Reserve Silica Reclamation Site Cleanup Status Update March 6, 2023

Solid Waste Management Program

Northwest Regional Office

DEPARTMENT OF ECOLOGY
State of Washington

Ecology Contacts

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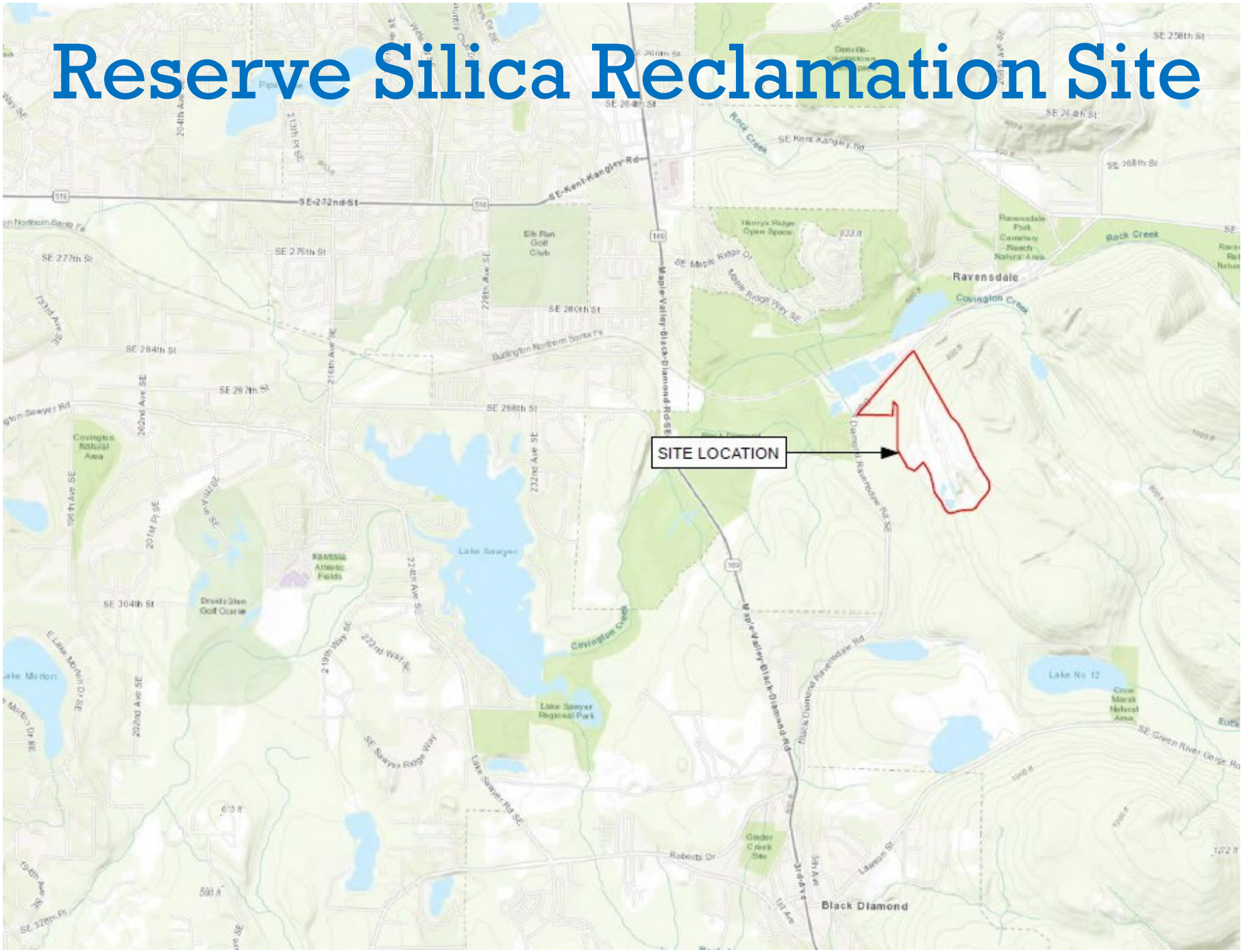
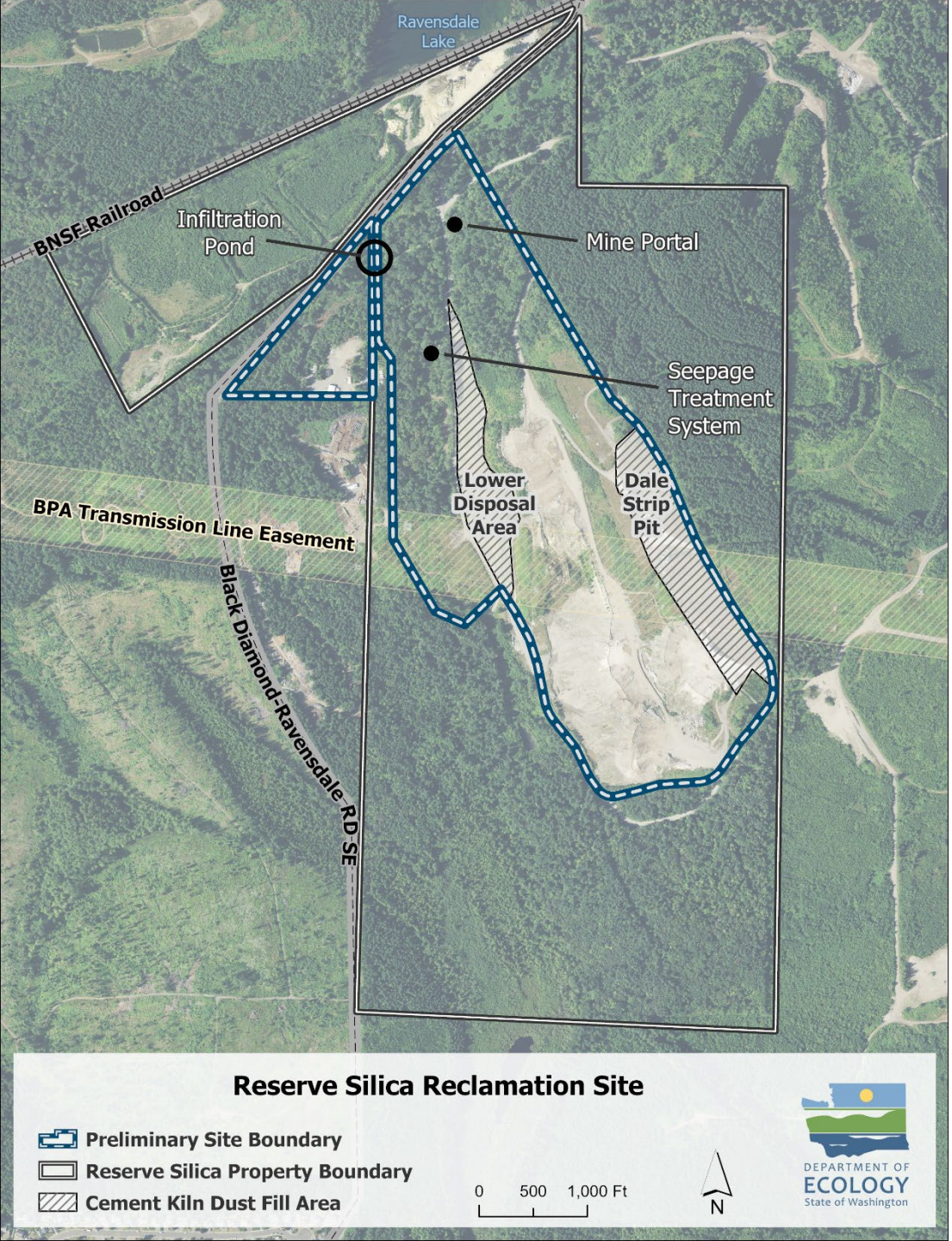
Reserve Silica Reclamation Site





