Lowland/In-Water Operable Unit
Former St. Helens Fiberboard Facility

Basis of Design

Tribal Engagement Meeting

November 14, 2024

DEQ

GSI Water Solutions, Inc.

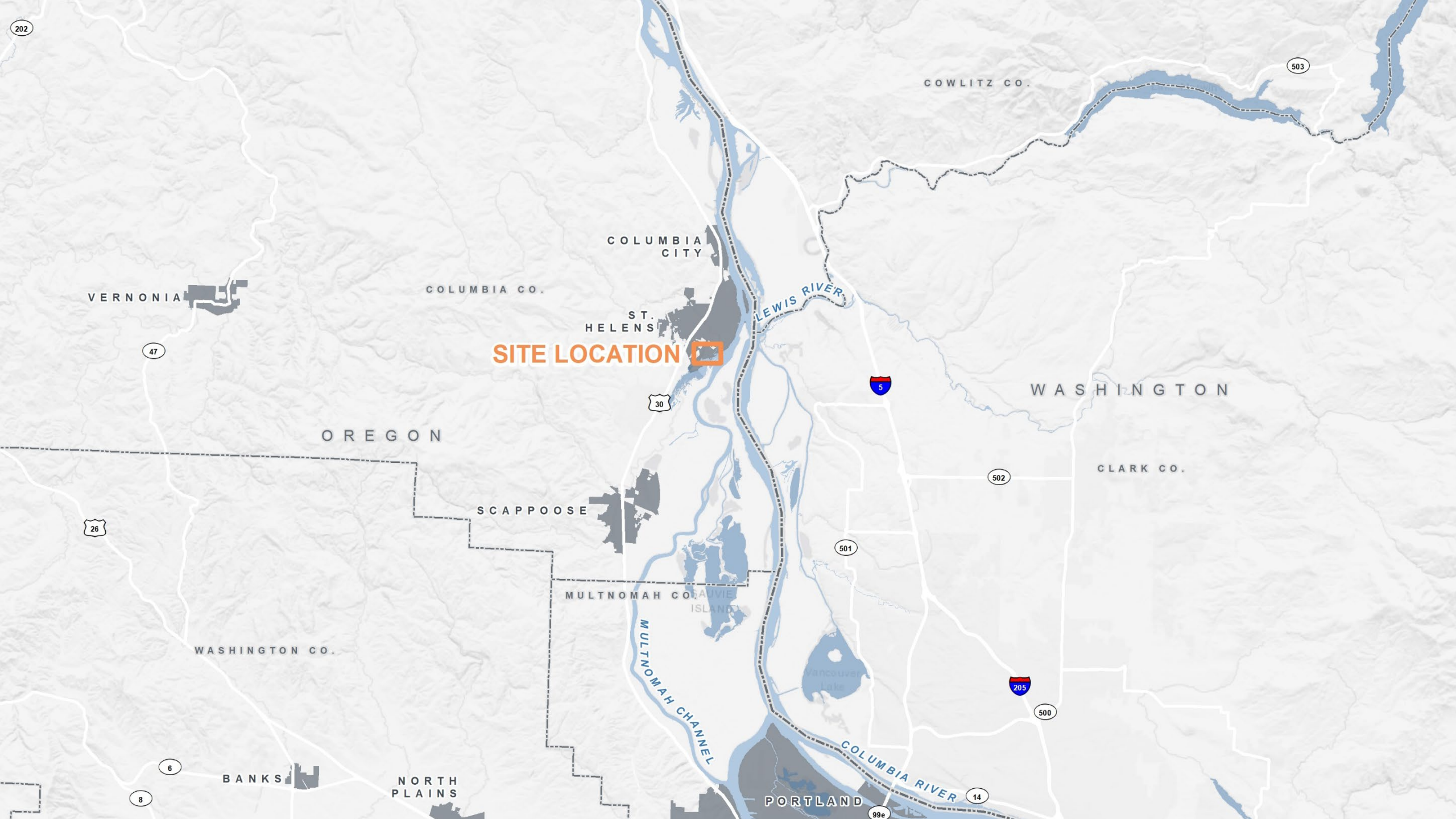
DOF DALTON OLMSTED FUGLEVAND

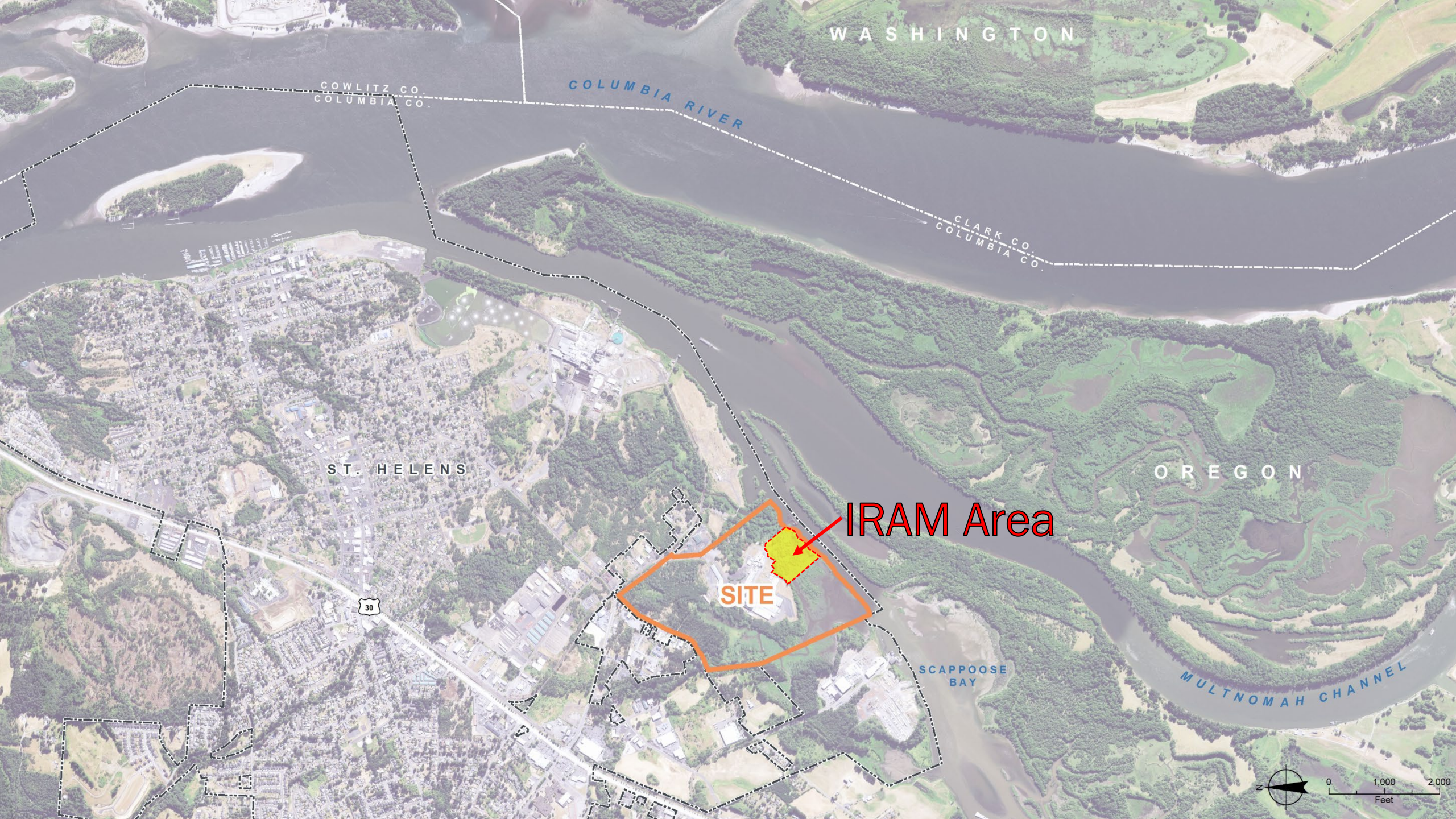
Lotic Solutions, LLC

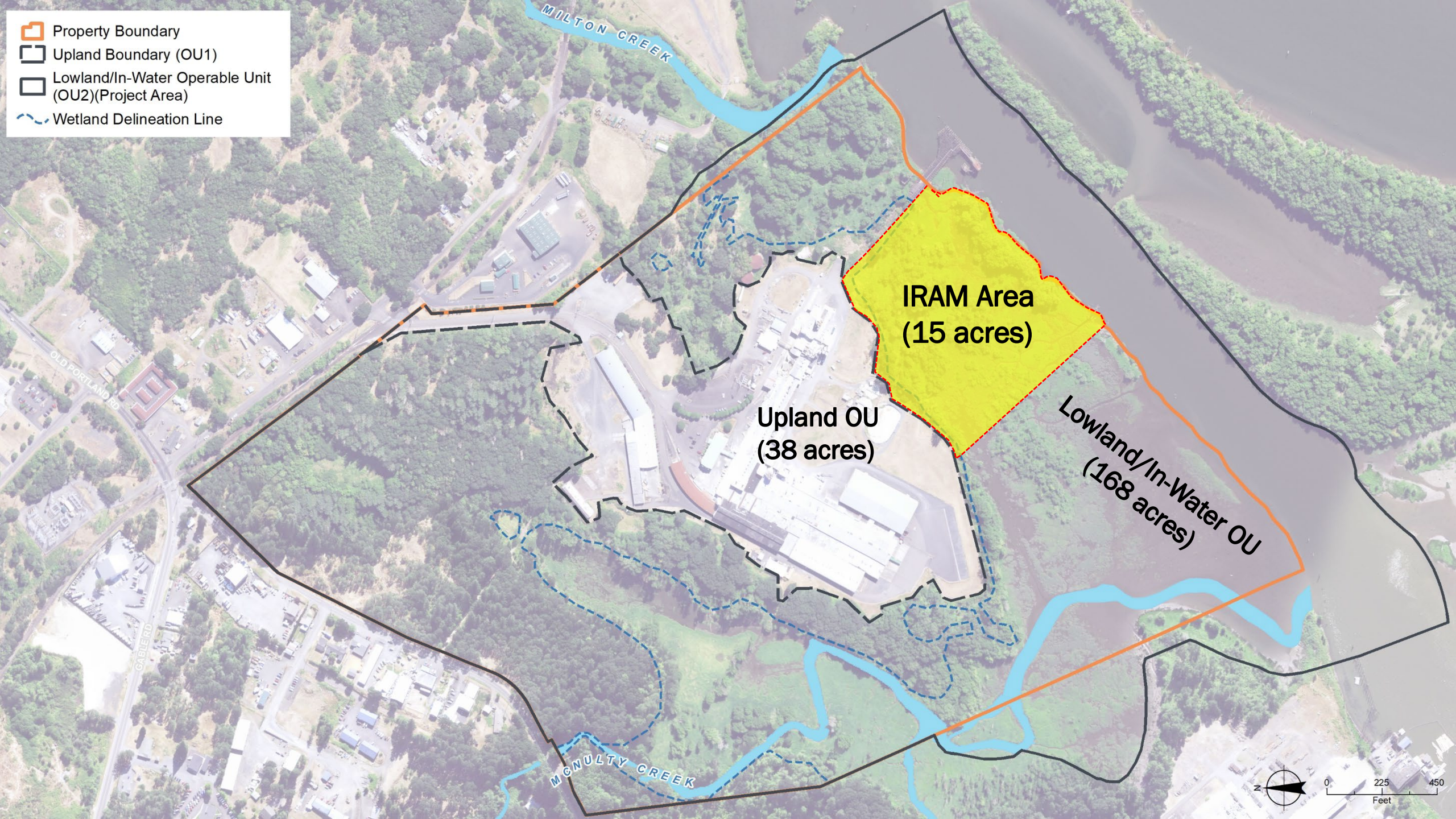
Agenda

- Project Overview
- Basis of Design for the Interim Removal Action Measure (IRAM)
- IRAM Approach
- Post-Removal Site Conditions
- IRAM Planning and Project Schedule
- Property Sale
- Fish Advisory Update
- Wapato Tissue Investigation

