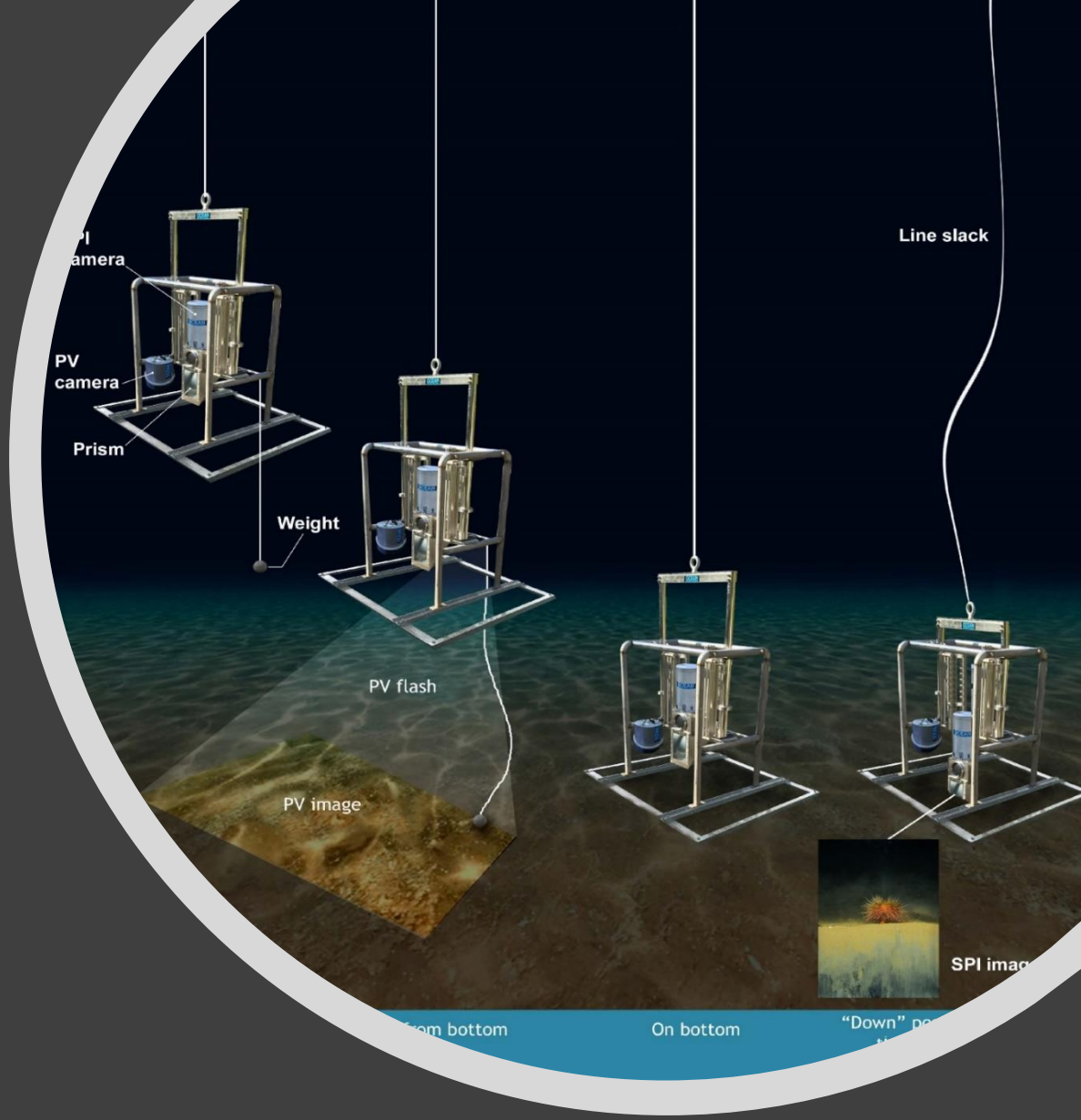
Port Gardner Monitoring Pilot Study

Sediment Profile Imaging & Plan View at Port Gardner

Physical monitoring to evaluate current conditions

- Does dredged material remain onsite or extend beyond the disposal site boundary?
- Is there a decrease in benthic habitat quality offsite due to dredged material disposal?



