



Western Washington University
Western CEDAR

Salish Sea Ecosystem Conference

2018 Salish Sea Ecosystem Conference
(Seattle, Wash.)

Apr 6th, 2:45 PM - 3:00 PM

Washington State Ferries: Colman Dock and the new Mukilteo Ferry Terminal: environmental protection and marine mammal monitoring during construction

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Huey, Richard, "Washington State Ferries: Colman Dock and the new Mukilteo Ferry Terminal: environmental protection and marine mammal monitoring during construction" (2018). *Salish Sea Ecosystem Conference*. 585.

<https://cedar.wvu.edu/ssec/2018ssec/allsessions/585>

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Colman and Mukilteo Multimodal Projects

Protected Species Monitoring



Rick Huey
Washington State Ferries
Biologist



WSF Creosote Removal

- 16,466 tons removed from 2008 - 2017
- Mukilteo Tank Farm Pier – 4,302 tons (2015)
- Colman North Trestle – 7,400 tons (2019)
- Total = 23,866 tons



WSF Creosote Removal

How much is 24,000 tons?

16,000 Prius



4 Wenatchee Jumbo II (vessel weight + 220 vehicles + 2,500 passengers)



WSF Protected Species Monitoring

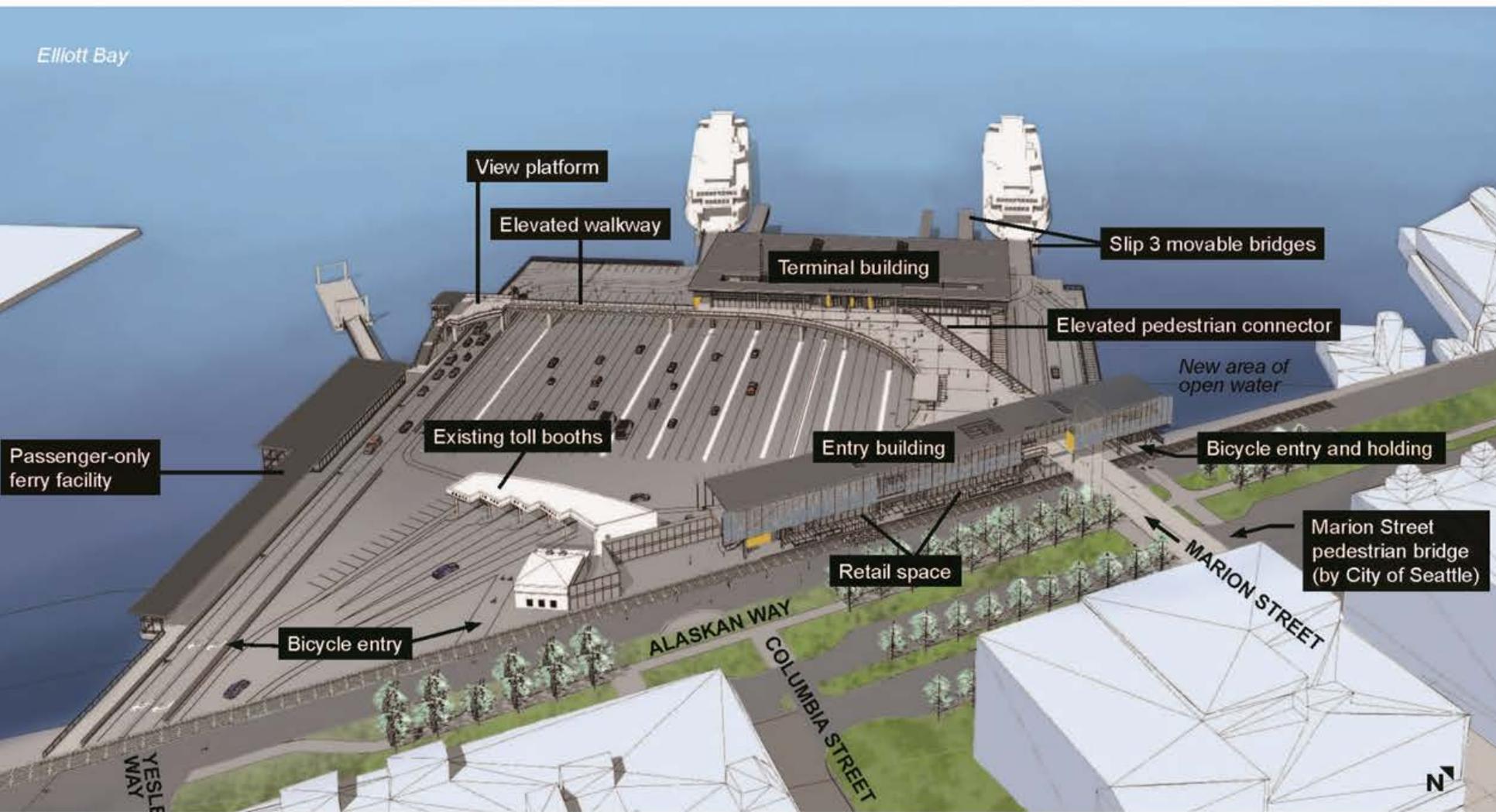
- ESA listed species
 - Marbled murrelet
 - Southern Resident Killer Whale
 - Humpback Whale
- MMPA listed species