Quick Refresher

- Coal and Sand Mining
- Cement Kiln Dust (CKD) Reclamation
- CKD Leachate Release
- Treatment System

Coal Map Overlay

Regulatory Framework

- Landfill post-closure care permit
  - Requires maintenance and monitoring
- Interim cleanup activities
  - Cap improvements
  - Groundwater and stormwater diversion
  - Seepage collection & treatment
- Agreed Order
  - Cleanup per Model Toxics Control Act
  - Remedial Investigation (RI)
  - Feasibility Study (FS)
  - Cleanup Action Plan (CAP)

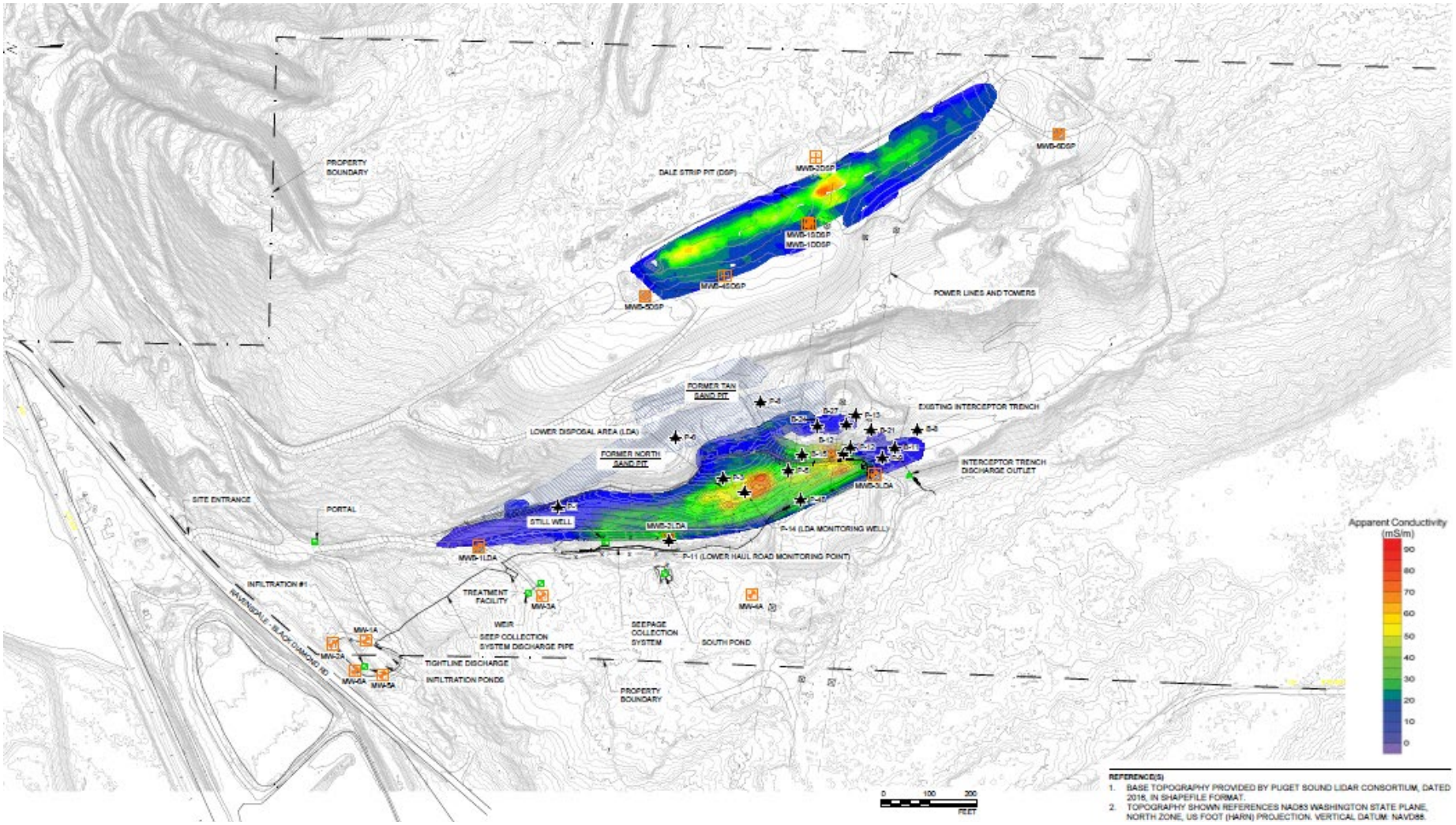
Available Reports

- Ecology website
  - https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=4728
  - Site summary
  - Presentations, public information, numerous technical reports, historical coal maps, and legal documents
- Recent technical reports
  - Remedial investigation work plan
  - Preliminary investigation reports
  - Supplemental work plans
  - Quarterly monitoring reports