Information from SPI

Physical

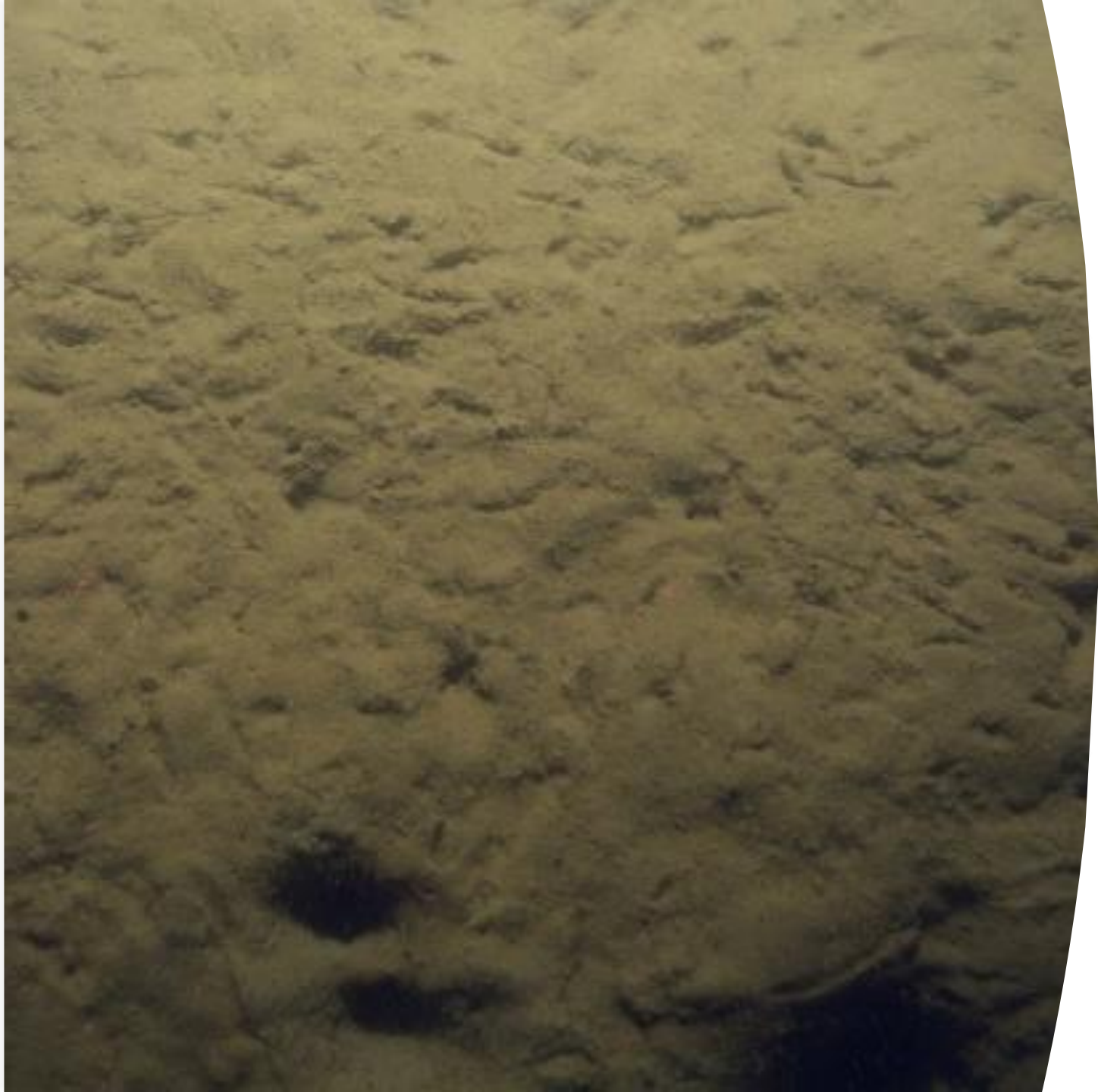
- Sediment grain size major mode
- Prism penetration depth
- Surface boundary roughness
- Mud clasts
- Thickness of depositional layers