Seattle Ferry Terminal at Colman Dock



Colman Dock 2021



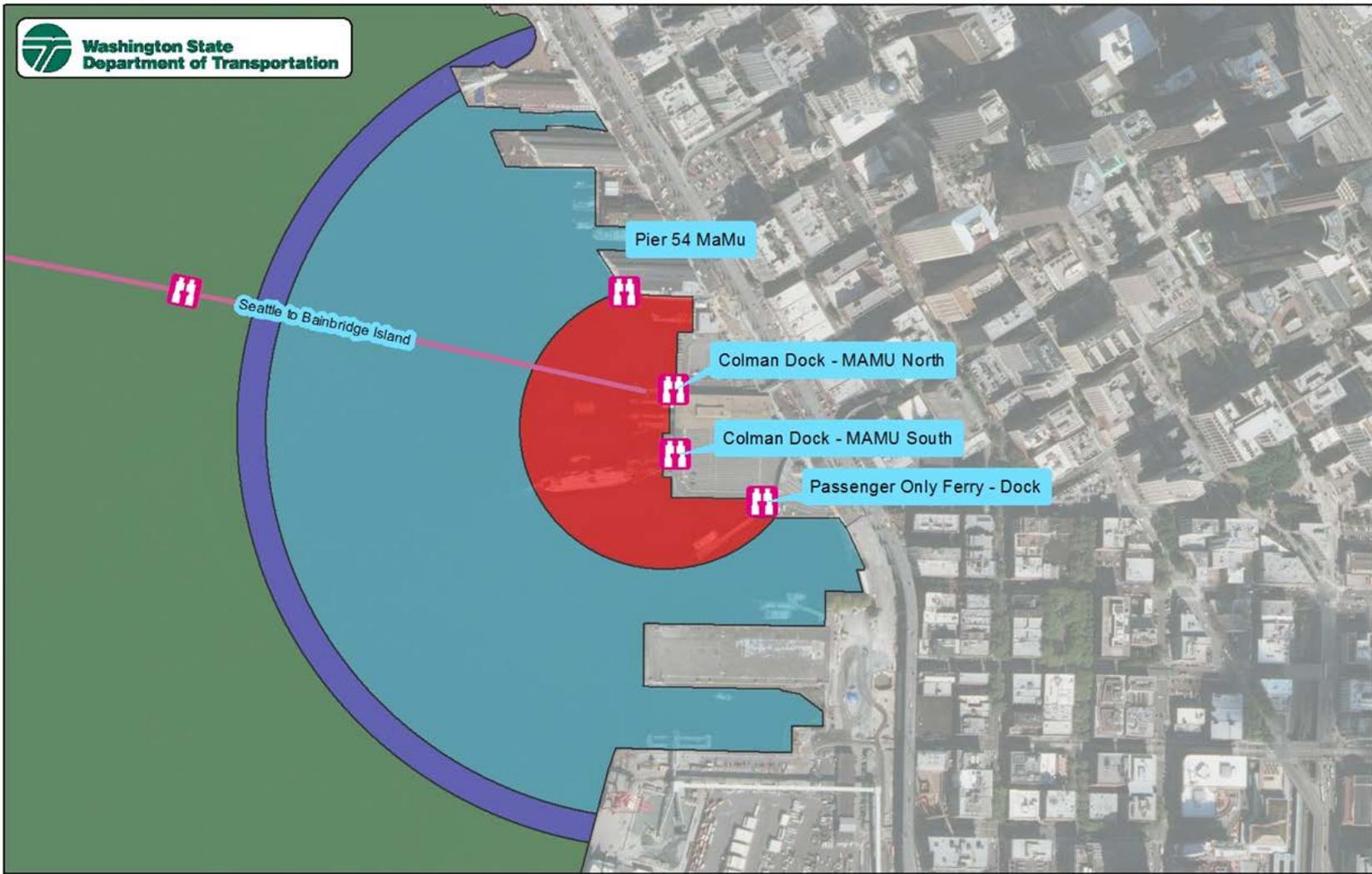
Colman Environmental Highlights

- 7,400 tons creosote removed by 2021
- Remove fill under north trestle, opening up new shoreline
- Improve stormwater treatment
- \$2.6 million voluntary capping 4.4 acres of contaminated sediments
- LEED Green Building
- Protected Species Monitoring
- ArcGIS Survey123 to record sightings



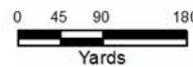
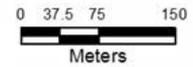
Voluntary Sediment Cleanup





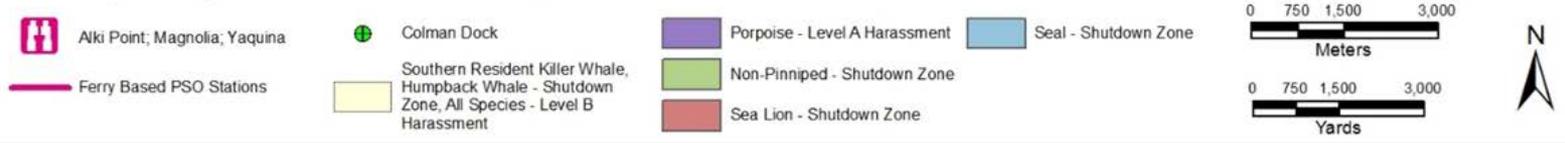
Impact Driving 24/30/36 inch Steel Piles Harassment and Shutdown Zones

- | | | | |
|--|---|--|--|
|  PSO Monitoring Stations |  Porpoise - Level A |  Seal, Sea Lion, Porpoise, Dolphin, Transient Killer Whale - Level B Harassment |  Seal - Level A |
|  Seattle - Bainbridge Ferry Based PSO Station |  Southern Resident Killer Whale, Humpback Whale, and Minke Whale Shutdown Zone, Gray Whale Level A Harassment Zone |  Gray Whale - Shutdown Zone |  Marbled Murrelet and Remaining Marine Mammal Shutdown Zone |