Project Overview

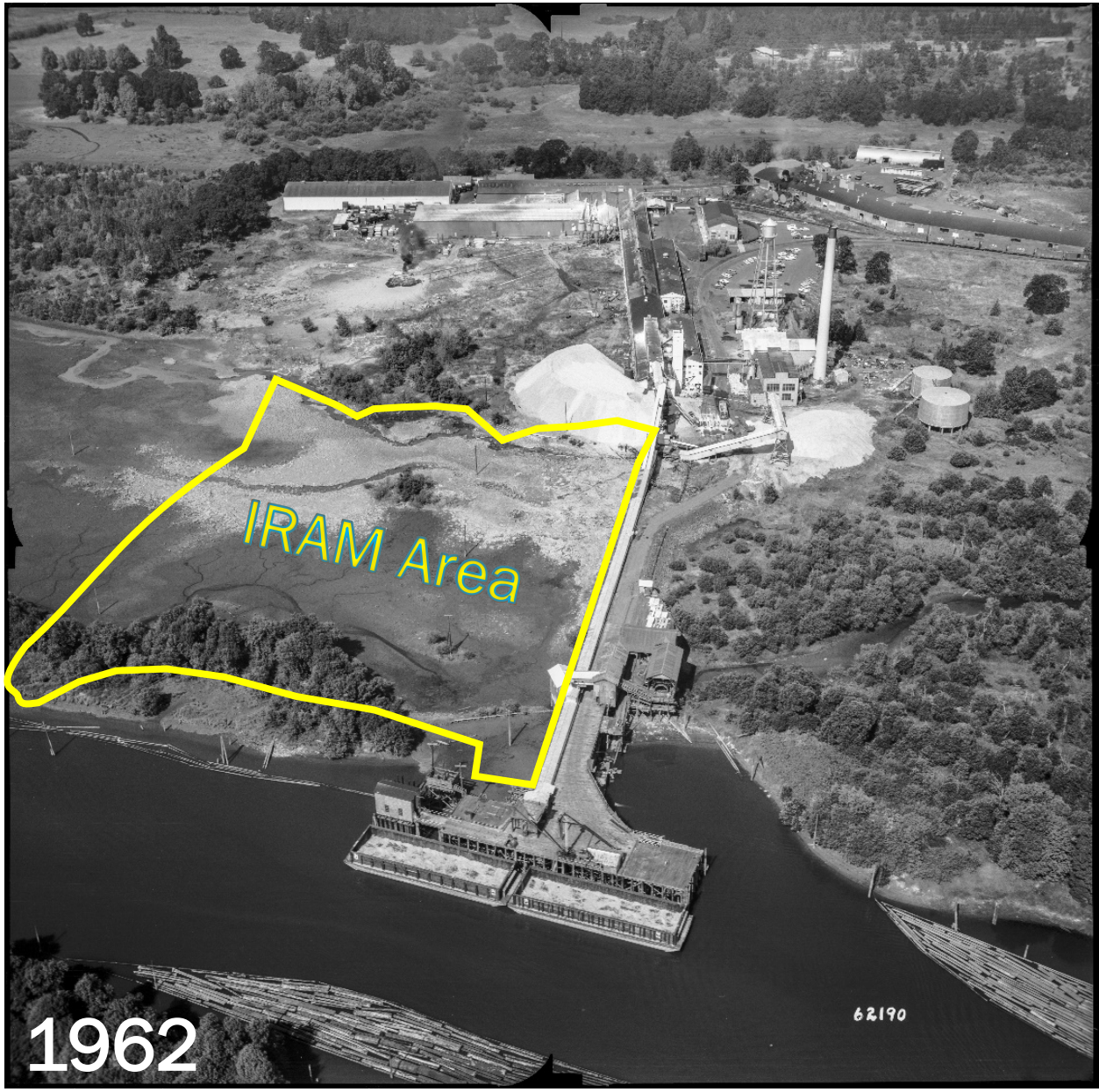

SITE LOCATION
COLUMBIA CITY
ST. HELENS
VERNONIA
COLUMBIA CO.
COWLITZ CO.
LEWIS RIVER
OREGON
WASHINGTON
CLARK CO.
SCAPPOOSE
MULTNOMAH CO.
WASHINGTON CO.
MULTNOMAH CHANNEL
COLUMBIA RIVER
SAUVIE ISLAND
Vancouver Lake
BANKS
NORTH PLAINS
PORTLAND
202
503
47
30
5
502
501
26
205
500
6
8
14
99e


WASHINGTON
COWLITZ CO.
COLUMBIA CO.
COLUMBIA RIVER
CLARK CO.
COLUMBIA CO.
ST. HELENS
OREGON
IRAM Area
SITE
30
SCAPPOOSE BAY
MULTNOMAH CHANNEL
N
0
1,000
2,000
Feet


Property Boundary
Upland Boundary (OU1)
Lowland/In-Water Operable Unit (OU2)(Project Area)
Wetland Delineation Line
MILTON CREEK
OLD PORTLAND RD
GABLE RD
MCNULTY CREEK
IRAM Area
(15 acres)
Upland OU
(38 acres)
Lowland/In-Water OU
(168 acres)
N
0
225
450
Feet

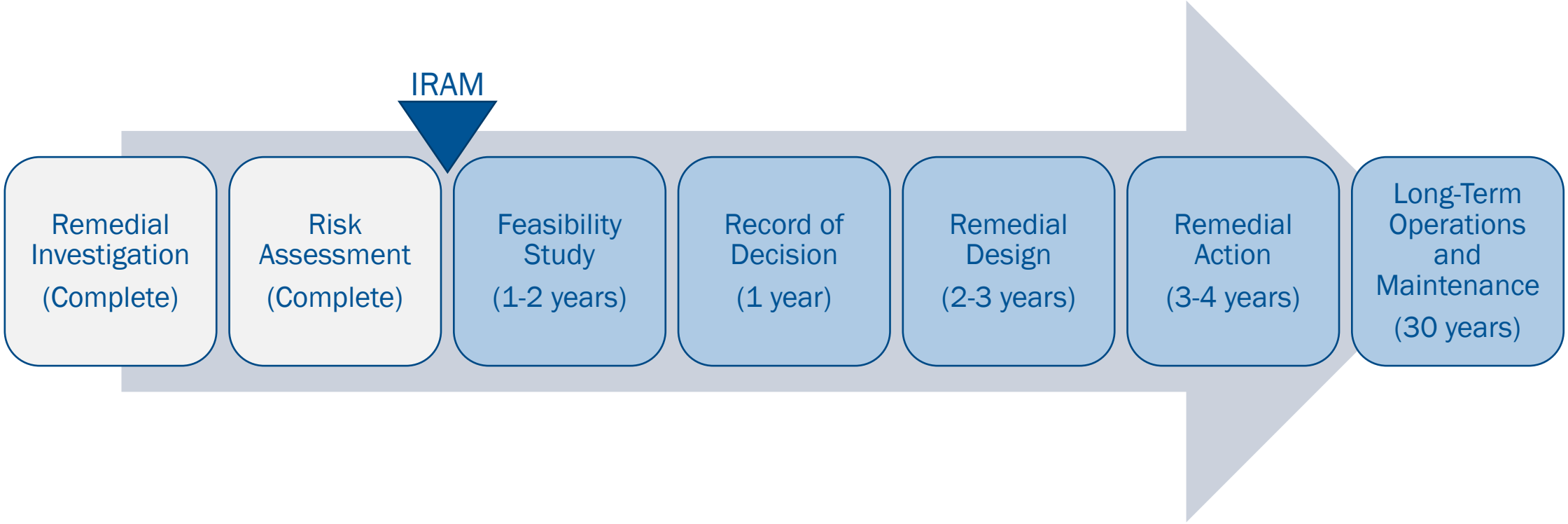
Site and Project Overview

- Contamination from historical manufacturing
  - Metals – primarily arsenic and mercury
  - Organics – primarily dioxin/furans (PCDD/F) as 2,3,7,8-tetrachlorodibenzo-p-dioxin equivalents (TEQ), polycyclic aromatic hydrocarbons, and total petroleum hydrocarbons (TPH)
- Highest concentrations found near former outfalls and wood chip pile
- Cleanup and restoration work funded by a $77M settlement
- IRAM: most contaminated area



Why an IRAM?

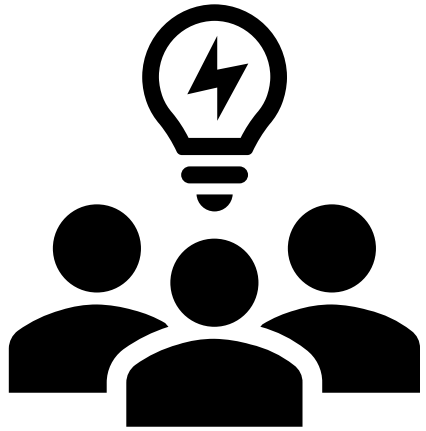
- Allows for expedited cleanup of most heavily contaminated areas
- Most efficient use of settlement dollars
- Phased approach will inform final remedy selection




Questions?

Basis of Design for the IRAM

IRAM Basis of Design



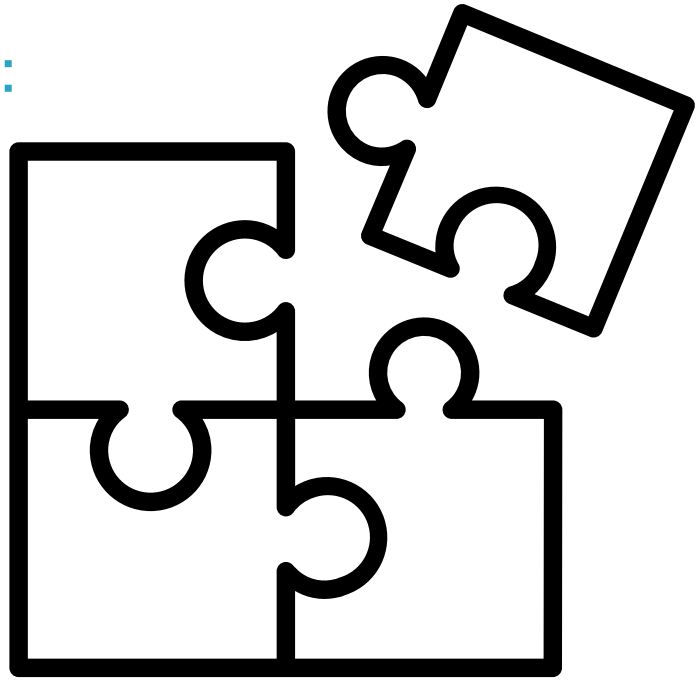
Basis of Design Report (based on 2023 Conceptual IRAM Plan)