Chemical and biological

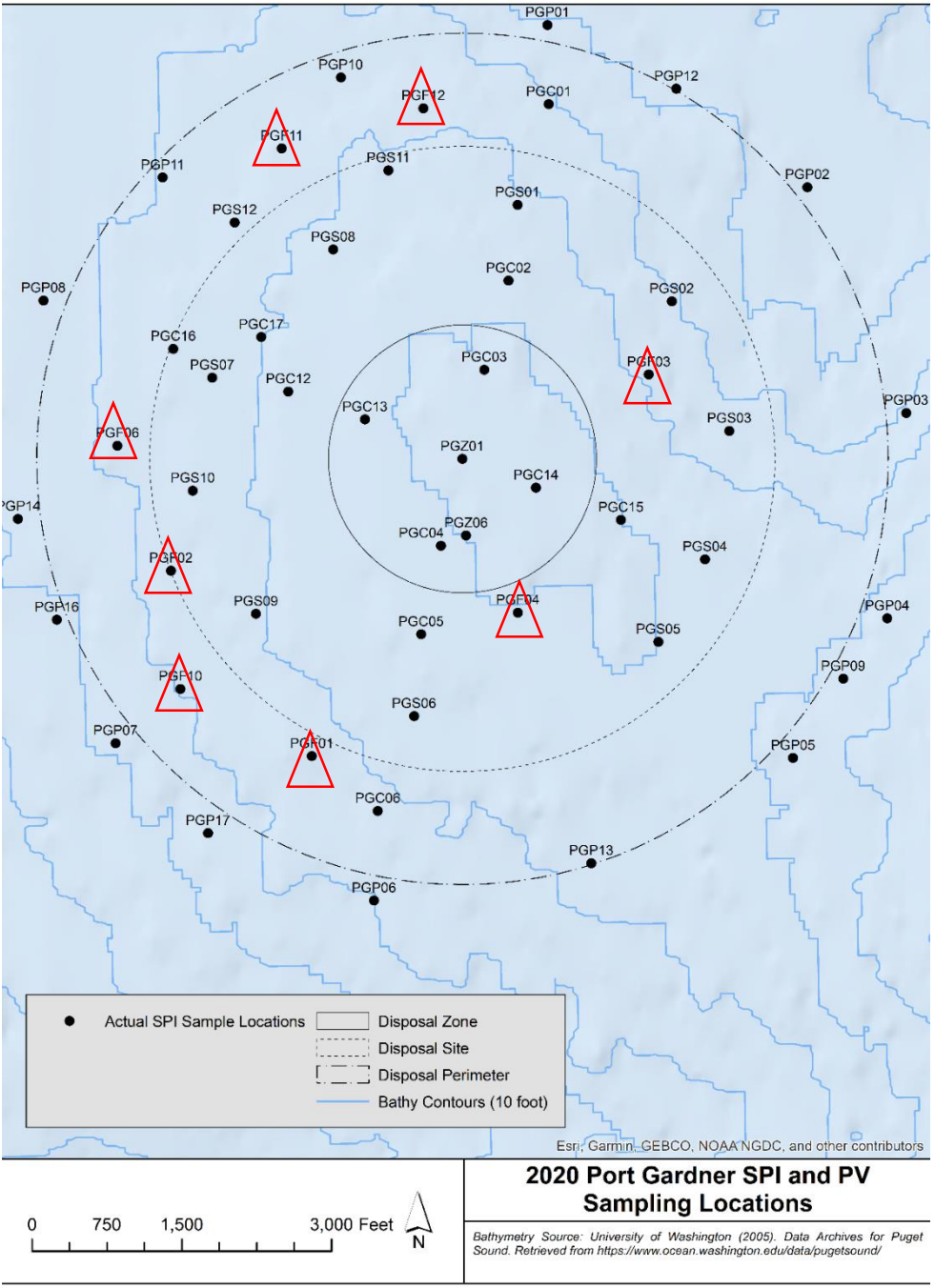
- Oxygenation depth
- Organic loading
- Infaunal successional stage
- Biological structures

Information from PV

- Surface sediment type and grain size characteristics
- Bedforms Burrows, mounds (presence: Yes/No; count/density)
- Tubes
- Tracks
- Mud clasts
- Flora/fauna present on the seafloor
- Presence of human-made debris



