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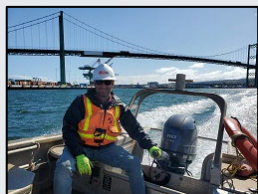
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**Anchor QEA, Dredge Designer/Consultant**

# OVERDREDGING EXAMPLES

Case Studies to Identify and Evaluate Over Dredging

# EXAMPLE 1

Small marina authorized DMMUs 1-6

Uncharacterized area (200 cy) for upland disposal was disposed at Rosario Straits and not disclosed to the DMMP agencies.

Dispersive sites like Rosario have slightly stricter disposal requirements than nondispersive.

Mistake by permittee “the area in red had the same biological assessment as the rest of the dredged areas...”

## Non-Compliance includes:

- Unauthorized change to Dredge Plan
- Failure to notify agencies
- Disposing of unauthorized material.

## DMMP Agencies Action:

- Post Dredge sampling revealed pesticides reported below DMMP Screening Levels.
- DNR Fine \$5.00 cubic yard charged.



# EXAMPLE 2

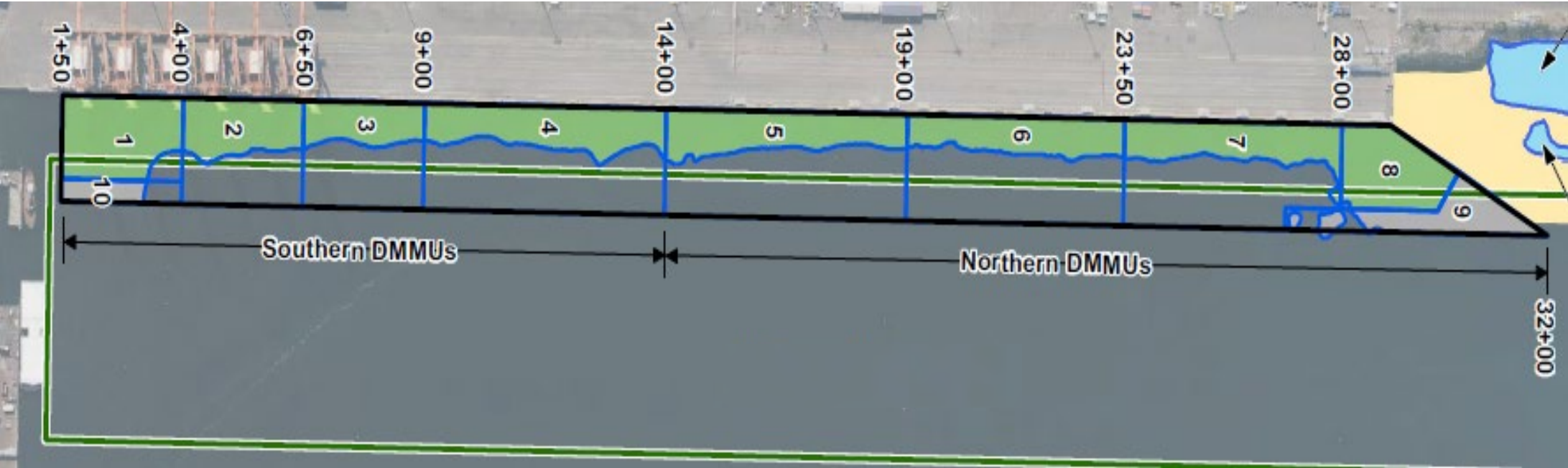
Multi year project with suitable and unsuitable DMMUs.

### DMMUs 1-8

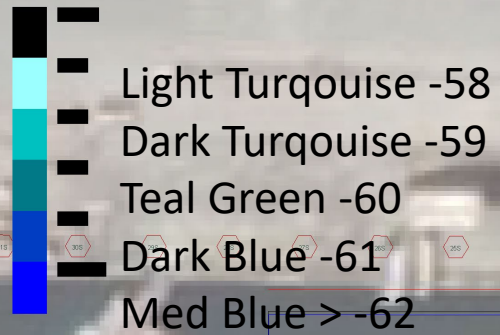
Design Depth -56 MLLW for DMMUs 1-8  
Overdredge Depth 2 Foot = -58 MLLW  
Permitted Depth -58 MLLW  
Post Dredge Survey -60 MLLW & -61 MLLW