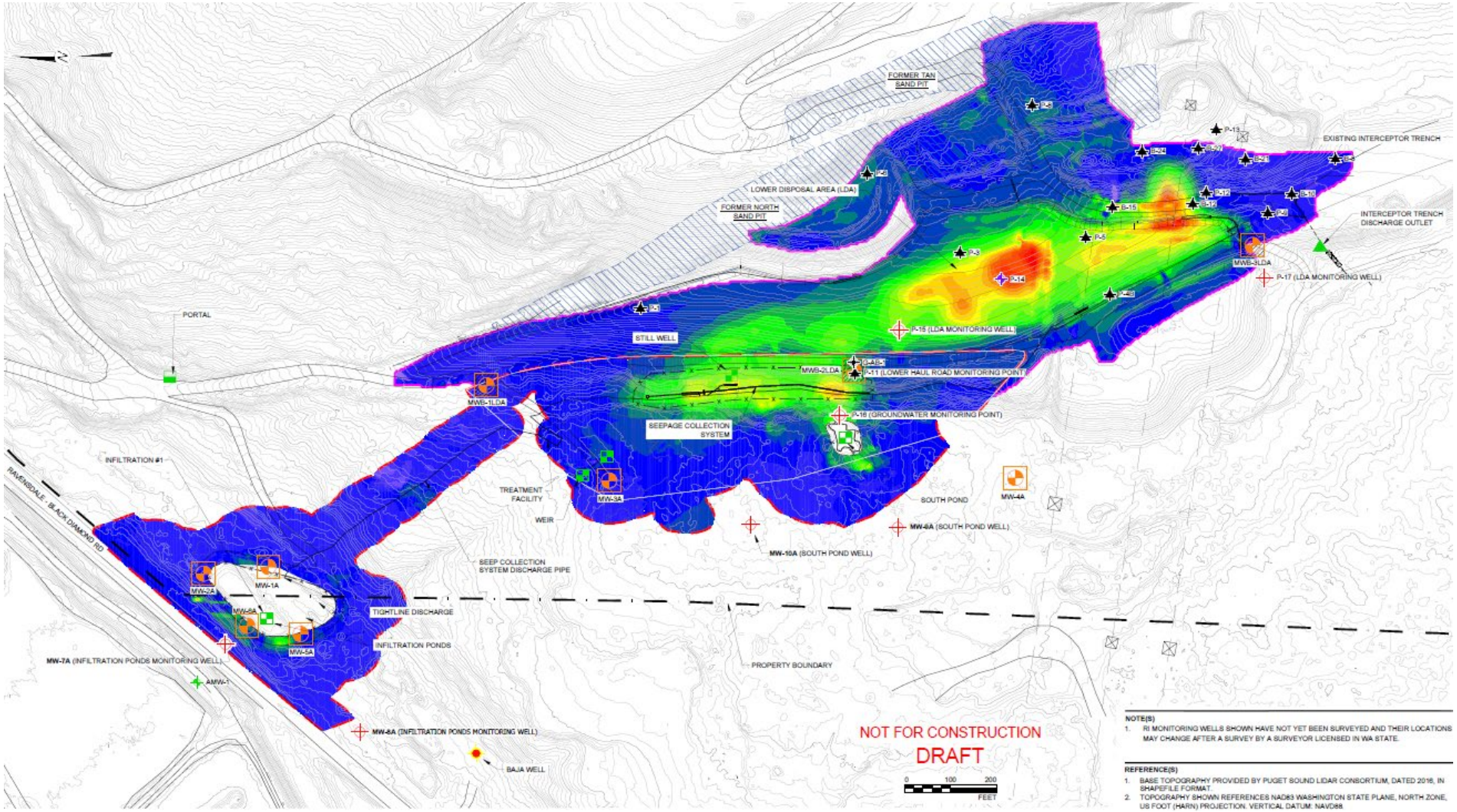
Completed RI Activities

- Geophysical surveys
  - Identified extent of high pH groundwater
- Identified chemicals of concern
  - Antimony, arsenic, lead, vanadium
  - Associated with high pH water
- Soil sampling
  - Initial sampling completed
  - Delineation sampling – results pending
  - Background metals – results pending
- Delineated groundwater contamination