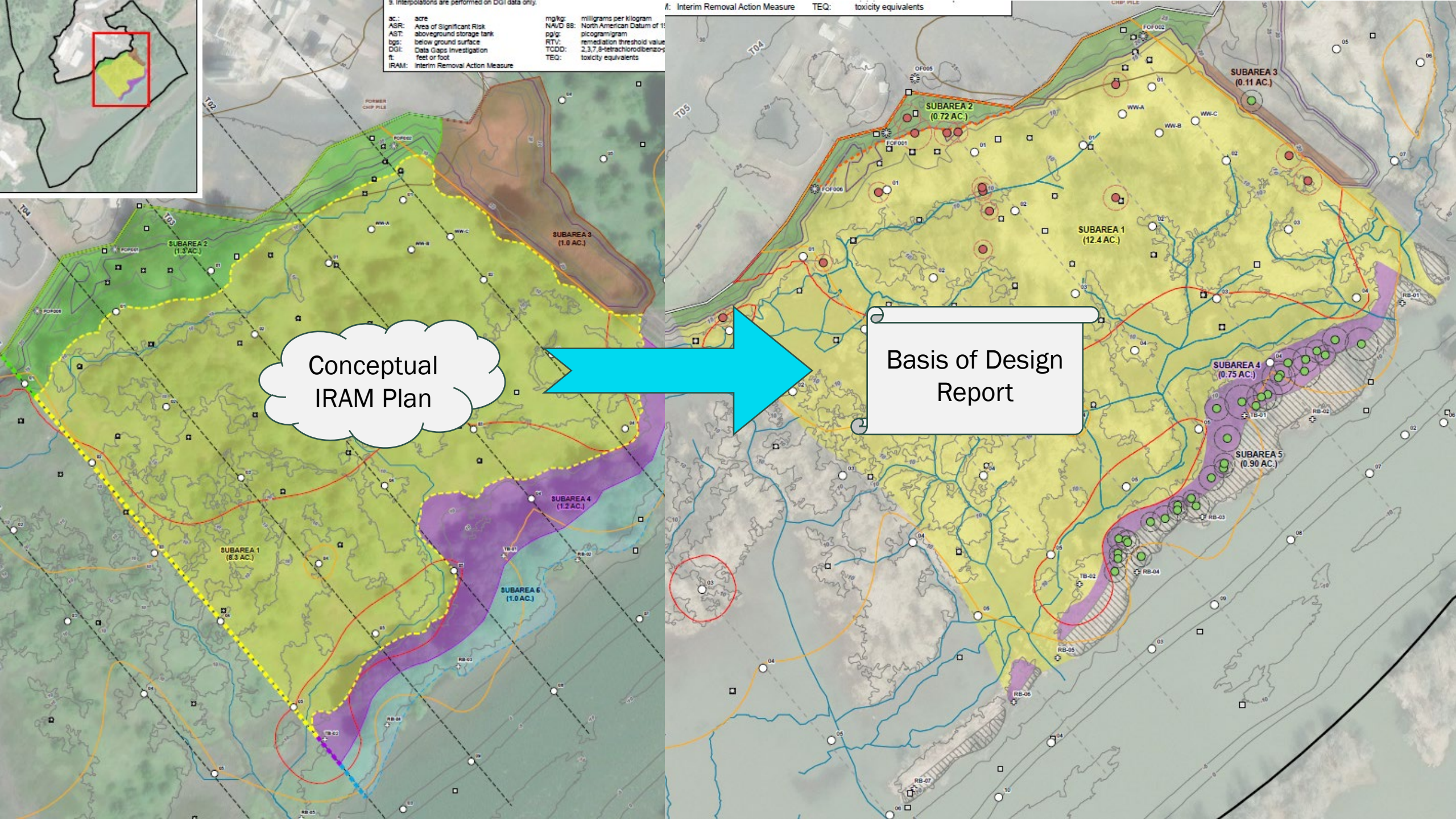
Summary of Design Factors:

- Project Objectives
- Remediation Levels
- Remediation Area
- Project Constraints:
  - Site Use
  - Existing Habitat

Post-IRAM Site Configuration:

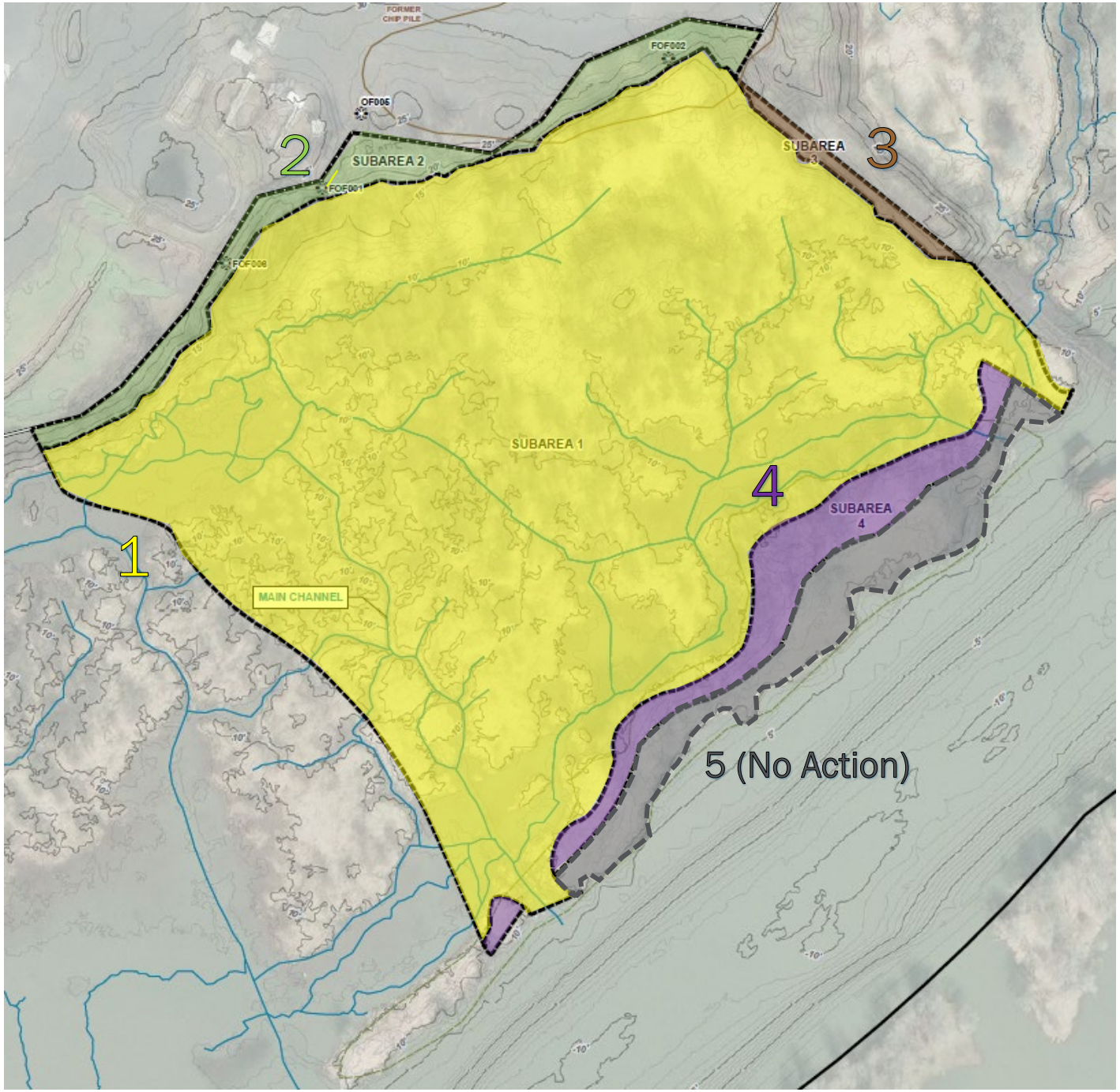
- Elevations
- Habitat
- Vegetation




Conceptual IRAM Plan
Basis of Design Report
SUBAREA 1 (8.3 AC.)
SUBAREA 2 (1.3 AC.)
SUBAREA 3 (1.0 AC.)
SUBAREA 4 (1.2 AC.)
SUBAREA 6 (1.0 AC.)
SUBAREA 1 (12.4 AC.)
SUBAREA 2 (0.72 AC.)
SUBAREA 3 (0.11 AC.)
SUBAREA 4 (0.75 AC.)
SUBAREA 5 (0.90 AC.)