Vibratory Driving 24/30/36 inch Steel Piles Harassment and Shutdown Zones

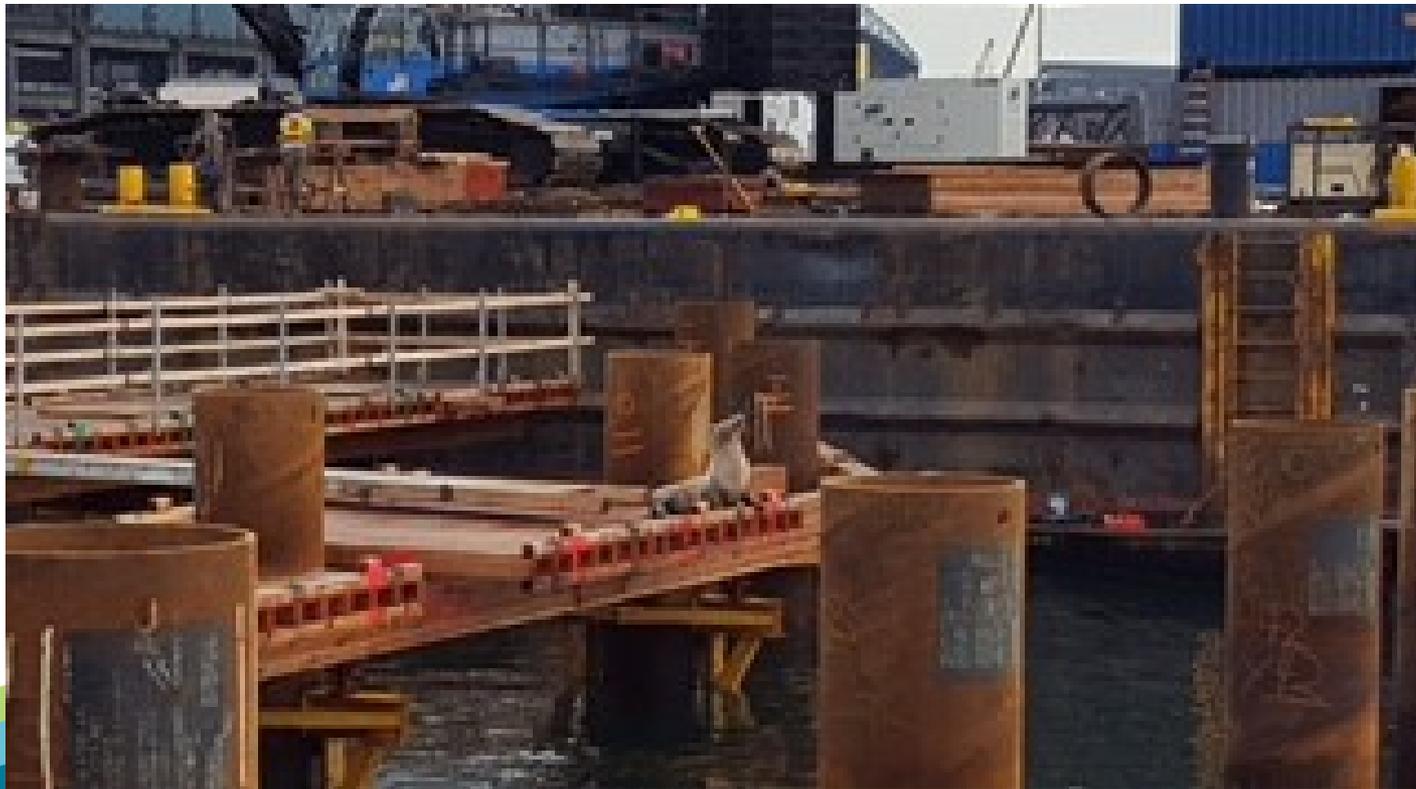


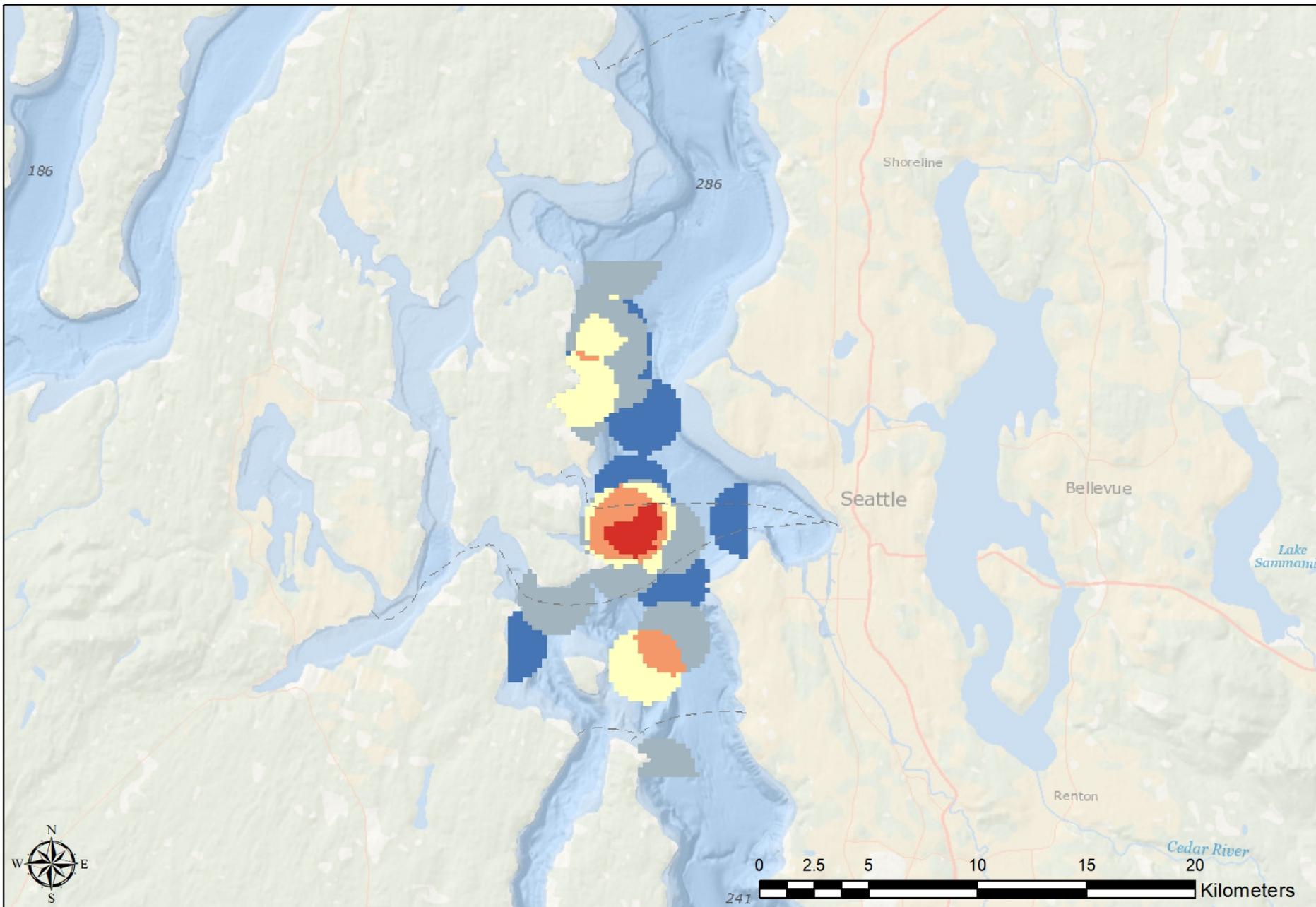
Colman Year One Sightings

| Species | Sightings | Take |
|-------------------------------|--------------|------------|
| Marbled Murrelet | 5 | 0 |
| Steller sea lion | 54 | 9 |
| Harbor seal | 773 | 201 |
| California sea lion | 997 | 267 |
| Harbor porpoise | 282 | 41 |
| Killer whale - Resident | 148 | 0 |
| Killer whale - Transient | 19 | 0 |
| Unidentified Pinniped | 76 | 21 |
| Unidentified Dolphin/Porpoise | 26 | 2 |
| Unidentified Large Whale | 1 | 0 |
| Common Dolphin | 2 | 0 |
| Bottlenose Dolphin | 4 | 2 |
| Totals | 2,387 | 543 |