### DMMUs 9 & 10 Unsuitable

Design Depth -57 for DMMUs 9 &10  
Overdredge Depth 2 Foot = -59 MLLW  
Permitted Depth -59 MLLW  
Post Dredge Survey shows dredging into the buffer



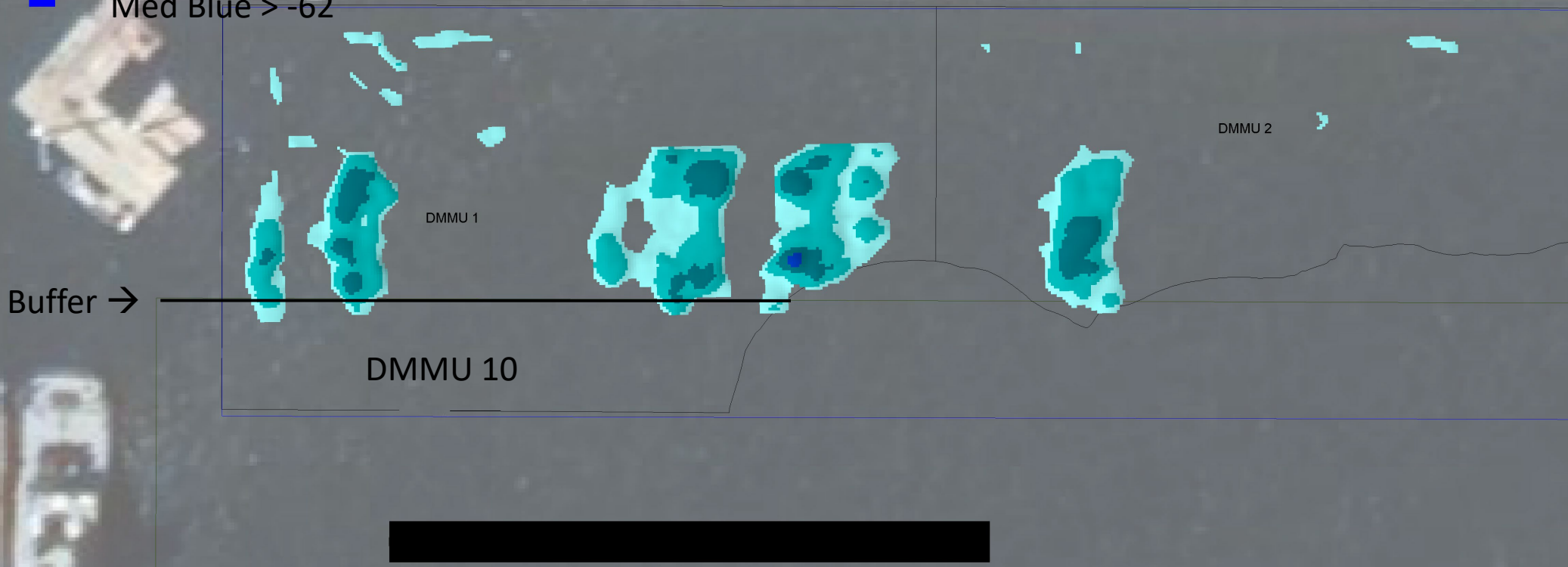
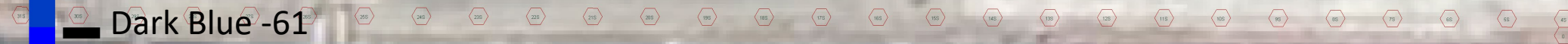




DMMU Permitted Depth -58  
Over dredged to -59 to -61



DMMU 10 Unsuitable material



Permitted Depth -58

Over dredged -59 to -60

High spot cleanup created another over dredge event  
Compromised structural toe wall and Needed to  
back fill with clean sand