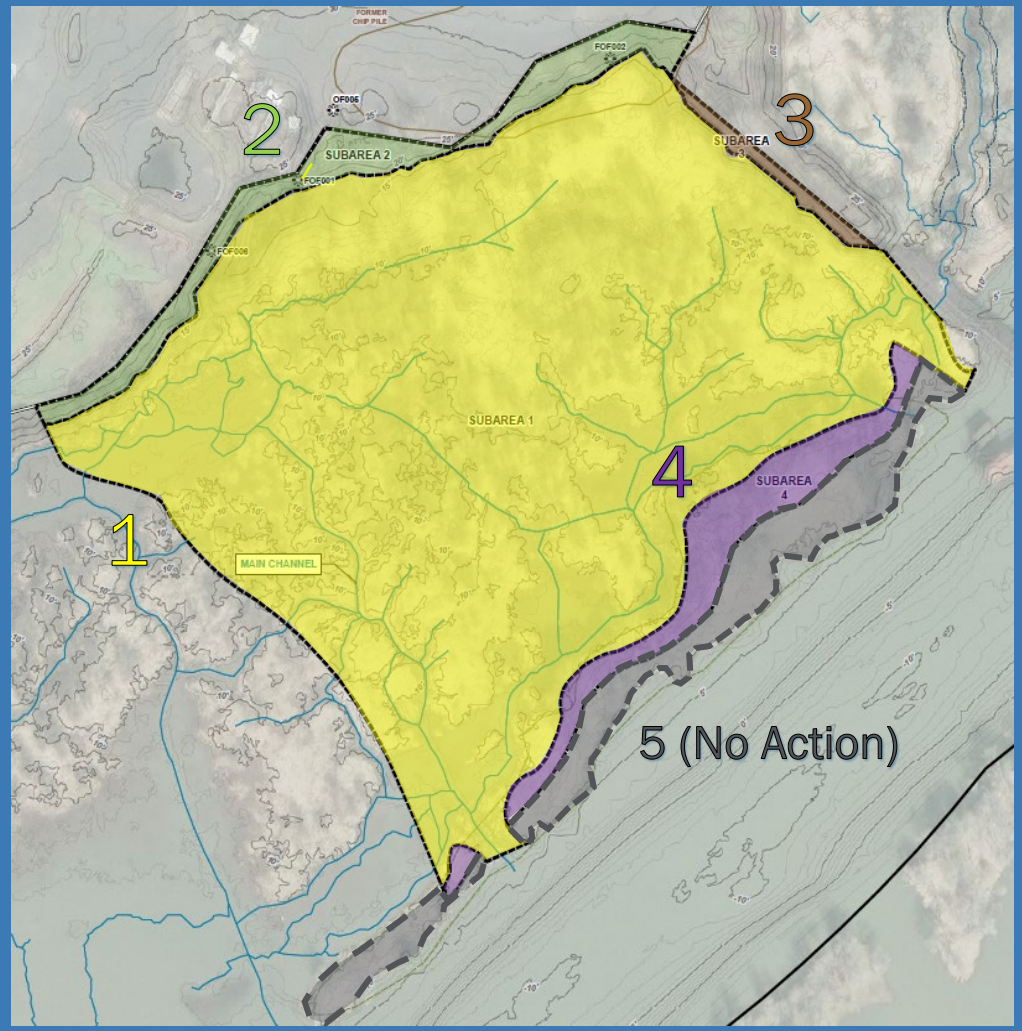
IRAM Area

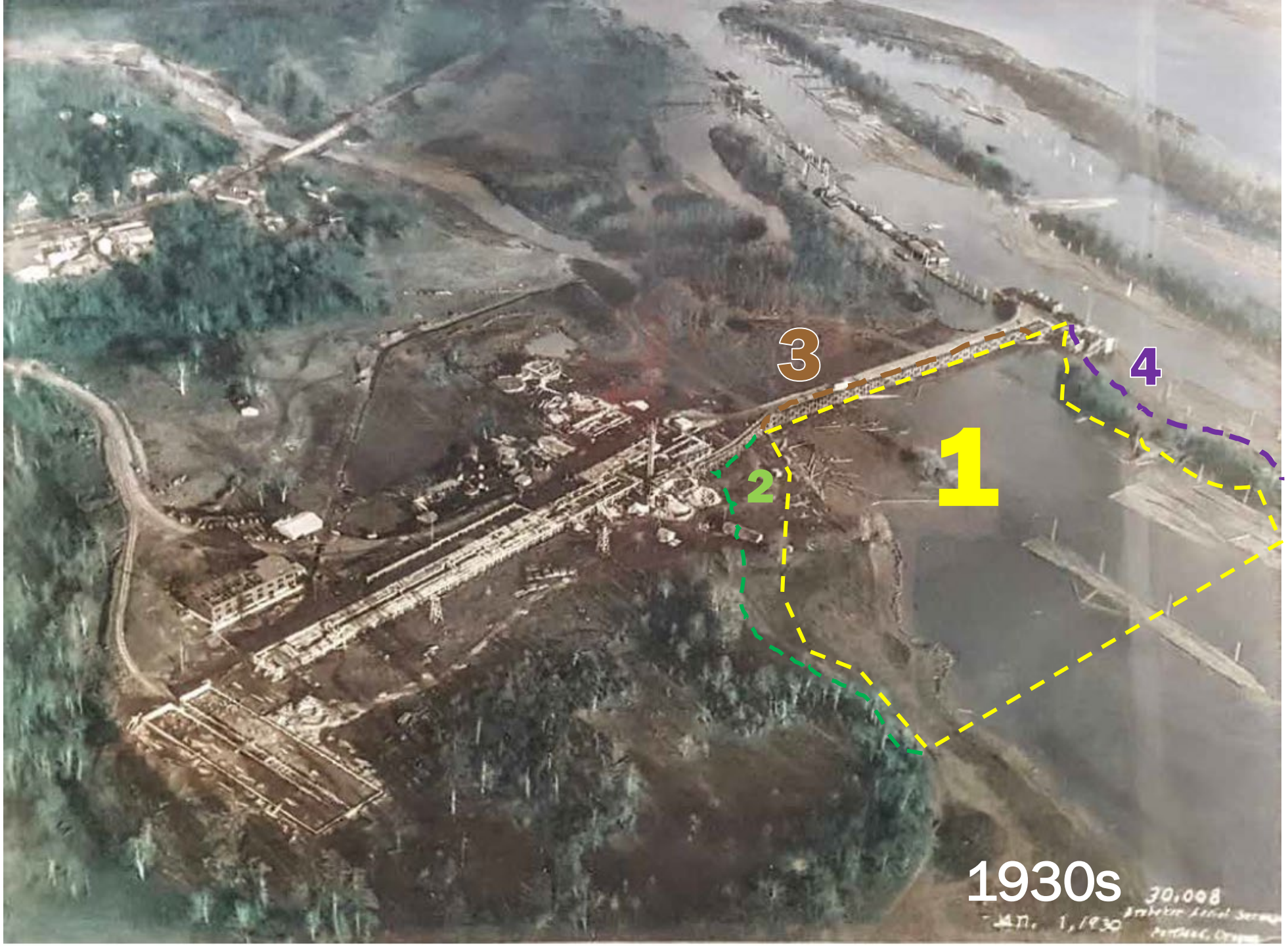
- Most significant/ widespread impacts
- Greatest depths of contamination
- Largest wood waste volume
- Efficiencies for implementation
- Scalable
- Split into five subareas with unique settings
  - Subarea 5: No Action



IRAM Subareas

Subarea	Description	Area (acres)
1	Central lowland area with greatest impacts, 3.4 ft deep (unbound)	12.4
2	Area between the upland OU and Subarea 1, historical outfall discharge	0.72
3	Historical pier structure slope to Subarea 1	0.11
4	Inside half of the riverbank	0.75
5 (No Action)	Outside half of the riverbank	0.9




3
4
2
1
1930s
30,008
JAN. 1, 1930


3
2
1
4
1970s


2
2
1
3
2019

Design Objectives

- Removal of contaminants/wood waste
- Restoration of ecological function
- Protection from disturbances and recontamination
- Allow for implementation of the final remedy

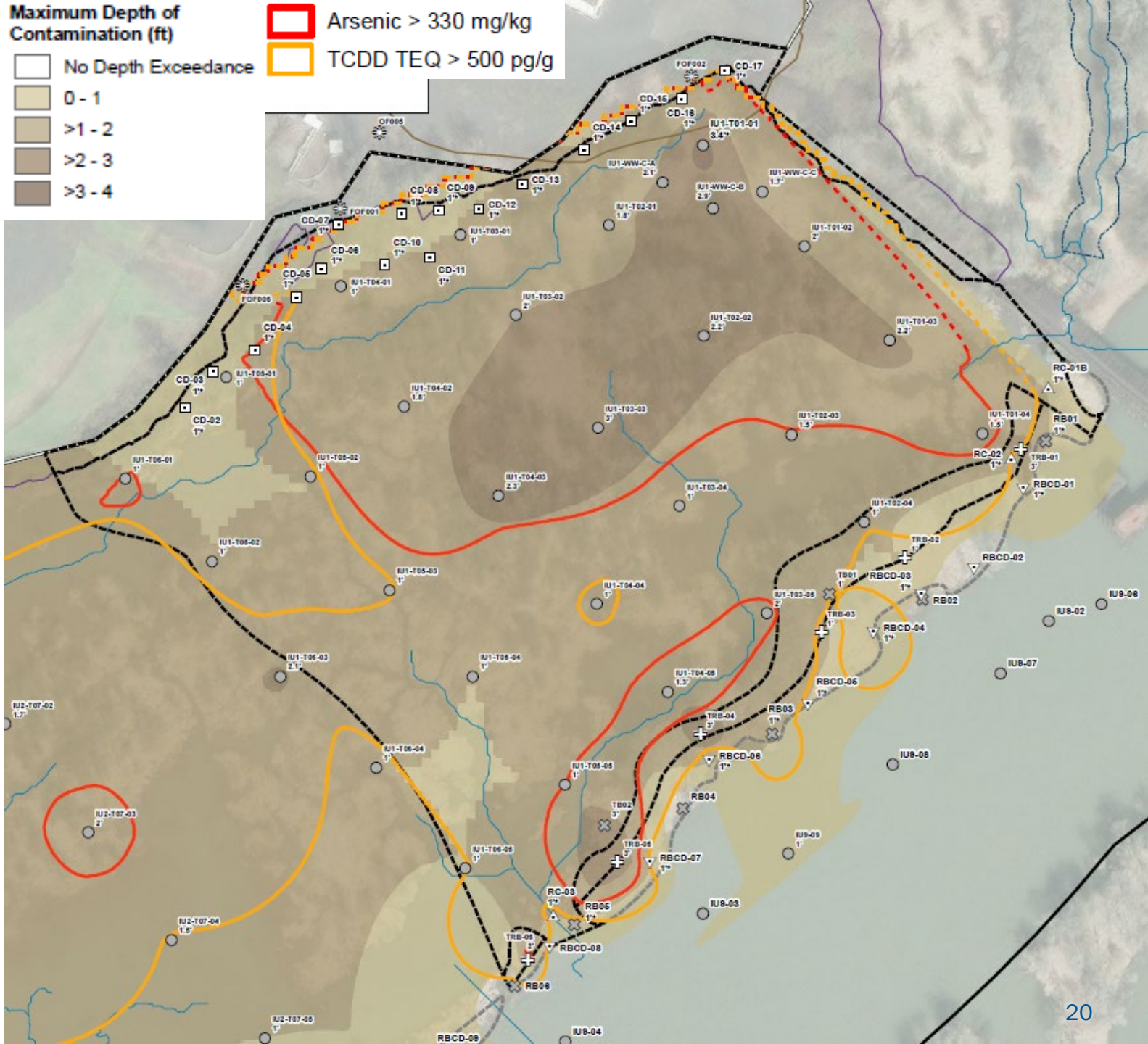
Project Target Levels

Key COC	Background Value	ASR Criteria and Applicability	RTV Value and Applicability
Arsenic	9 mg/kg	330 mg/kg Lateral extents	33 mg/kg Depth of removal
TCDD TEQ (mammalian)	5 ng/kg	500 ng/kg Lateral extents	50 ng/kg Depth of removal
Mercury	0.11 mg/kg	-	0.2 mg/kg
Polycyclic Aromatic Hydrocarbons	NA	-	12,205 µg/kg
Diesel Range Hydrocarbons	NA	-	340 mg/kg
Residual Range Hydrocarbons	NA	-	3,600 mg/kg

ASR = area of significant risk; RTV = remediation threshold value

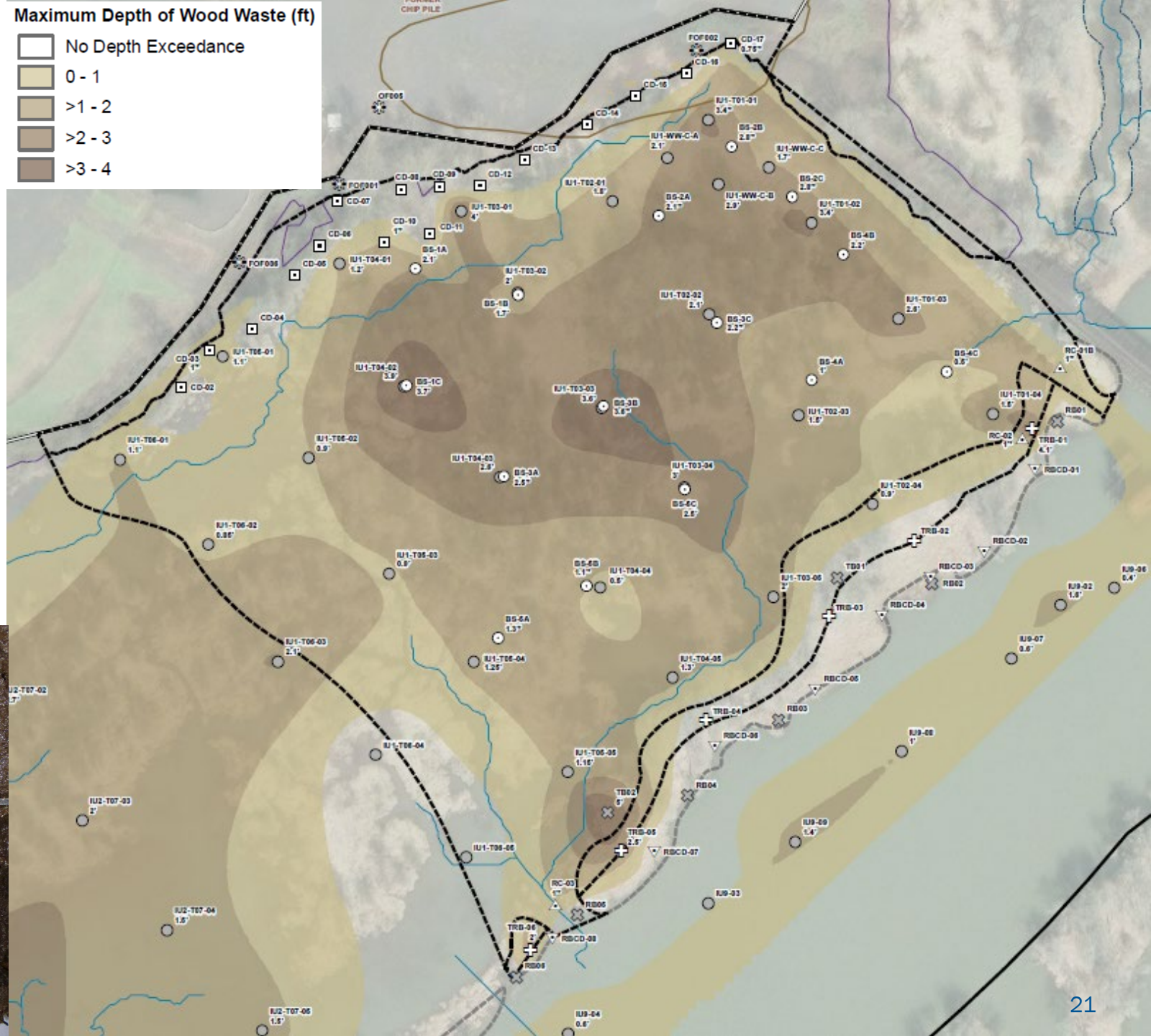
Performance Standards

- Areas of Significant Risk (ASRs)
  - Horizontal extent of action
- Remediation Threshold Values (RTVs)
  - Vertical extent of action