Construction Stoppages

- 15 hours – seal, sea lion, SRKW
- 6 hours – weather

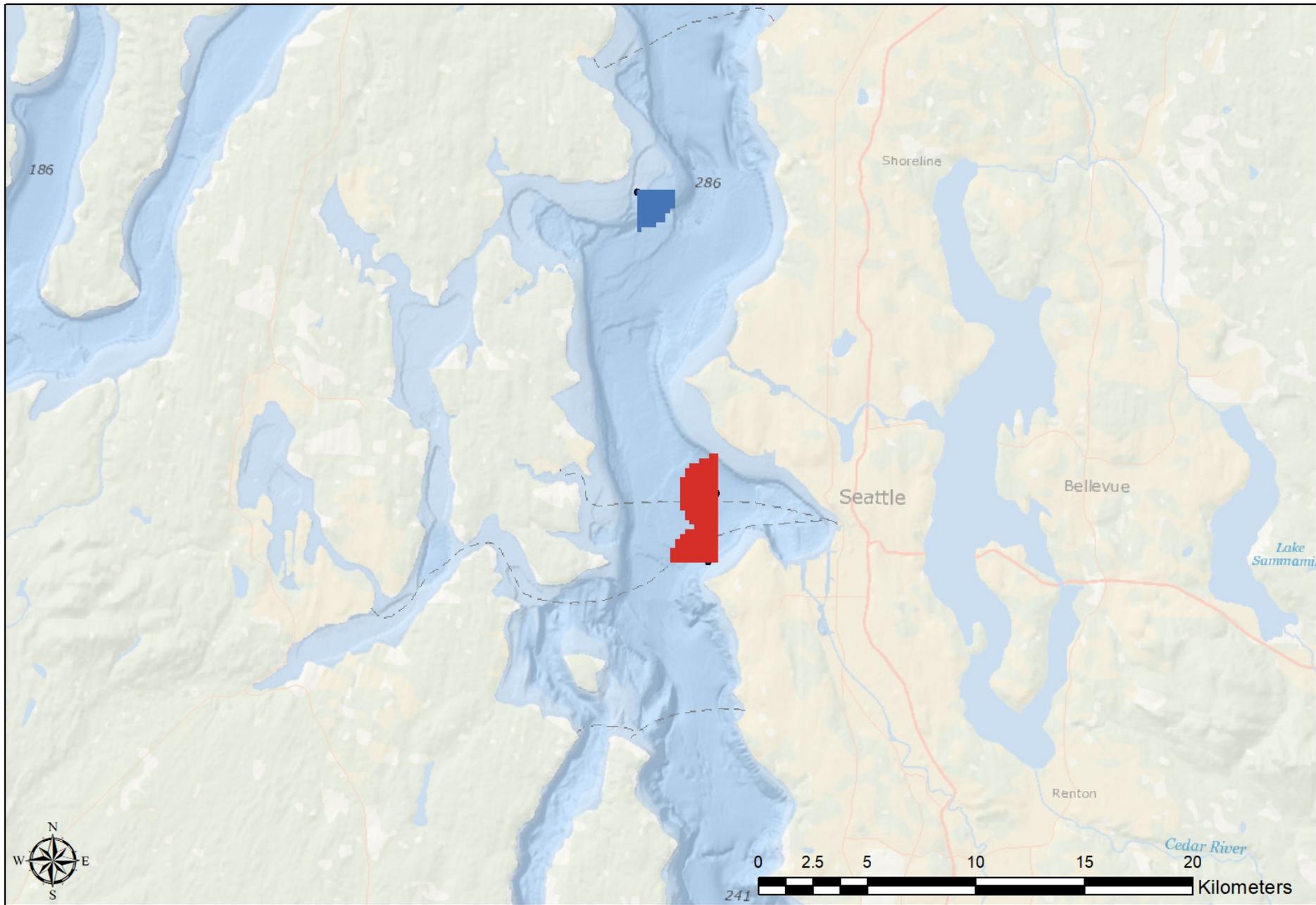




Colman Dock - Southern Resident Killer Whale Sighting Density

Individuals Sighted per sq. km

| | | | | |
|-----------|-----------|-----------|-----------|-----------|
| 0.1 - 0.5 | 0.6 - 1.3 | 1.4 - 2.5 | 2.6 - 4.2 | 4.3 - 5.8 |
|-----------|-----------|-----------|-----------|-----------|



Colman Dock - Transient Killer Whale Sighting Density

Individuals Sighted per sq. km



0.3



0.9 - 1.6

Mukilteo Ferry Terminal 2019