Light Turquoise -58

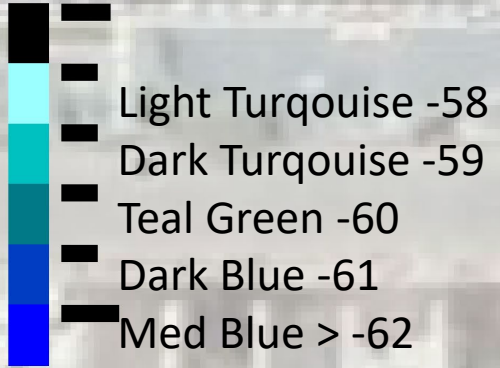
Dark Turquoise -59

Teal Green -60

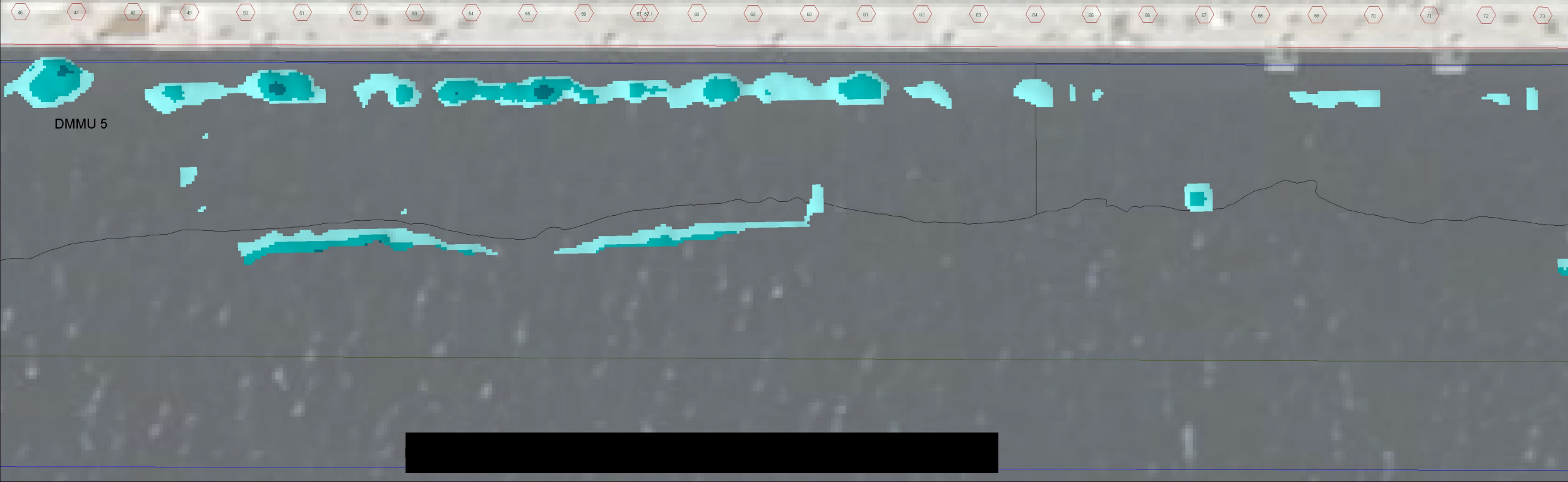
Dark Blue -61

Med Blue > -62





Post Dredge sampling was required by DMMP agencies  
Clean sand placement was required  
Unauthorized Disposal to Elliott Bay (2730 cy)



## **Causes of over dredging:**

- Damaged Electronic Tide Gauge - King tides caused damage to the electronic tide gauge that connects to the dredge software and experienced damage due to debris. Tide gauge was reset on two occasions, however this disruption in the tide elevation being shown in the dredge software is a contributing factor to the excess over-dredge.
- Dredging Operator Error - Night Shift operator was brought in after project had started, and a primary factor for the excess over-dredge is that the second shift operator had mis-understood the dredge software calculations.

## **Non Compliance and Agency Action:**

Over dredging outside authorized prism both horizontally and laterally.

Dredged in unsuitable DMMU buffer and disposed to Elliott Bay.

Post dredge sampling was required for anti degradation.

Post dredge samples were conducted very late, due to many issues.

