	443	1,316
<i>40' Flare Double ELJs</i>	<i>464</i>	<i>1,375</i>
30' Flare	378	1,118
30' Flare Double ELJs	299	989
20' Flare	283	852
20' Flare Double ELJs	224	780

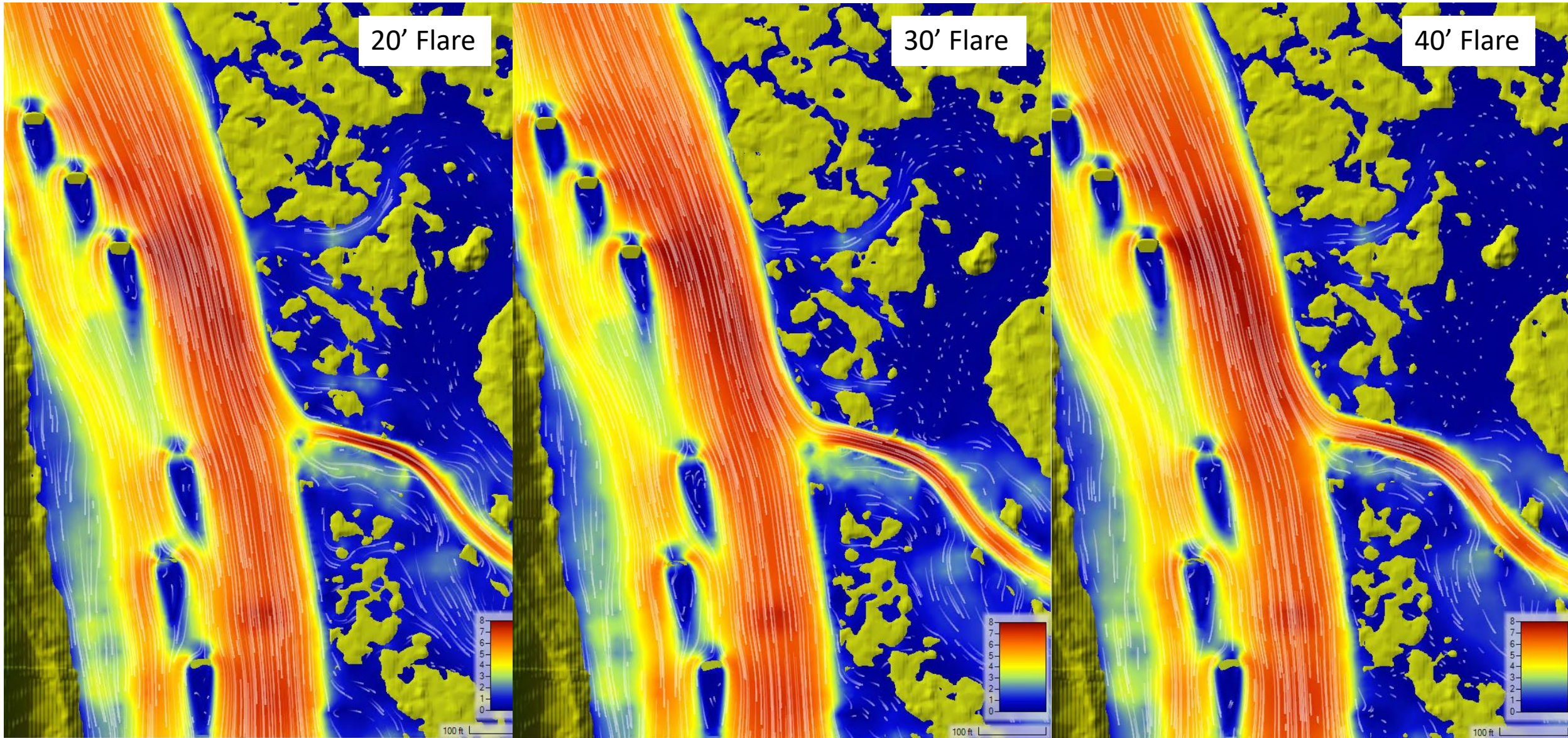
1-year velocity (fps)