Tank Farm Pier Removal 2015



Tank Farm Pier Removal



Tank Farm Pier unused since 1989. Removal took approx. 8 months.

View after pier removal



Current Terminal Removal



Mukilteo Environmental Highlights

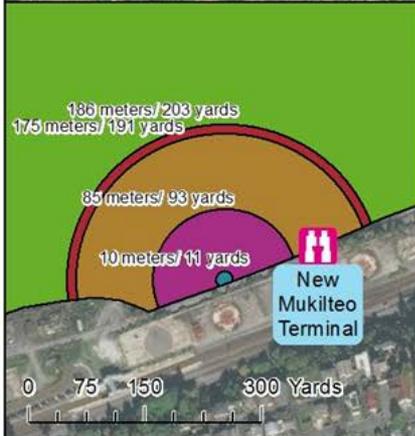
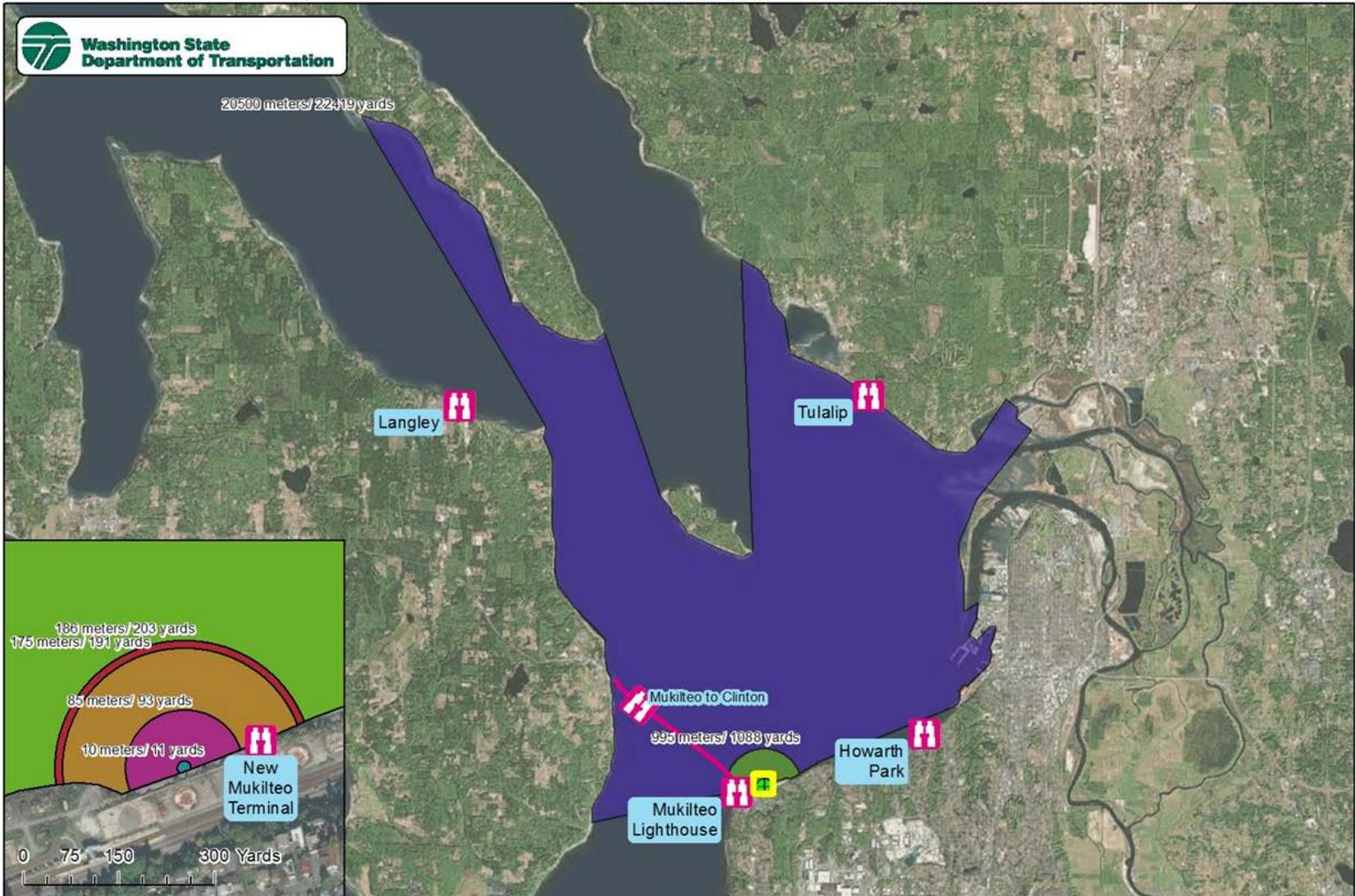
- 4,302 tons creosote removed
- Improved stormwater treatment
- New Mukilteo Terminal design/solar will result in the first WSDOT net zero ready energy use building in the state.
- Protected Species Monitoring
- ArcGIS Survey123 to record sightings