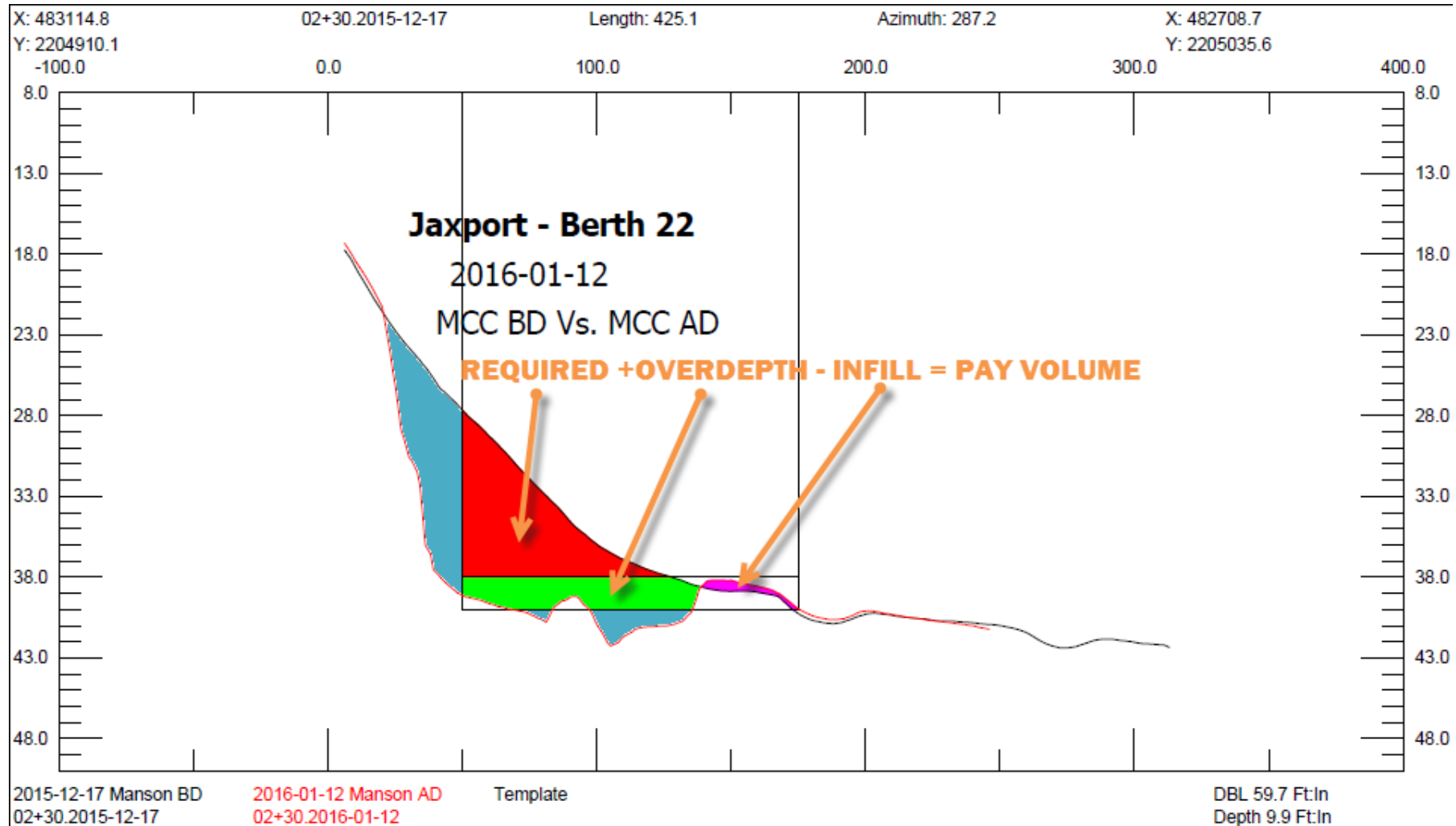
Contaminated but DMMP determined low risk to Elliott Bay disposal site.

Clean sand placement at over dredged areas.