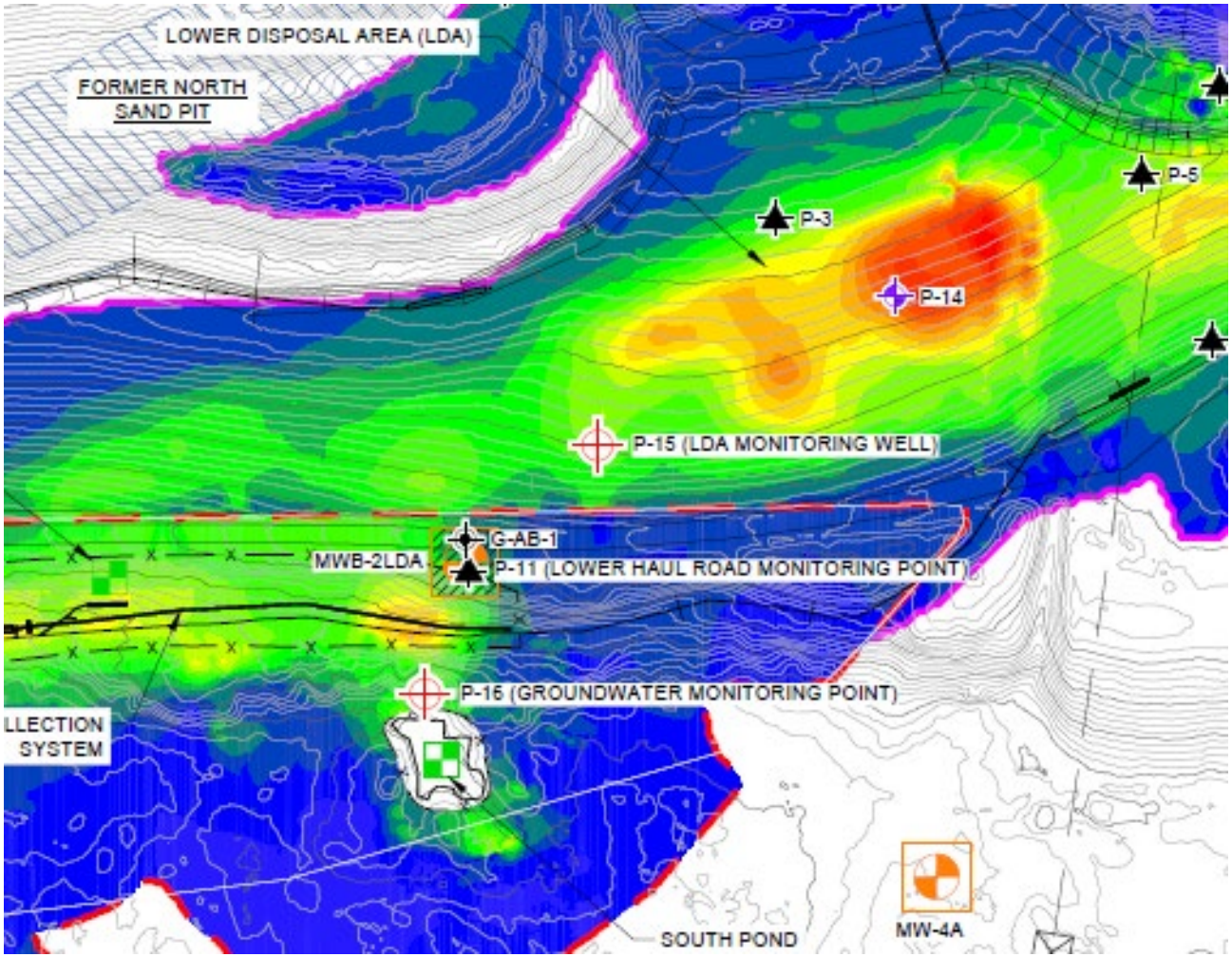
EM-31 Surveys of DSP and LDA



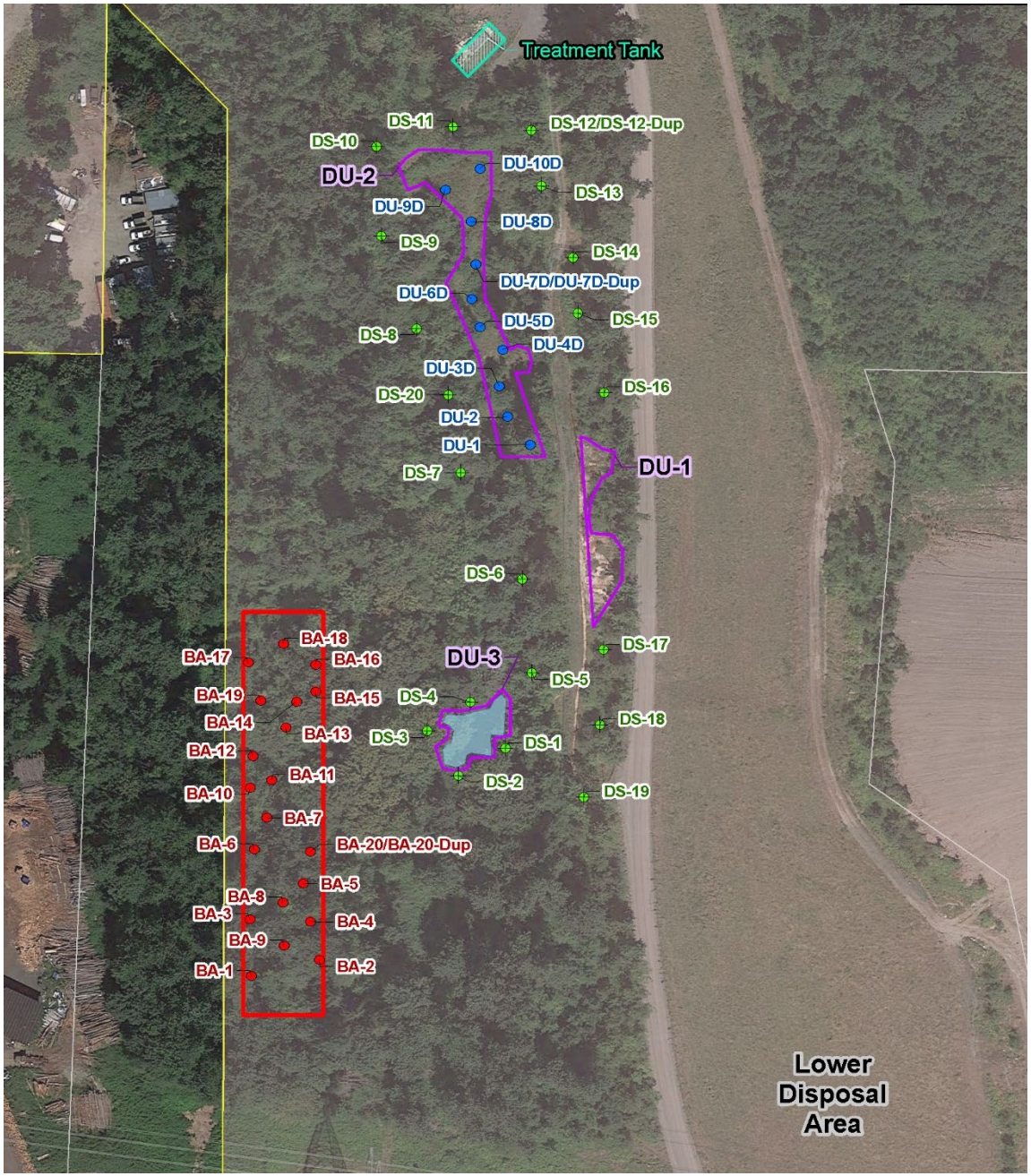
LDA Geophysical Survey



Source Area Evaluation



Drainage and Surface Soil Impacts

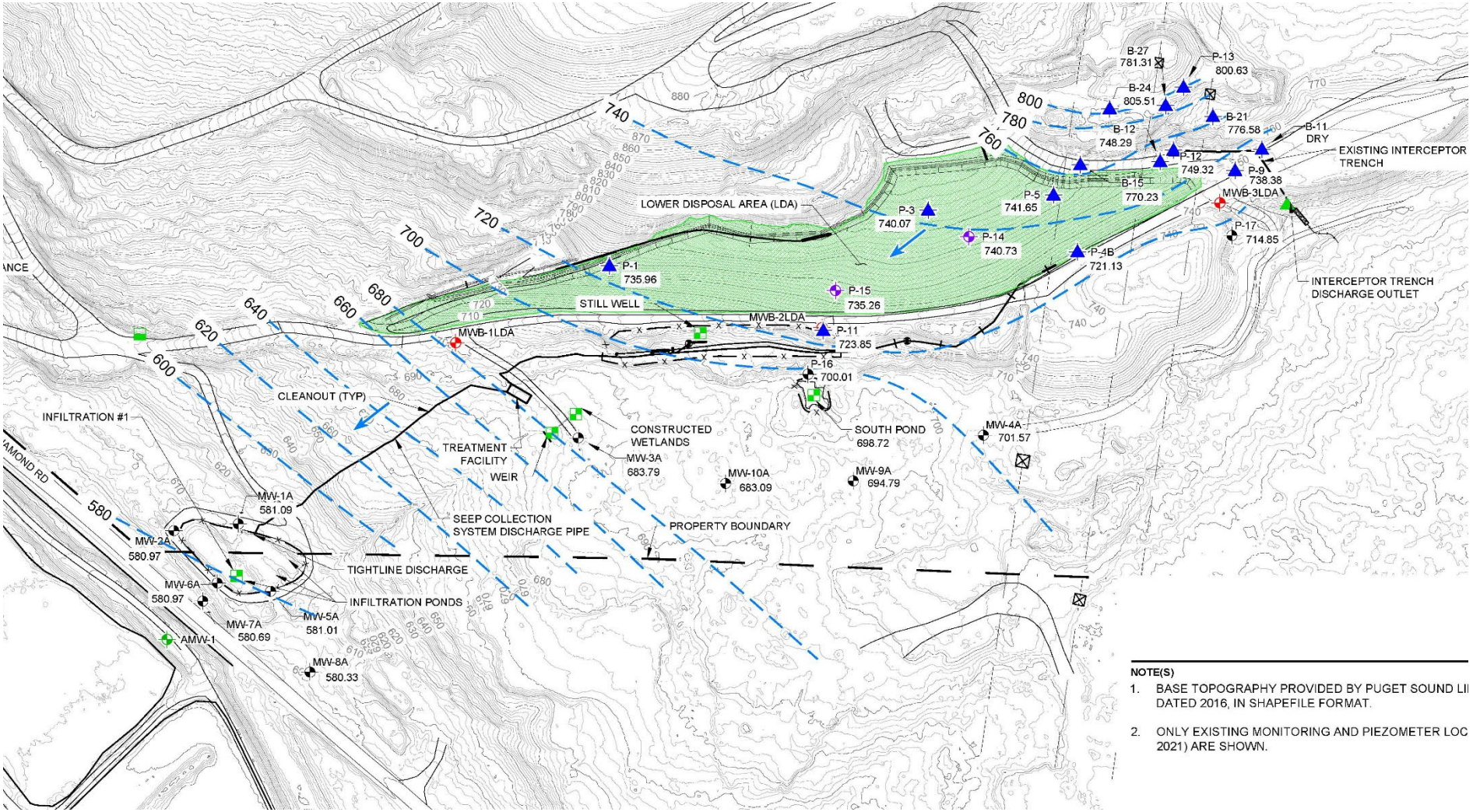


Soil Sample Results from Drainage Areas

	Preliminary Cleanup Levels (PCULs) in mg/kg					
Analyte	Direct Contact	Protection of Drinking Water Vadose Zone	Soil Protect Surface Water Vadose Zone	Protect Sediment Vadose Zone	TEE Eco. Indic. Soil Conc. Unrestricted Land Use	Natural Background Ecology (1994)