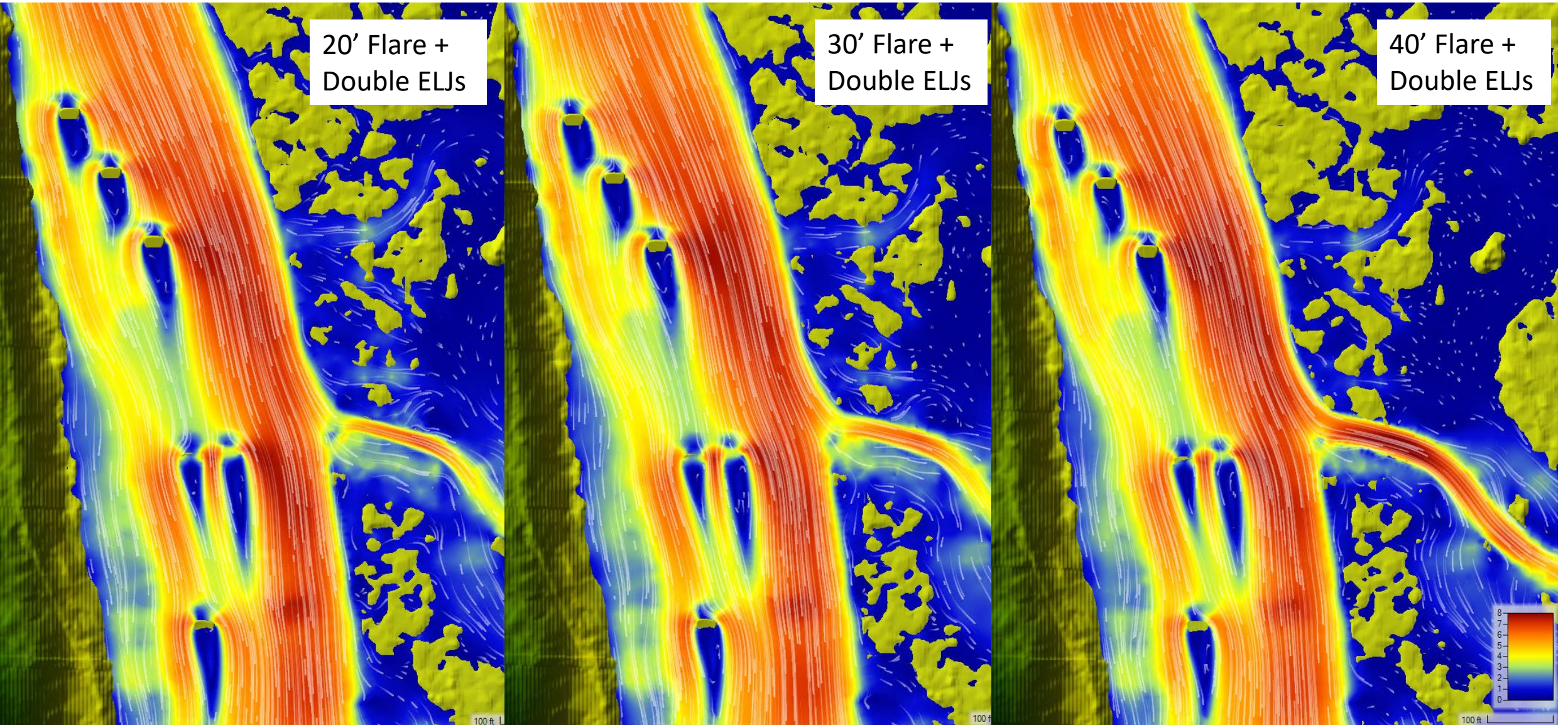
1-year velocity (fps)



2-year velocity (fps)