Washington State
Department of Transportation

20500 meters/22419 yards



Mukilteo Multimodal Project: Steel Vibratory Pile Driving Harassment Zones

- | | | | |
|-------------------------|--|--|-------------------------------------|
| PSO Monitoring Stations | Mukilteo Ferry Terminal | Shutdown - Southern Resident Killer Whales; Level B Harassment - All Other Species | Shutdown - All other Marine Mammals |
| Ferry PSO Stations | Level A Harassment for 24", 30", 36" dia. piles - Porpoise | Shutdown - Sea Lion | Shutdown - Seal |
| | Level A Harassment for 78" and 120" dia. piles - Porpoise | | |

0 1,000 2,000 4,000
Meters

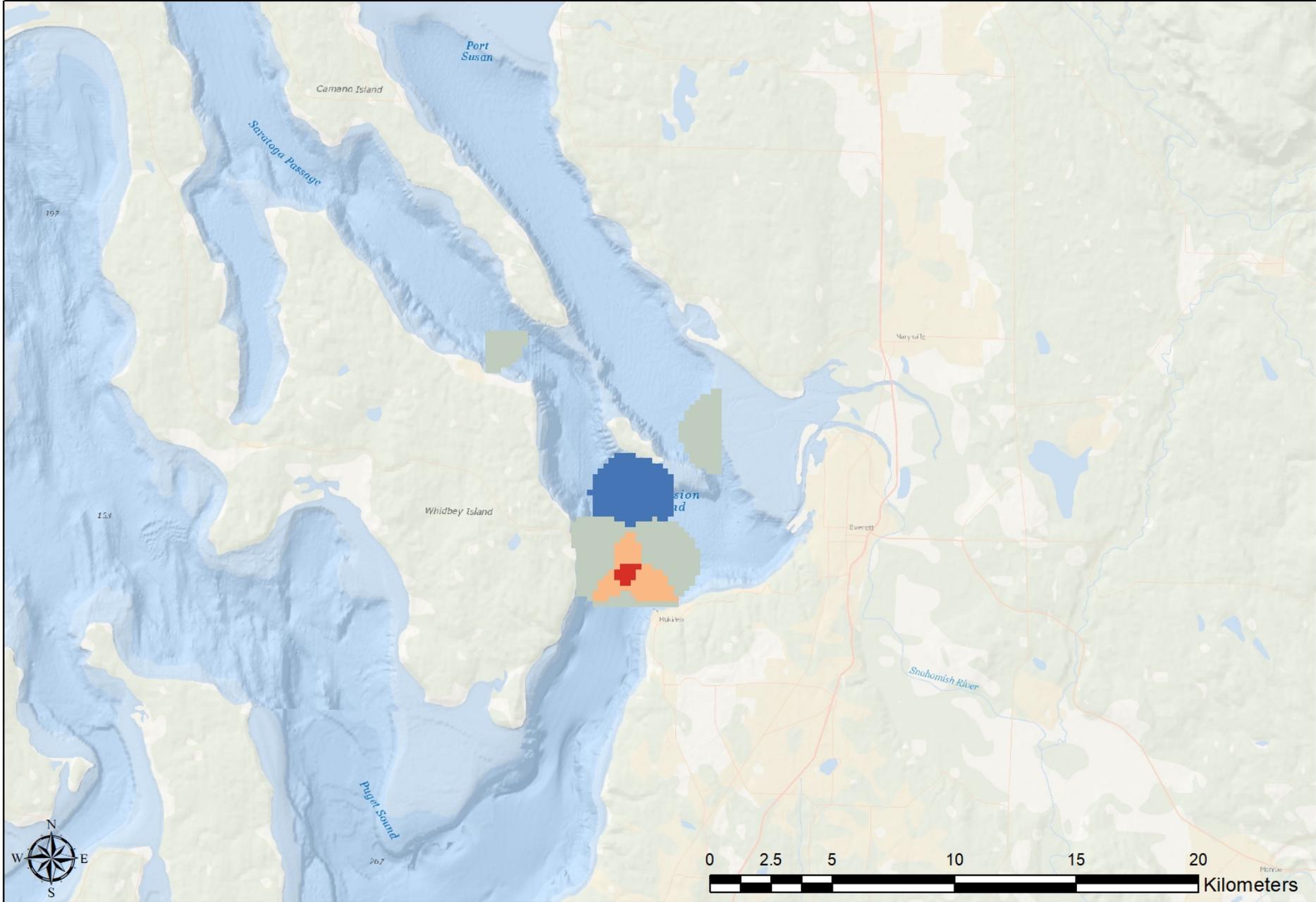
0 1,000 2,000 4,000
Yards



Mukilteo Year Two Sightings

| Species | Sightings | Take |
|-------------------------------|--------------|------------|
| Marbled Murrelet | 126 | 0 |
| Steller sea lion | 7 | 1 |
| Harbor seal | 1,525 | 492 |
| California sea lion | 707 | 215 |
| Harbor porpoise | 85 | 28 |
| Dall's porpoise | 2 | 0 |
| Killer whale - Transient | 16 | 4 |
| Unidentified Pinniped | 12 | 0 |
| Unidentified Dolphin/Porpoise | 6 | 0 |
| Unidentified Small Whale | 1 | 0 |
| Totals | 2,487 | 740 |