Antimony (mg/kg)	32	5.42	5.06	1233	5	-
Arsenic (mg/kg)	0.67	0.34	0.01	219	7	7.3
Lead (mg/kg)	250	3000	503	420	50	17
Vanadium (mg/kg)	720	2881	-	5957	2	-
Total Solids	-	-	-	-	-	-
Total Organic Carbon	-	-	-	-	-	-
pH	-	-	-	-	-	-

	DU-1 (seep area)			DU-2 (historical flow area)			DU-3 (South Pond)		
	ISM1	ISM2	ISM3	ISM1	ISM2	ISM3	ISM1	ISM2	ISM3
	10/19/2021	10/19/2021	10/19/2021	1/25/2022	1/25/2022	1/25/2022	10/19/2021	10/19/2021	10/19/2021
Analyte									
Antimony (mg/kg)	0.879	0.916	0.86	14.3 J-	14.3	13.4	5.47 J-	4.37	4.94
Arsenic (mg/kg)	65.2	44.4	39.8	87.9	98.8	86.9	58.6	45.6	52.7
Lead (mg/kg)	63.8	64.5	56.1	120	145	130	178	176	164
Vanadium (mg/kg)	13.5	14.5	12.3	12.8	15.1	13.8	27.4	25.1	27.2
Total Solids	99.6%	99.6%	99.5%	99.3%	99.2%	99.1%	96.7%	94.7%	98.2%
Total Organic Carbon	0.566%	0.883%	0.918%	2.21%	1.76%	1.55%	2.73%	2.73%	1.54%
pH	9.23 J	8.46 J	9.86 J	8.27 J	8.14 J	8.25 J	8.63 J	8.46 J	8.81 J

Delineation of Impacted Groundwater



Next Steps

- Confirm delineation of soil contamination
- Remedial Investigation Report
  - Agency review draft and revisions
  - Public comment period
- Initiate Feasibility Study
- Ongoing activities
  - Seepage collection and treatment
  - Monitoring of groundwater and surface water

Questions

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https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=4728