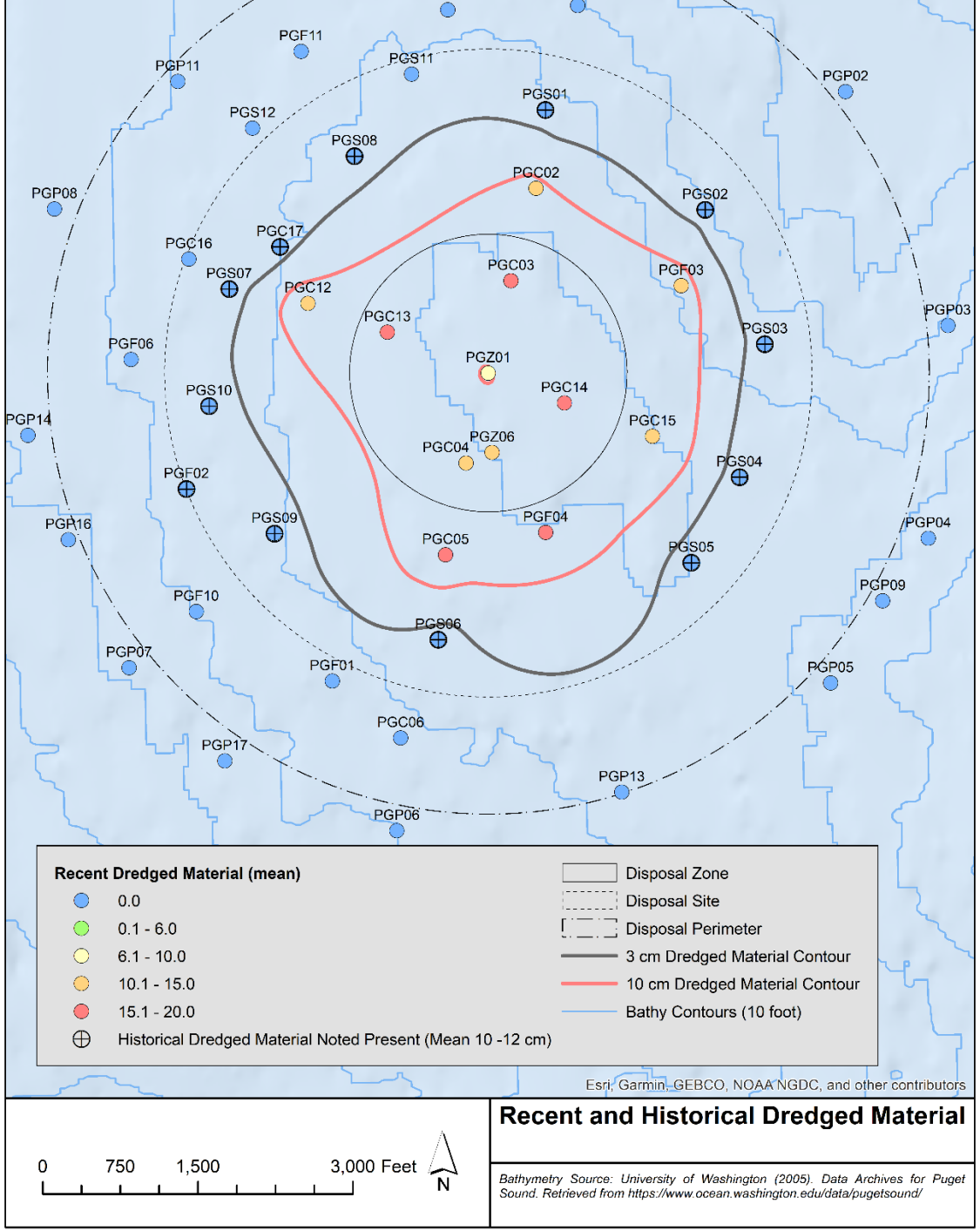
SPI/PV Sampling Locations 2020



- Images collected late June 2020 at 50 stations
- 8 Floating stations △ added to delineate the 3 cm and 10 cm contours of recently disposed dredged material