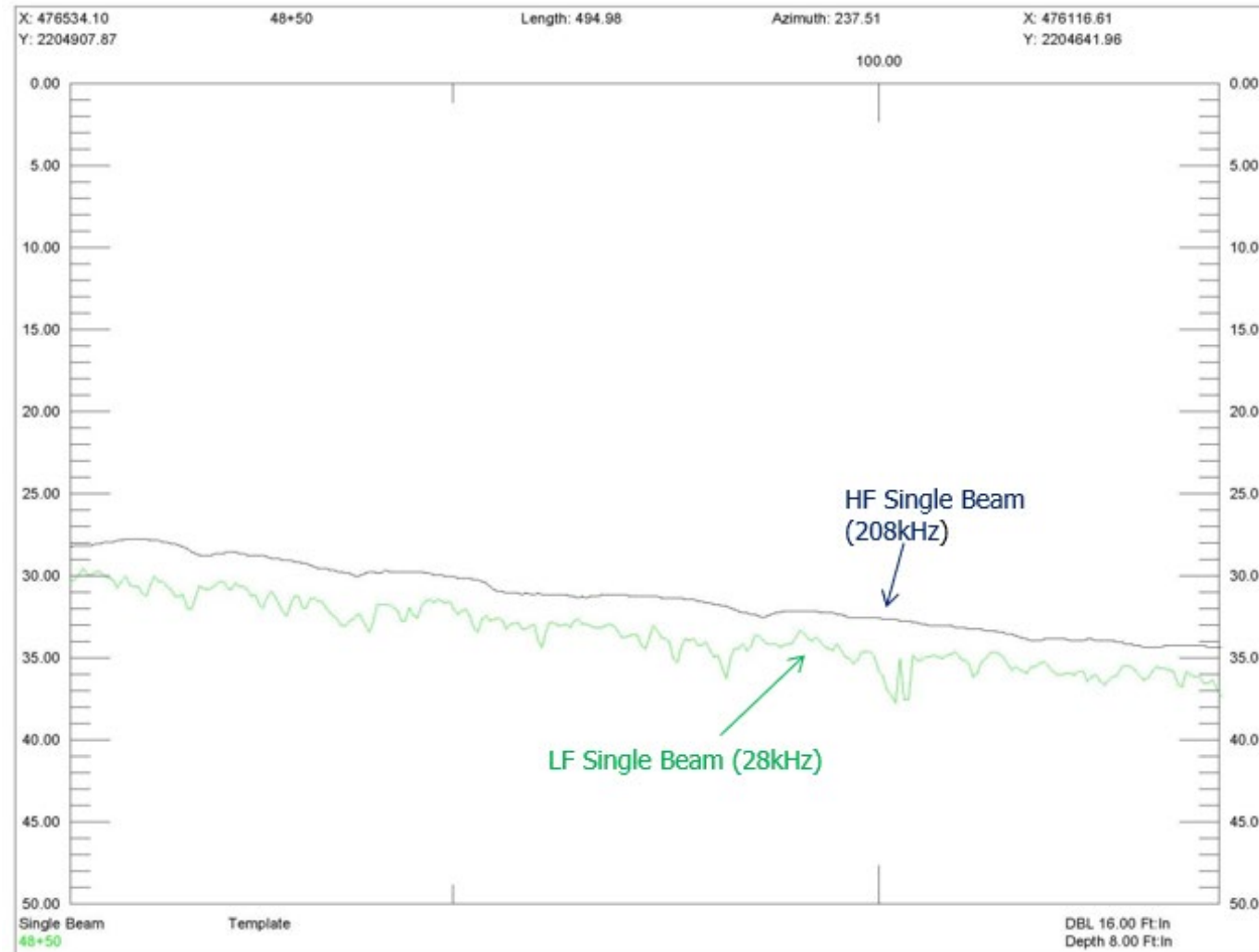
DNR fine issued for the volume of unauthorized material.