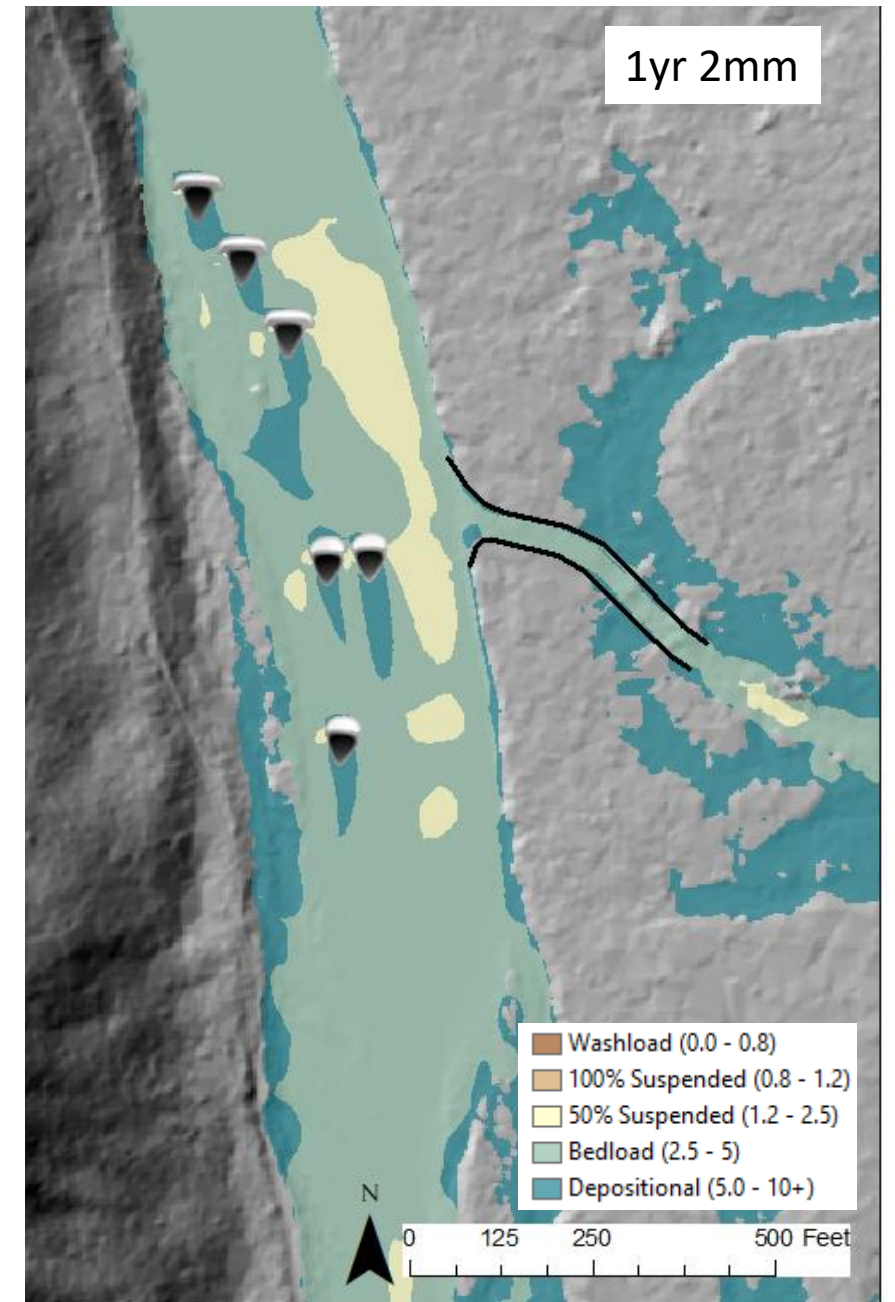
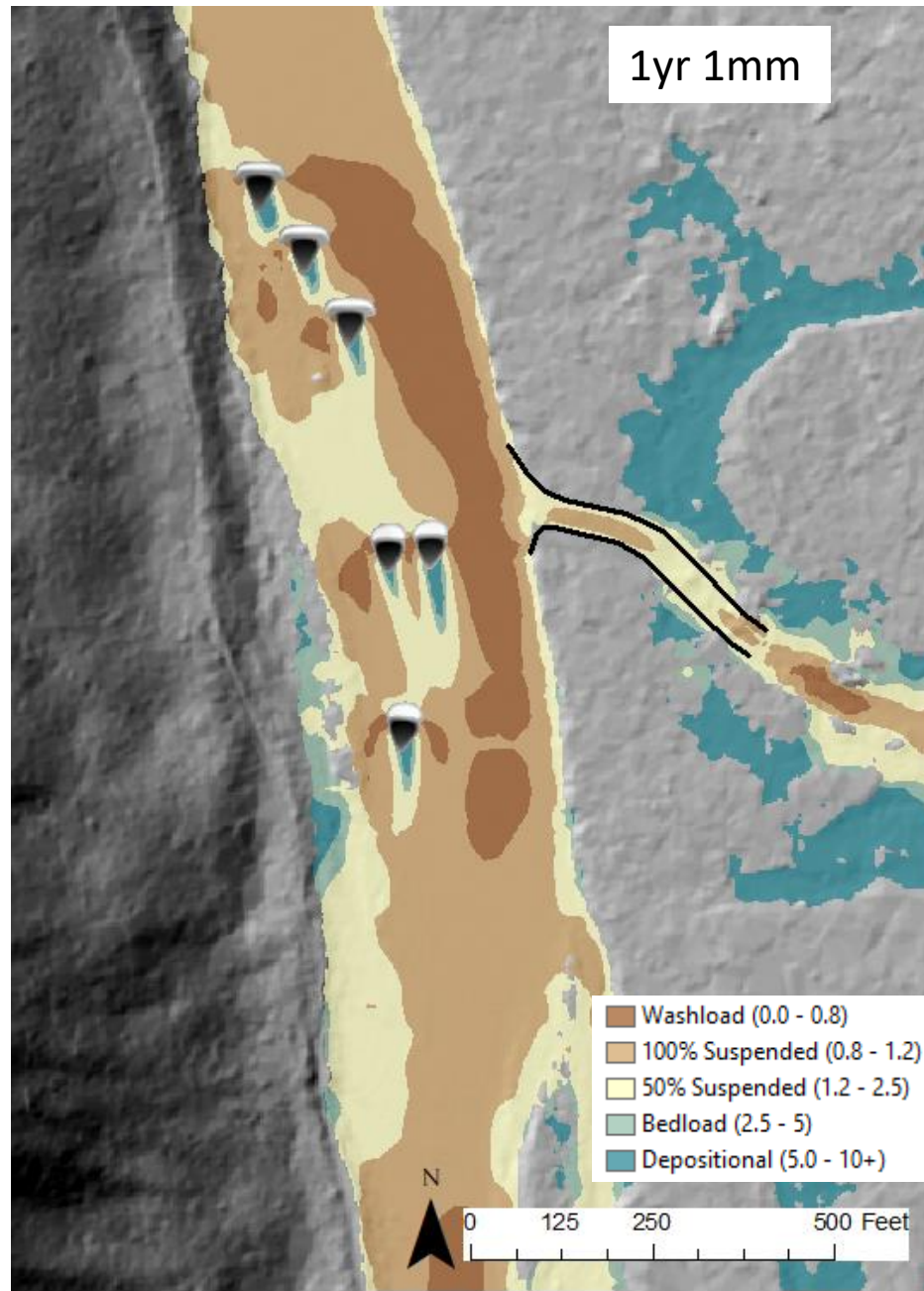
2-year velocity (fps)



40' Flare with Double ELJs

Ran rouse analysis to determine what size sediment would move during the 1 and 2 year flow

1mm is much more mobile than the 2mm at the 1yr flow



40' Flare with Double ELJs

Ran rouse analysis to determine what size sediment would move during the 1 and 2 year flow

1mm is very mobile.
2mm has more sediment in the 50% suspended than the 1yr flow