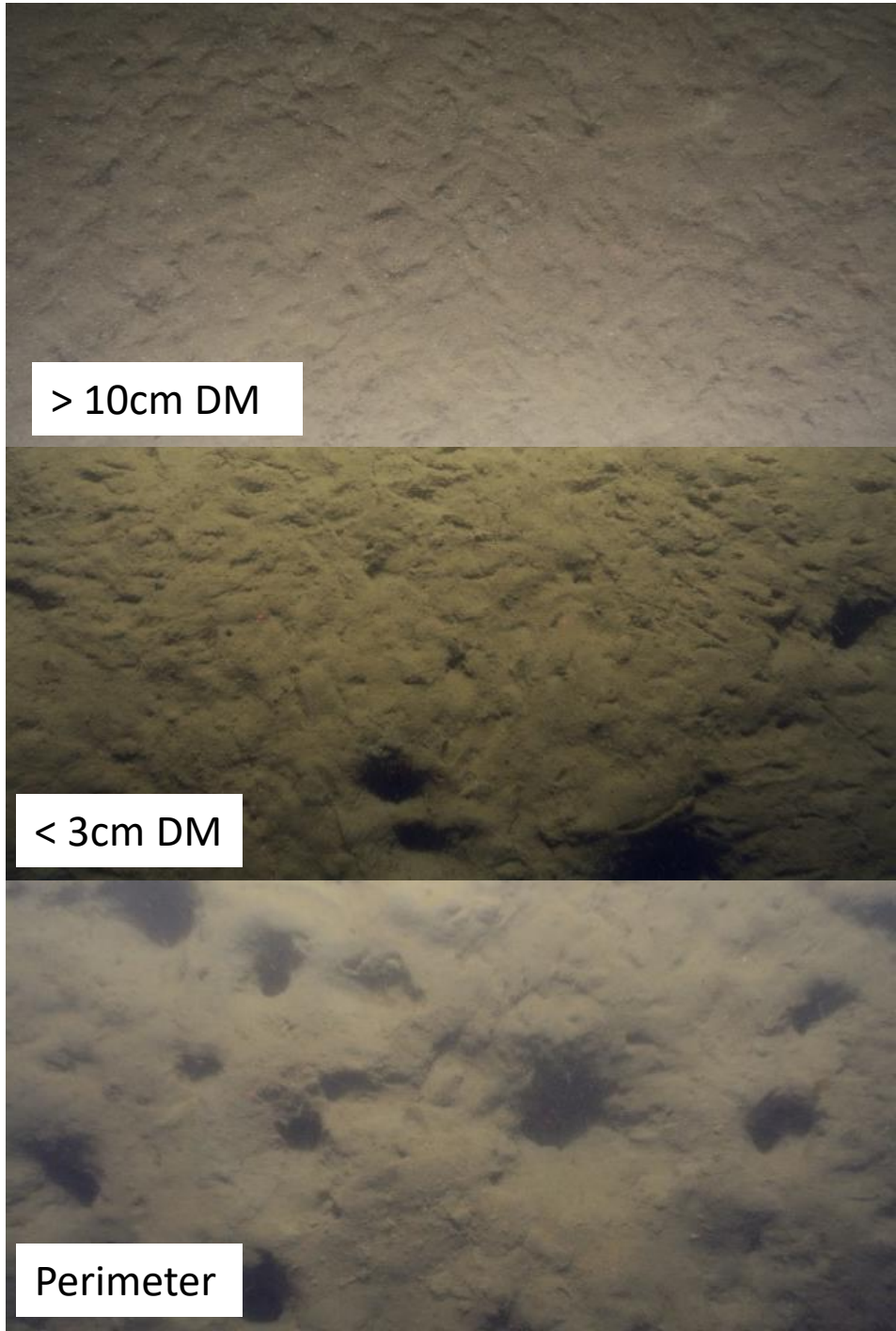
SPI Results

- Recent dredged material observed at 12 stations
- Dredged material footprint *confined within disposal site boundary*
- Recolonization of high-order successional infauna widespread within the disposal zone, site, and along the perimeter.
- Near surface biogenic mixing levels greater than found in the 2010 survey



PV Results

Notable difference in the distribution/abundance of large burrowers (e.g., burrowing shrimp, *Molpadia*) on and off the disposal mound



SPI/PV: Implications for Chemical and Biological Monitoring

- No off-site lobes to incorporate into on-site bioaccumulation composite
- Reference area sediment not needed for bioaccumulation testing

Sediment collection for chemical and biological testing

- 20 Disposal site samples (composted)
- 20 Environs samples (composited)
- 5 disposal site samples tested individually