SDOT



Mukilteo Ferry Terminal - Transient Killer Whale Sighting Density

Individuals Sighted per sq. km

| | | | | | | | |
|---|-----------|---|-----------|---|-----------|---|---------|
|  | 0.1 - 0.2 |  | 0.3 - 0.4 |  | 0.5 - 0.7 |  | 0.8 - 1 |
|---|-----------|---|-----------|---|-----------|---|---------|

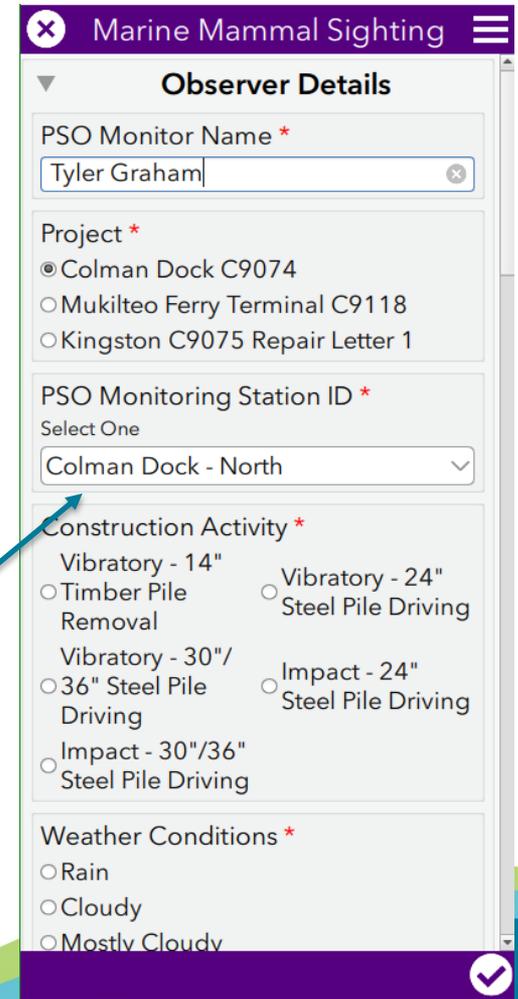
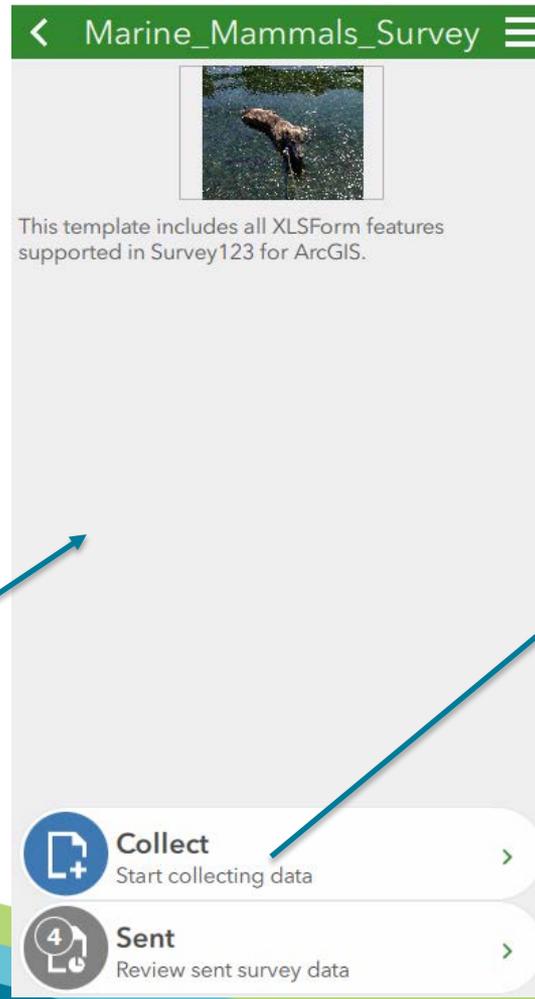
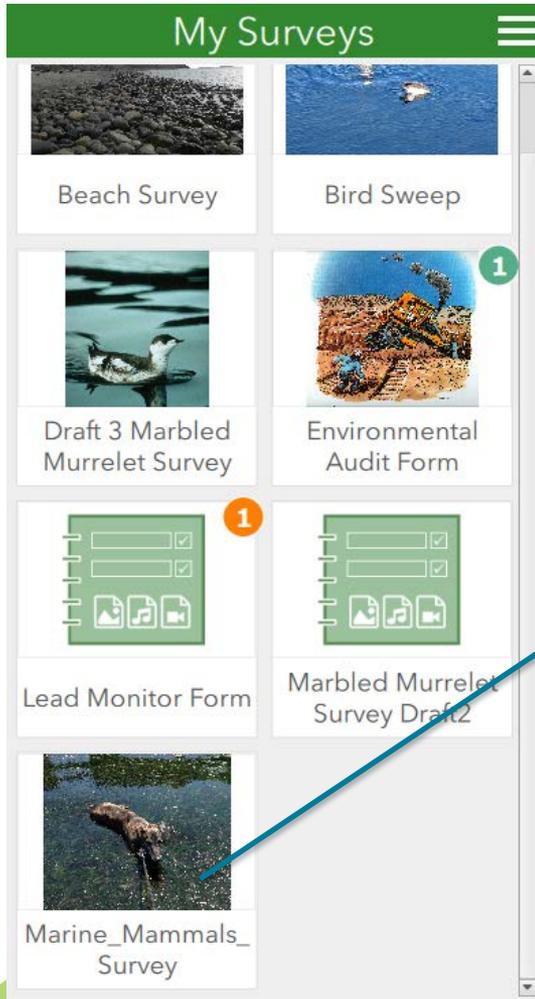
Construction Stoppages