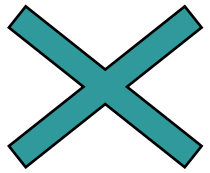


Performance Standards

- Wood waste
  - Presence of highly contaminated anthropogenic deposits



Source Control



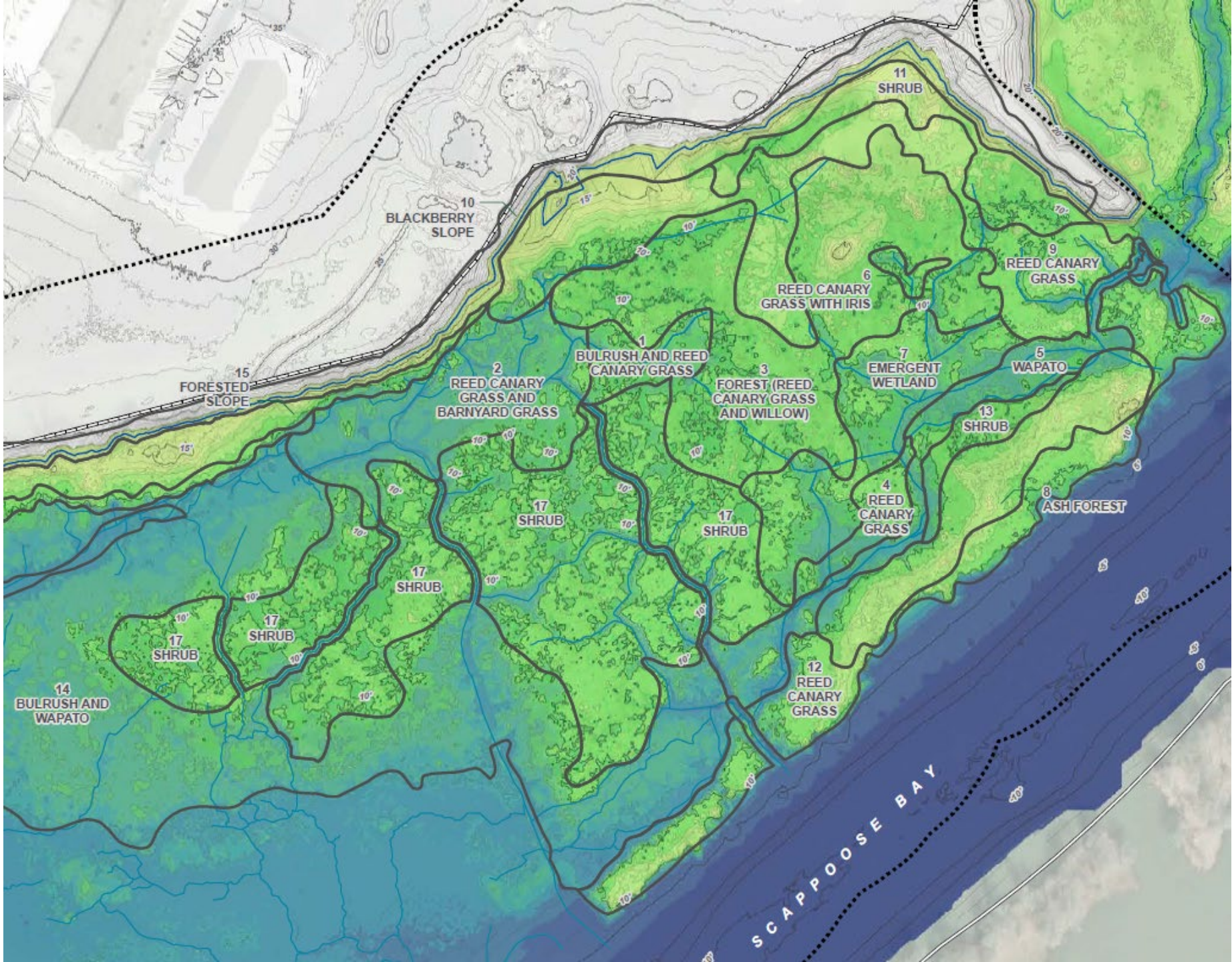
- Groundwater
  - Low mobility/mixing, natural sources
  - Not of concern

- Stormwater
  - Active outfall OF005
  - Status must be verified: IRAM Investigation

- Bank Erosion/Sediment Transport
  - Waves/wakes evaluated: IRAM Investigation
  - Pier structure evaluated: IRAM Investigation

Habitat and Ecological Background

- Site has 66.3 total acres of wetland
- Subarea 1 is intertidal
- Significant coverage by reed canary grass



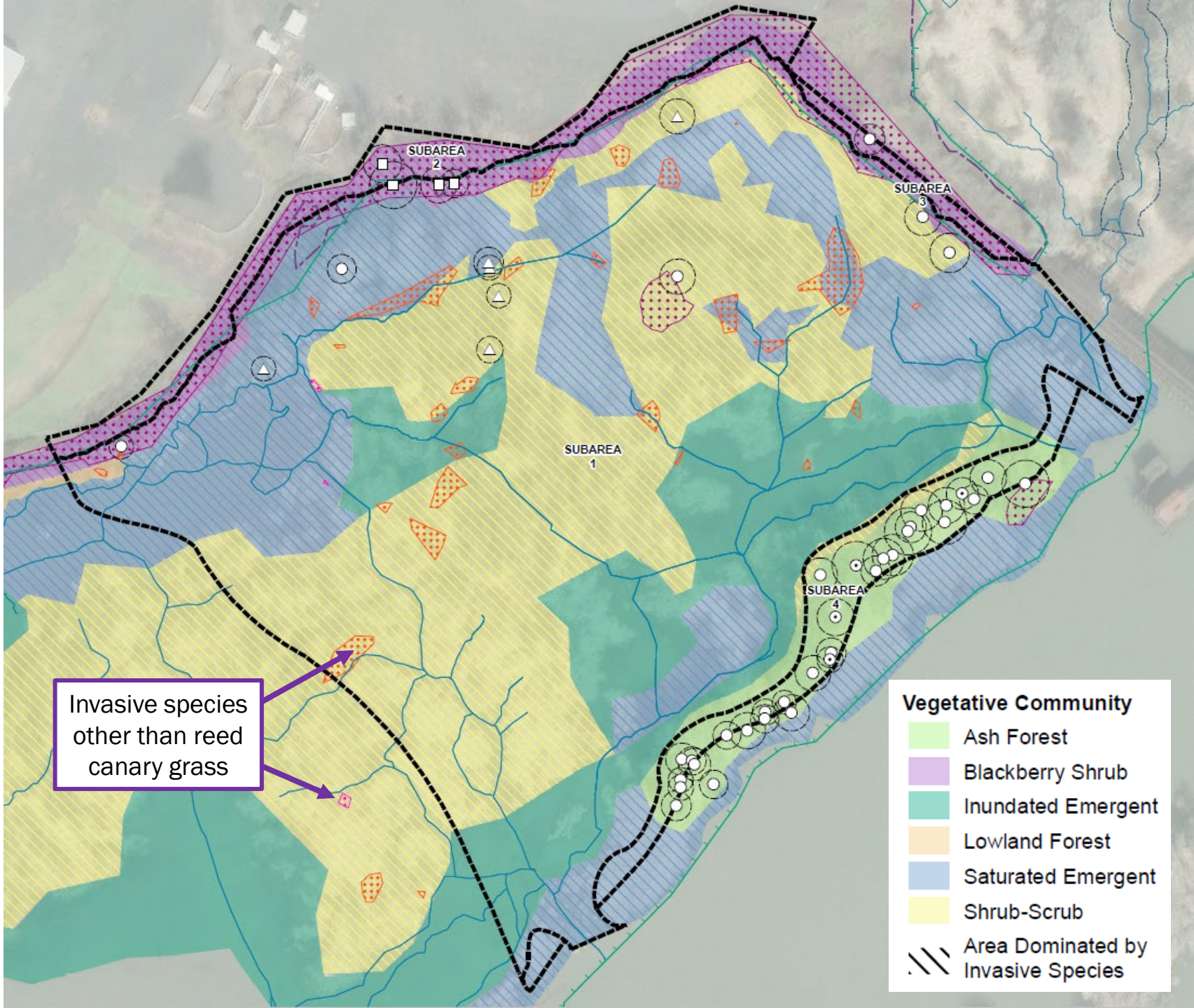
Habitat and Ecological Criteria

- No Net Fill

(removed material ≥ fill)

- No Net Loss

(of habitat)



Permits

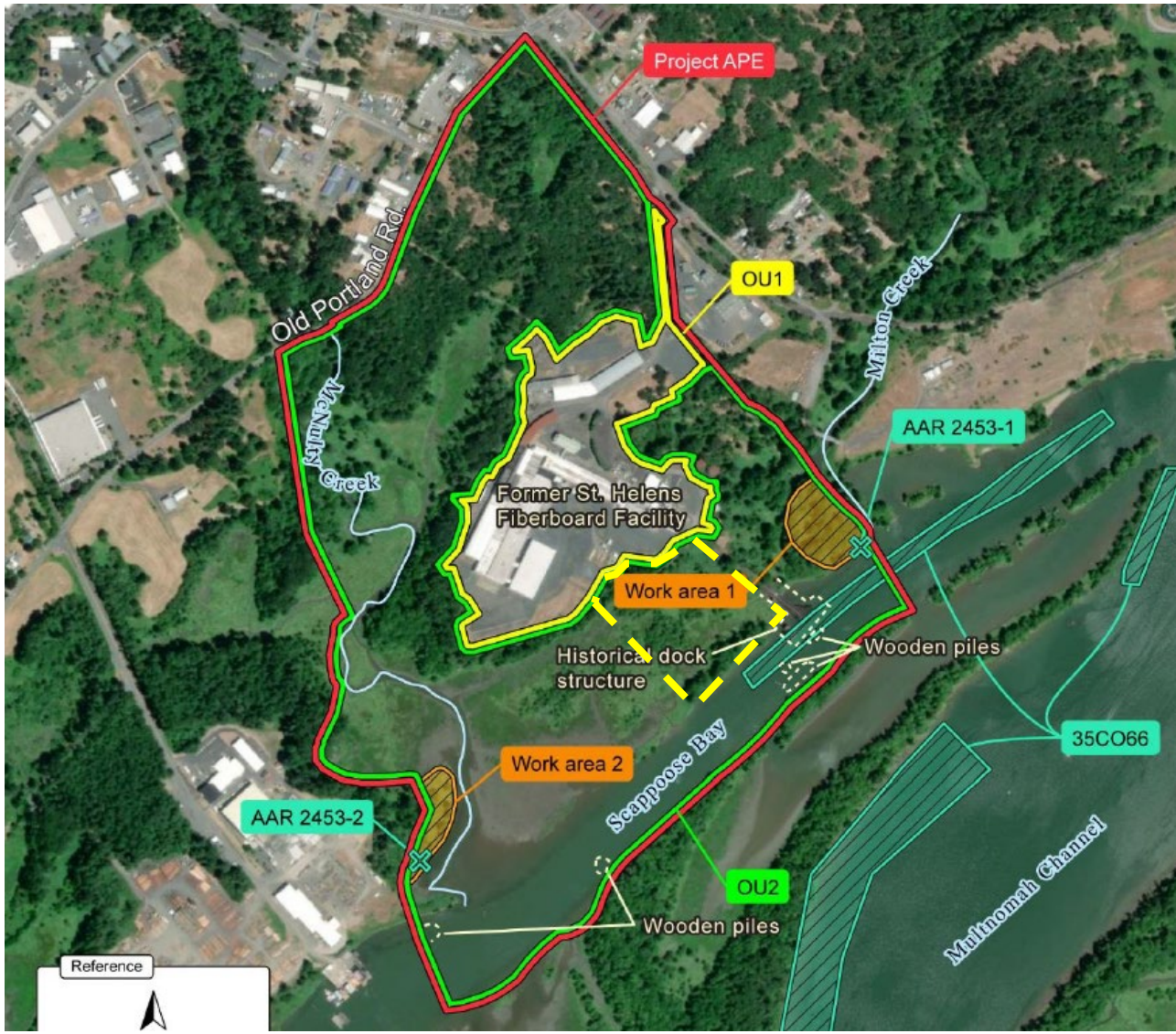
- USACE Nationwide Permit 38
- Endangered Species Act - Tidal Area Restoration Programmatic (TARP) Consultation
- DSL Removal Fill Permit Waiver
- Expedited Section 401 Water Quality Certification
- NPDES 1200-C Stormwater Construction Permit
- Tribal consultation

Permitting Approach and Considerations

- The IRAM project actions will be conducted pursuant to a variety of state and federal regulations
  - USACE Portland District regional conditions
    - USACE will seek review by the Tribes that might be affected, and concerns must be addressed before a permit is issued
    - National Historic Preservation Act (Section 106) review
    - Cultural Resources and Human Burials-Inadvertent Discovery Plan
  - TARP Project Design Criteria
    - There are many: IWWP, erosion control, work area isolation, etc.
  - State water quality criteria
    - The 5 NTU rule: monitoring requirements are anticipated

Cultural Resources

- Archaeological firm retained from Data Gaps Investigation
- Inadvertent Discovery Plan (IDP) developed and applied
- Consultation with SHPO during permitting process
- No known areas of significance identified within the IRAM Area



Questions?