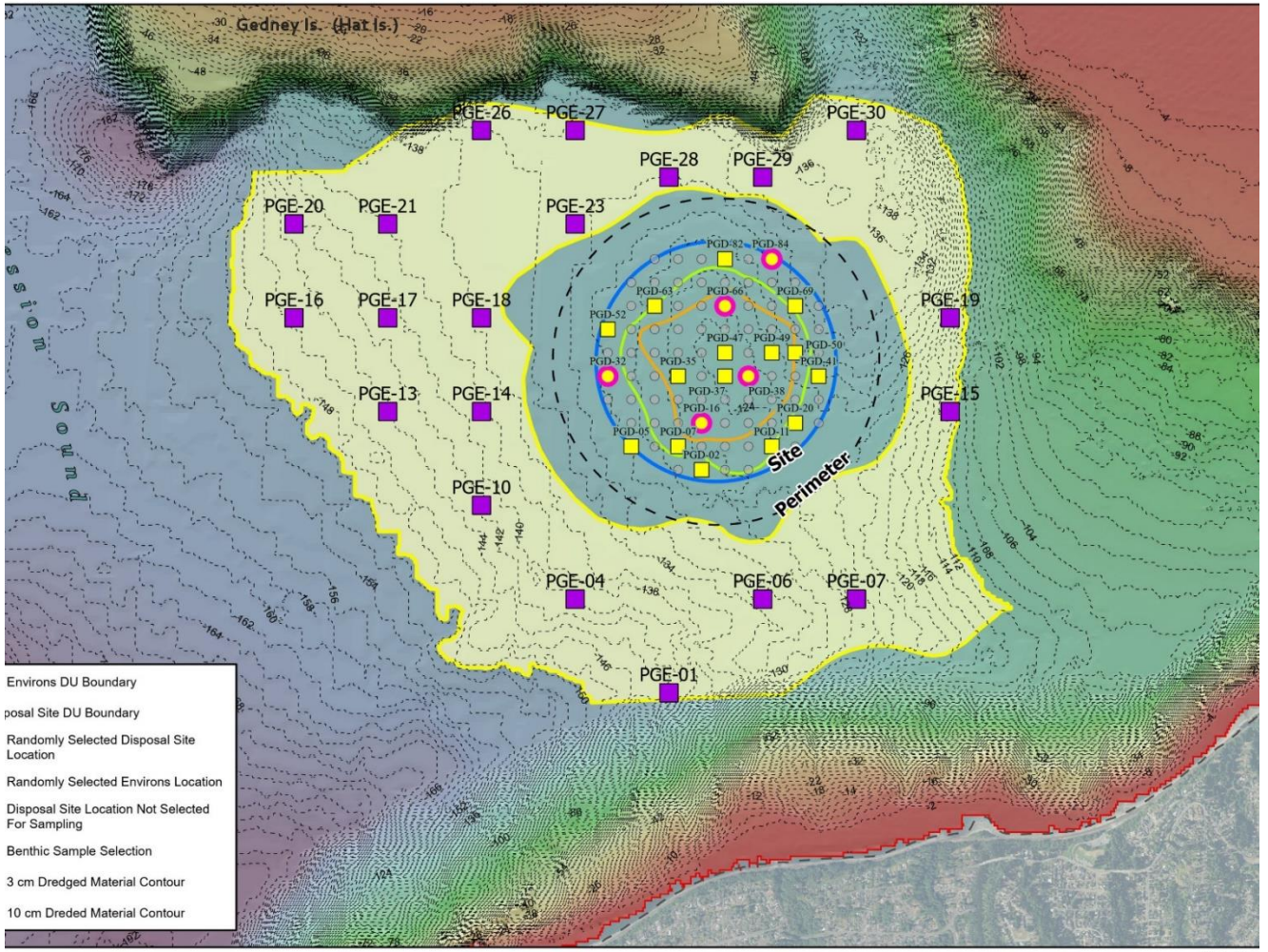


Figure 4. Randomly Selected Sampling Locations in the Disposal Site and Environs DUs