- 12 hours – marine mammal
- 21 hours – weather



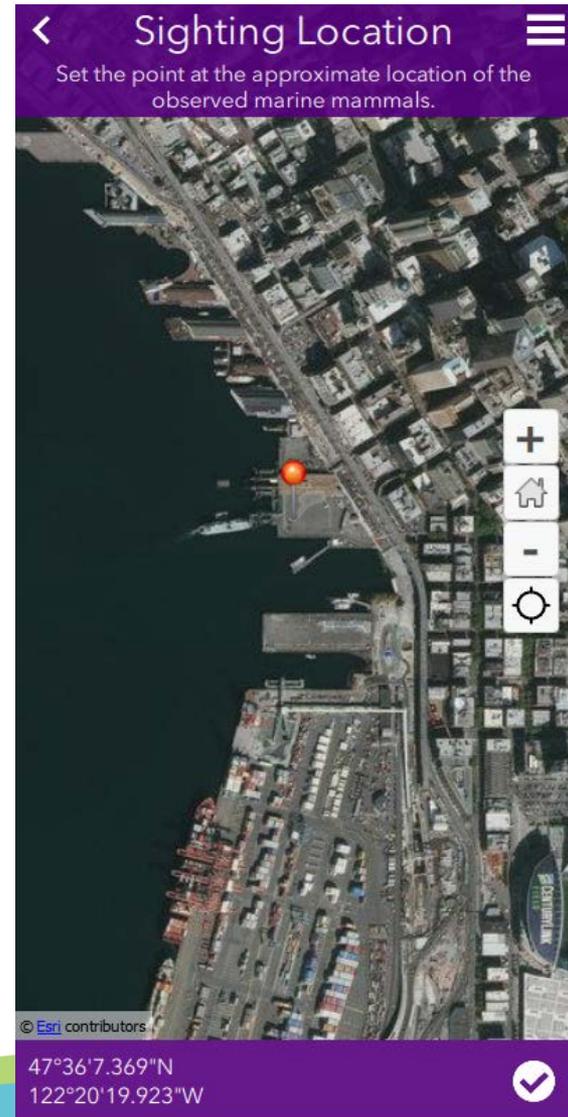
 WSDOT

Opening a Survey



Positioning a point

- Survey123 is a little different. Instead of tapping or clicking on a map to set a point, you move the map to the point, which is always in the center of the screen.
- Simply place your finger on the map and drag it around.
- The Home button takes you to the default extent of the map.
- Tap the check box at the bottom right to save the point location to the form.



Taking Pictures



A rare sighting of a non-swimming marine mammal.

Seattle Multimodal Marine Mammal Report 8/14-20/17

| Breakdown of Authorized Level A and Level B Take | | | | | |
|--|-------------------------|-------------------------|-----------------------------|-----------------------------|--|
| Species | Weekly Level A Observed | Weekly Level B | Level A to date | Level B to Date | |
| Pacific Harbor Seal | 0 | 1 | 0 | 1 | |
| California Sea Lion | 0 | 0 | 0 | 0 | |
| Steller Sea Lion | 0 | 0 | 0 | 0 | |
| Killer Whale, Transient | 0 | 0 | 0 | 0 | |
| Gray Whale | 0 | 0 | 0 | 0 | |
| Harbor Porpoise | 0 | 3 | 0 | 11 | |
| Dall's Porpoise | 0 | 0 | 0 | 0 | |
| Authorized Take Remaining | | | | | |
| Species | Authorized Level A Take | Authorized Level B Take | Pct. Remaining Level A Take | Pct. Remaining Level B Take | |
| Marbled Murrelet | 0 | 0 | No Take Allowed | No Take Allowed | |
| Pacific Harbor Seal | 364 | 715 | 100.00% | 99.86% | |
| California Sea Lion | 0 | 3901 | No Take Allowed | 100.00% | |
| Steller Sea Lion | 0 | 116 | No Take Allowed | 100.00% | |
| Killer Whale, Transient | 0 | 7 | No Take Allowed | 100.00% | |
| Gray Whale | 1 | 15 | 100.00% | 100.00% | |
| Harbor Porpoise | 233 | 2056 | 100.00% | 99.46% | |
| Dall's Porpoise | 16 | 137 | 100.00% | 100.00% | |

Mukilteo Multimodal Harassment - Daily

wsdot.maps.arcgis.com/home/webmap/viewer.html?webmap=6c27be96b7142a4b45595393d6e4490

Save Share Print Directions Measure Bookmarks Find address or place

Details Add Edit Basemap

About Content Legend

Marine Mammal Monitoring v3_stakeholder

- Harbor seal
- California sea lion
- Dall's porpoise
- Gray whale
- Harbor porpoise
- Humpback whale
- Killer whale - Southern Resident
- Killer whale - Transient
- Minke whale
- Northern Elephant seal
- Other

Scale: 0 300 600ft

Map Title: Marine_Mammal_Monitoring_v3

| | |
|---------------------------|-------------------------------|
| PSO Monitor Name | Sye Ehler |
| Project | Mukilteo Ferry Terminal C9118 |
| PSO Monitoring Station ID | Mk_Term |
| Construction Activity | VibeHpile |
| Weather Conditions | Partly Cloudy |
| Specify other. | |
| Observation Date & Time | 10/11/2017, 2:27 PM |
| Species Observed | California sea lion |
| Specify other. | |

Zoom to Get Directions Edit

Powered by esri

USDA FSA, DigitalGlobe, GeoEye, Microsoft, CNES/Airbus DS



Well Trained PSO's are Key!



“Dolphins are so beautiful!”
- Untrained Person as they enter a Marine Mammal sighting