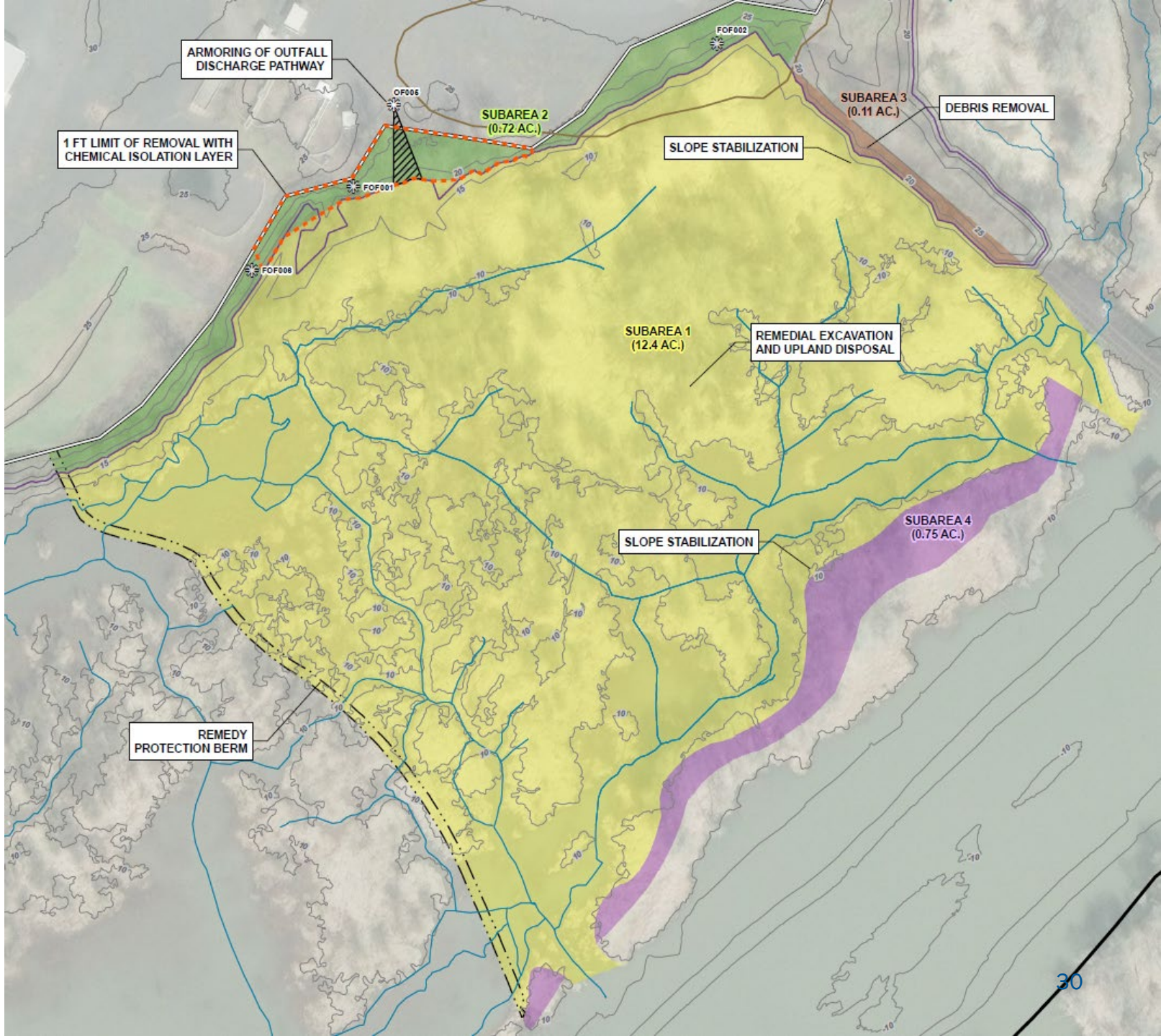
IRAM Approach

Photo not from Site

Remedial Components

Main actions:

- Excavate and backfill
- Slope stability and erosion protection enhancements
- Source control
- Debris removal



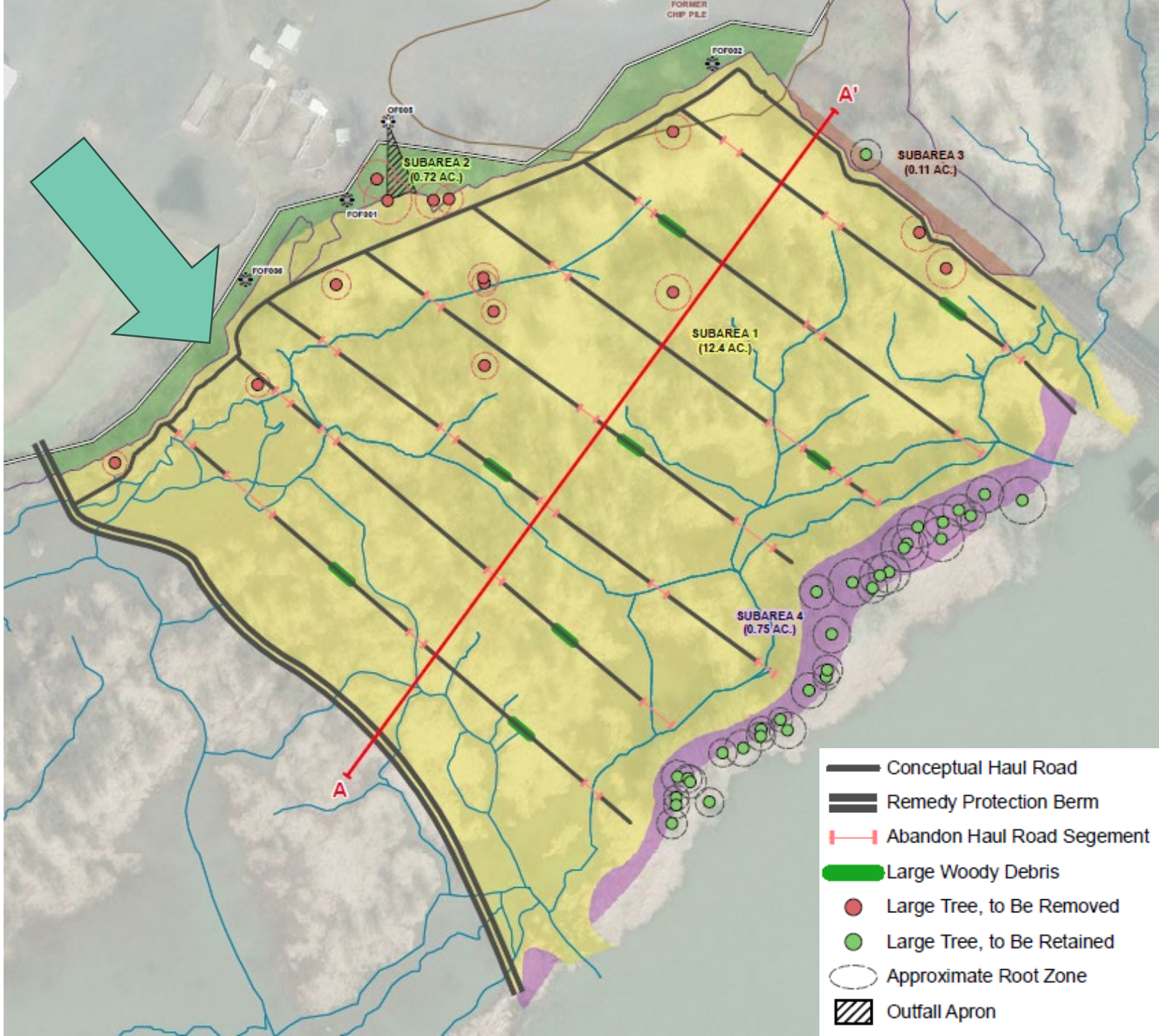
Subarea 1

- Haul road and RPB construction
- Sediment/wood waste removal
- Upland waste stabilization and water treatment
- Backfill and channel construction
- Haul road abandonment*
- Native planting