Preliminary Sediment Chemistry Results

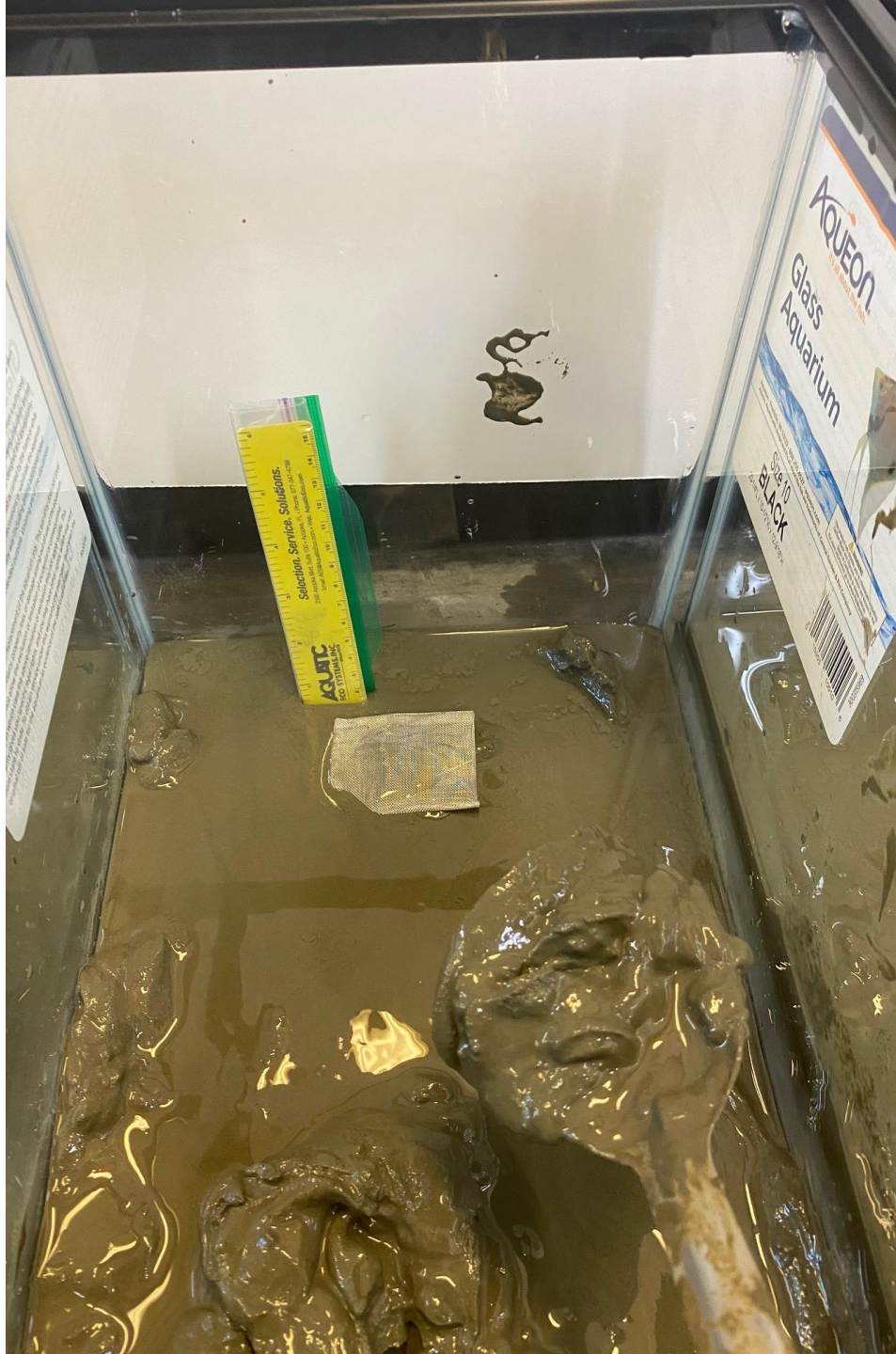
- No SL exceedences
- Dioxins/Furans below 4 pptr TEQ in all samples
- Total PCBs on-site ≈ off-site; < 17 ppb
- On-site PBDEs ≈ 2010 PBDEs

45-day Bioaccumulation testing

Macoma nasuta
Allita virens (photo)
separate exposures

EXTRA: Paired Passive sampling and polychaete bioaccumulation testing

- Bagged SPME fibers in subset of bioaccumulation test chambers
  - 3 from Disposal Site
  - 3 from Environs
- Gain experience with *ex situ* method
- Synoptic exposures to validate SPME results
- Started Sept 2020



What comes next?

- Draft SPI report currently under review
- Results of bioaccumulation testing and SPME analysis expected by mid-November
- Final data report expected Jan 2021
- Discuss results & framework at Spring 2021 workshop TBA
- Update at SMARM 2021

Any Questions?