*haul road abandonment may be different than the shown configuration

Subarea 2

- Removal of surface soil
- Erosion protection
- Engineered outfall apron

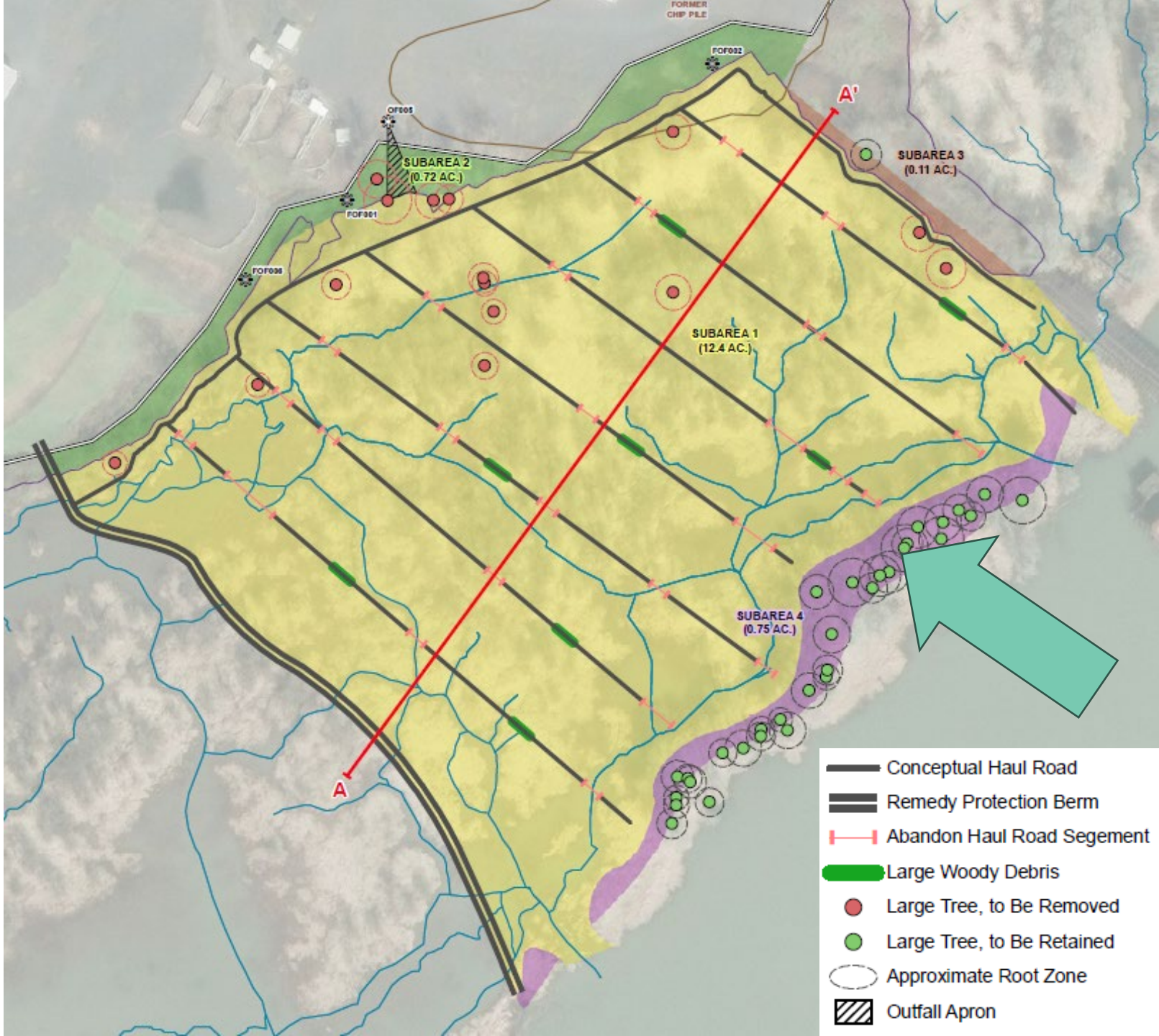


Subarea 3

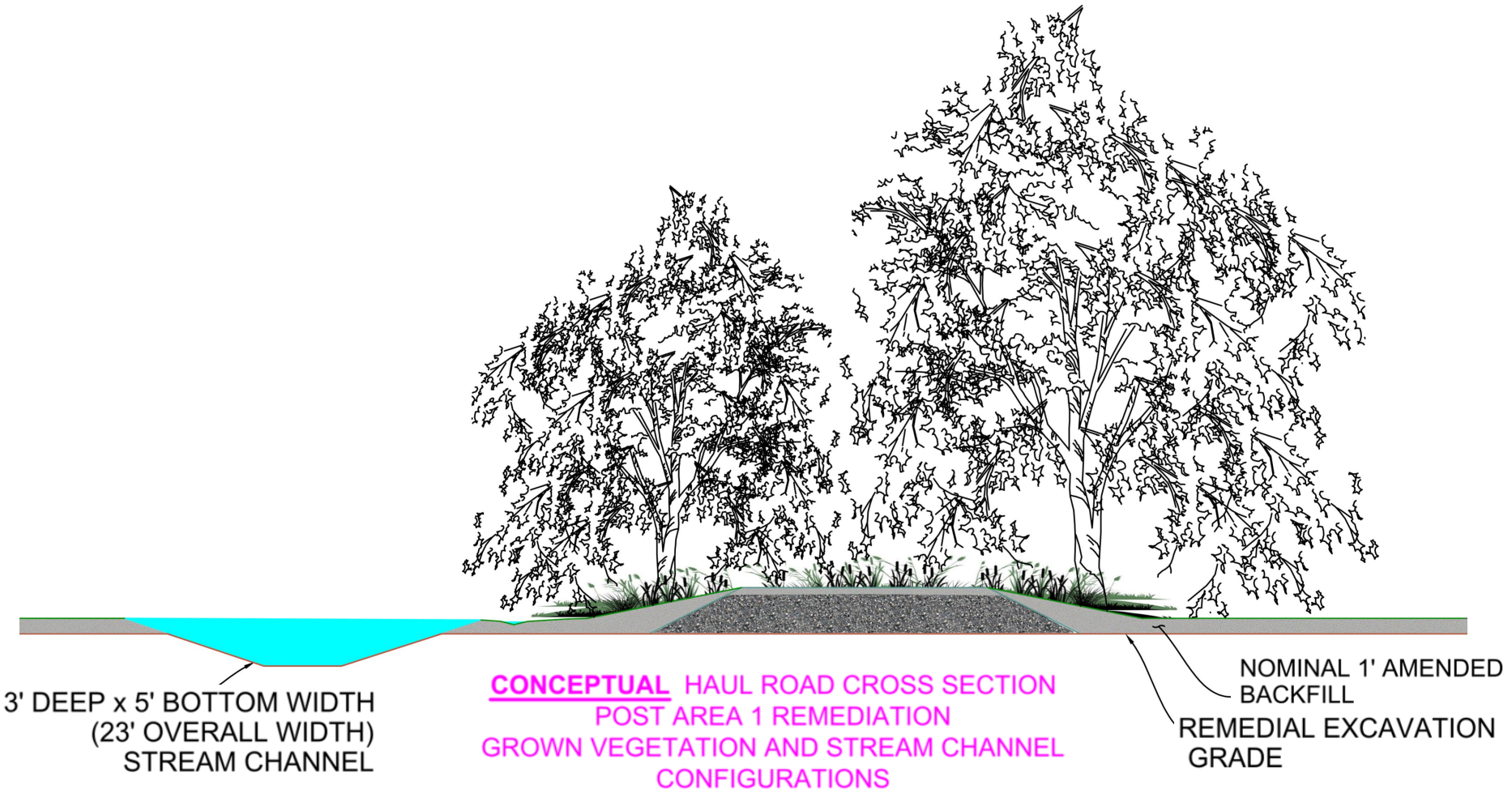
- Removal of debris
- Buttress or grade excavation transition from Subarea 1
- Potential erosion protection enhancement

Subarea 4

- Buttress or grade excavation transition from Subarea 1
- Potential amended backfill
- Protect large trees



Haul Road Construction

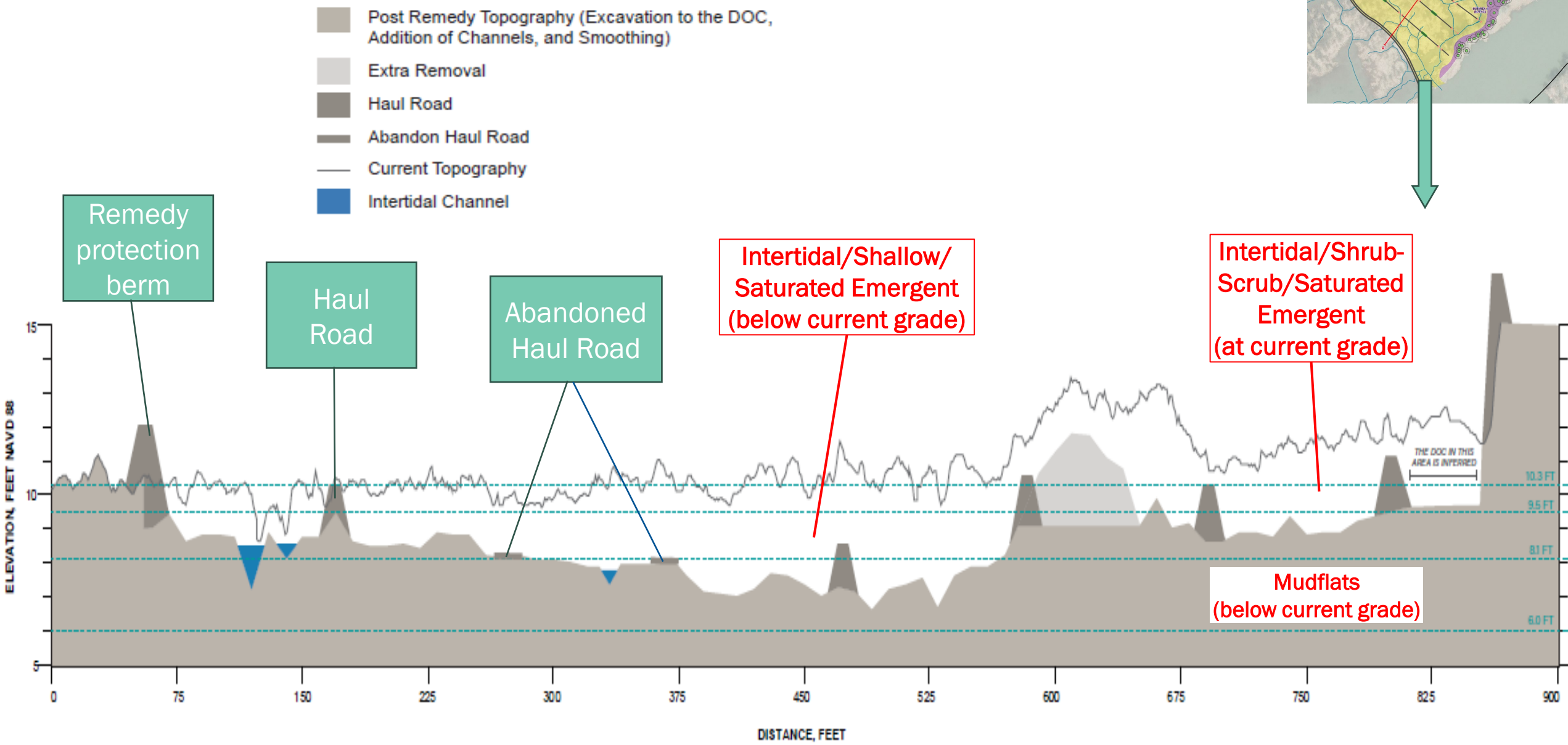


Existing Ground Surface Elevation Range (feet NAVD 88)	Primary Habitats Present	IRAM Subareas	Dominant Species	General Habitat Goals
10.3 to 17.5 (OHW)	Intertidal Lowland Forest Blackberry Shrub	2, 3, 4	Oregon Ash, Himalayan blackberry	Retain large native trees where possible
9.5 to 10.3	Intertidal Shrub-Scrub Saturated Emergent	1	Reed Canary Grass	Decrease area Retain large native trees where possible
8.1 to 9.5	Intertidal Shallow-Water Inundated Emergent	1	Wapato, Bullrush	Maintain area where possible
6.0 to 8.1	Intertidal Shallow-Water Emergent (Mudflats)	1	NA	Increase area where possible

Questions?

Post-Removal Site Conditions

Post-Construction Elevations



Restoration

- No net fill, no net loss
- Steep transitions discourage invasives
- Increased habitat
  - Shallow-water salmonid refugia
  - Western painted turtle
  - Northern red-legged frog
  - Bulrush and wapato
- Re-use trees removed
  - Sunning logs, habitat complexity structures, etc.
- Improved wetland function
  - Increase tidal exchange
  - Breach or cover haul roads
  - Fish ingress/egress

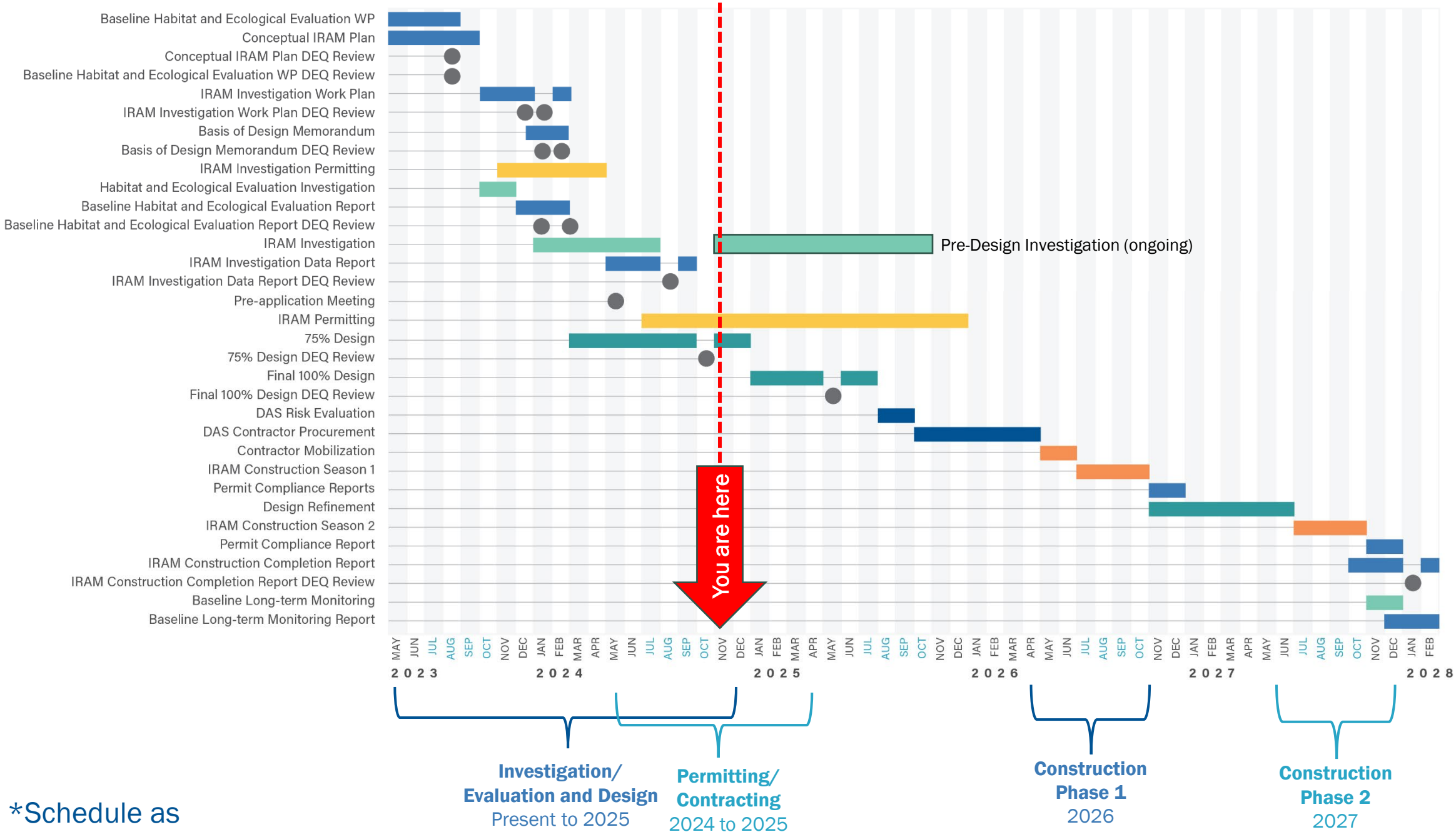
Questions?

IRAM Planning and Project Schedule

IRAM Planning

- Site coordination
  - Access
  - Transportation routes
- 75%, 95%, and 100% Design Package Submittals and Reviews:
  - Plan Set
  - Technical Specifications
- Permit applications
- Contractor procurement and risk management
- Construction timing
- Post-construction monitoring
- Follow-up remedial action

Schedule*



*Schedule as presented in BODR


Questions?


Property
Sale

Facility Operations and Property Sale

- Upland Data Center, LLC
- Upland development planned over next couple years
- PPA ensures access to site and IRAM Area
- Frequent engagement with Site Owner

Questions?

Fish Advisory Update

Interim Institutional Control

- Coordinating with OHA to conduct outreach on draft fish advisory materials
- Seeking input from Tribes and community groups


Questions?

Wapato Tissue Investigation

Background

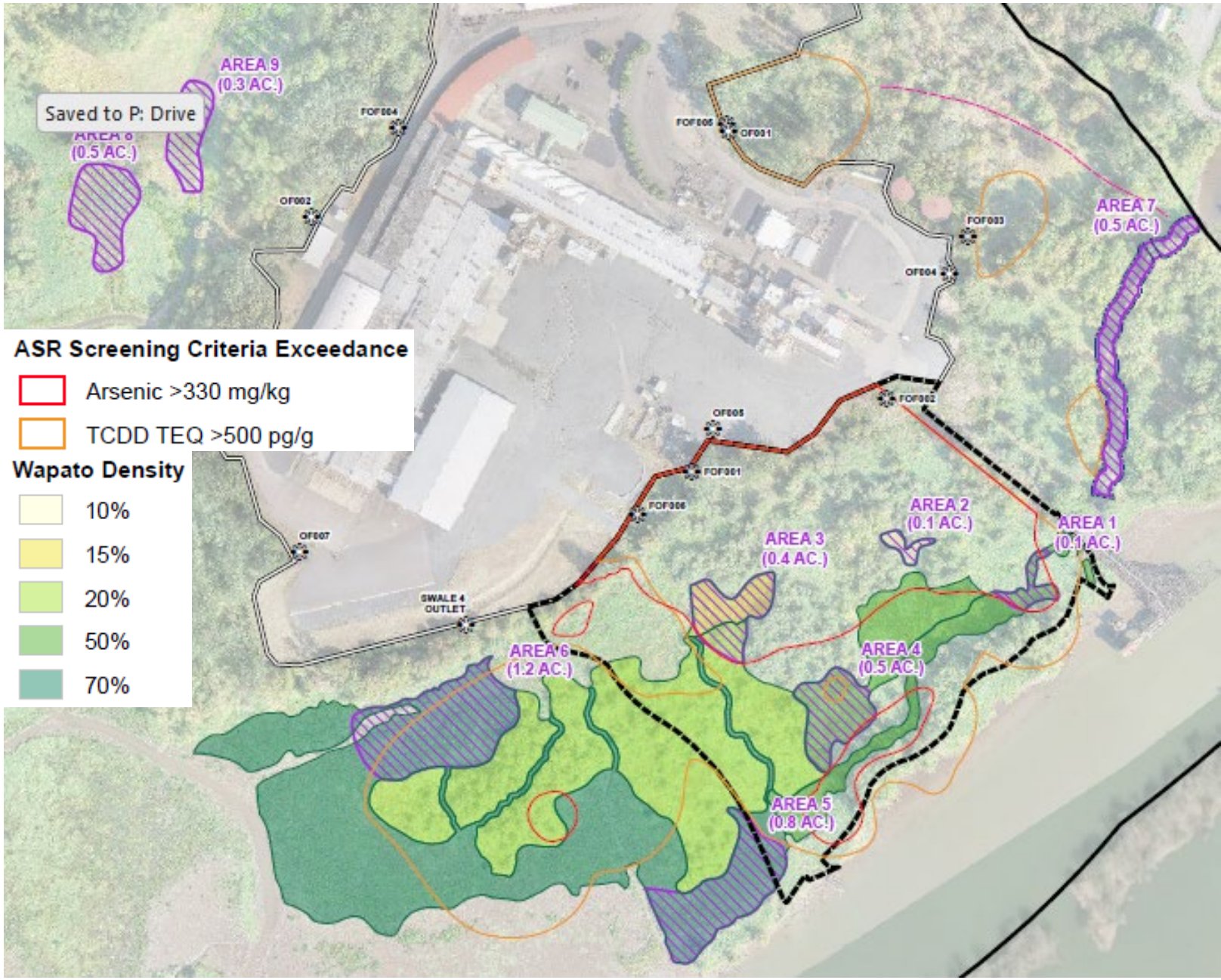
- Traditional food source
- Ongoing USFWS studies
  - Ridgefield National Wildlife Refuge Complex
  - Tualatin River National Wildlife Refuge Complex
- Uptake of Site contaminants is unknown
- Tissue investigation will complement the IRAM

Objectives

- Determine uptake rate of Site contaminants
  - Assess different Site Areas
  - Use existing Site sediment data to guide sampling
- Largely follow the USFWS studies, but less sediment sampling
  - Robust data set from Data Gaps Investigation paired with new tissue data

Sampling Areas

- Based on surface COC distribution and wapato density
- 9 sampling areas, focus on IRAM Area



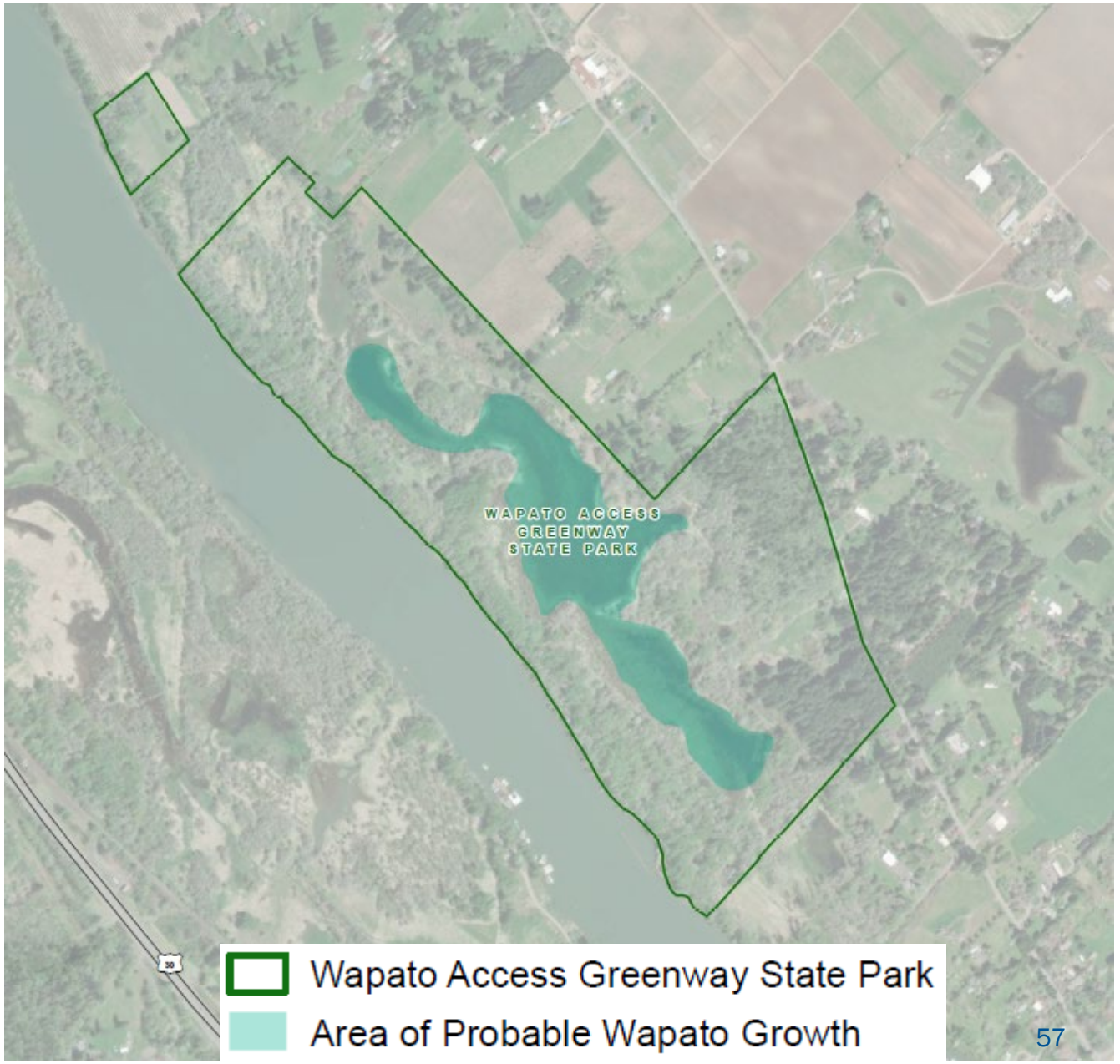
Average Soil COC Concentrations

Exceeds ASR Criteria
Exceeds RTV Criteria
Exceeds background (Coast Range)

Contaminant of Concern	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8	Area 9
Arsenic (mg/kg)	383	518	784	189	133	177	44	39	13
Mercury (mg/kg)	0.46	1.14	1.15	0.35	0.19	0.38	0.20	0.12	0.05
TCDD TEQ (ng/kg)	2,288	2,190	2,720	960	305	1,062	339	199	42
Surface Area (acres)	0.1	0.1	0.4	0.5	0.8	1.2	0.5	0.5	0.3

Background Location

- Collect wapato tubers
- Collect 5-point soil composite
  - 2D slab cake processing
  - Differs from USFWS studies (50 increments)
  - Mimics average Site concentrations



Wapato Sample Collection

- Trowel, clam rake, etc.
- 2 pounds of tubers per area*
- Tubers cleaned and cut into cubes*
- Samples shipped to labs
- Sampling area may change depending on availability of wapato

* Differs from USFWS studies

Background Soil Sample Collection

- Push corer, trowel, hand auger, etc.
- 5 subsamples distributed within the wapato sampling area
- Root matting and vegetation removed
- Subsamples homogenized into one composite sample

Laboratory Analysis

- Soil background sample
  - Arsenic
  - Mercury
  - Dioxins/furans
  - Total solids/moisture
  - Total organic carbon
- Wapato tissue samples
  - Arsenic
  - Mercury
  - Dioxins/Furans
  - Lipids
- Results validated and presented to DEQ in a memorandum

Questions?

Visit DEQ's Environmental Database at https://tinyurl.com/563juwp3 (or scan the QR code) **for more information about this site.**

Contact DEQ by emailing Sarah Greenfield, Project Manager
Sarah.Greenfield@deq.oregon.gov