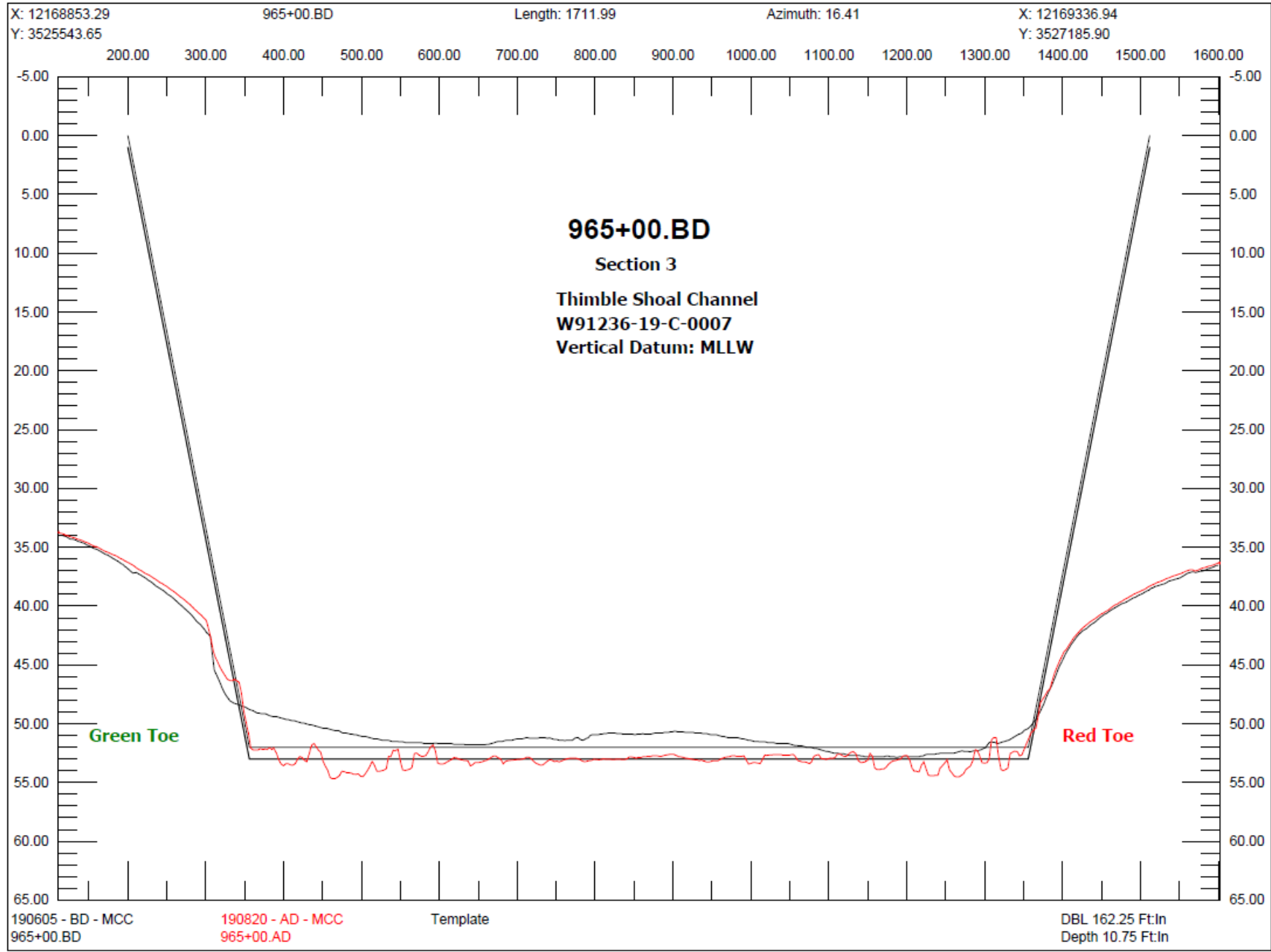


# VOLUMES 101 – PAY VOLUME



# Unconsolidated Material - High vs. Low Frequency





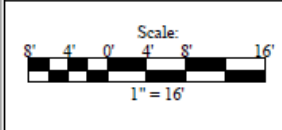
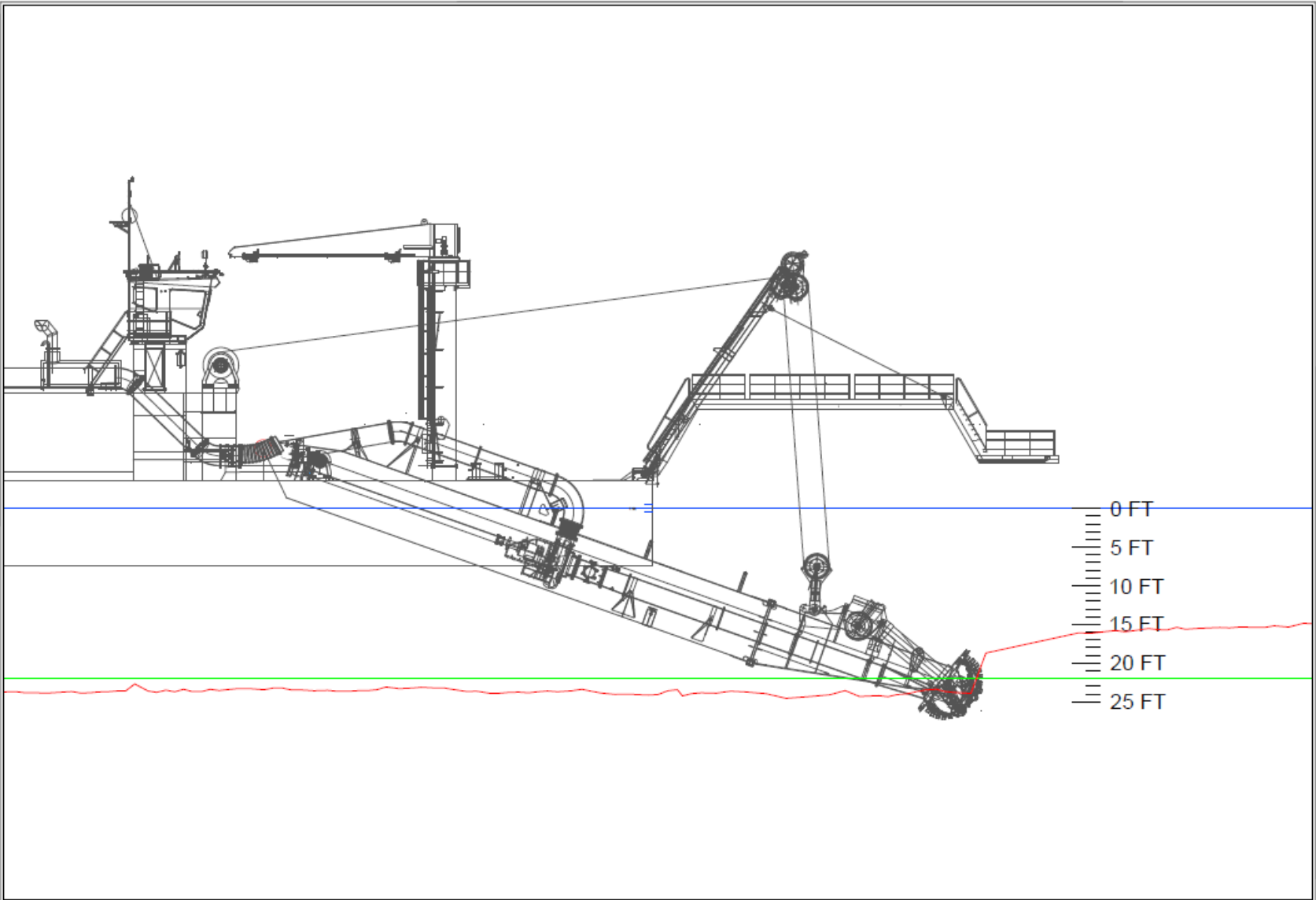
# Dredge Depth Accuracy Is Impacted By:

- Quantity of material above grade & the layout of material in channel
- Geotechnical parameters
- Dredging depth
- Location of the dredging site (offshore, inshore, lake, etc.)
- Physical environment (waves, tides, currents)
- Type of dredge available to do the work
- Hydrographic surveying & positioning available
- Level of quality control used to monitor data quality
- Experience level of dredge operators



# Contractor Suggestions

- Optional Line Items to increase required depth.
- Maintain a 2 foot allowable paid overdepth below the required.
- Allow box cutting on slopes & an allowable overdepth on slopes.
- Characterize and permit 4-5 feet below the allowable overdepth for incidental overdredging.
  - When contractors perceive potential incidental overdigging as a permit violation it increases cost & potential lack of competition due to contractors not wanting to knowingly win a job that they will violate a permit.



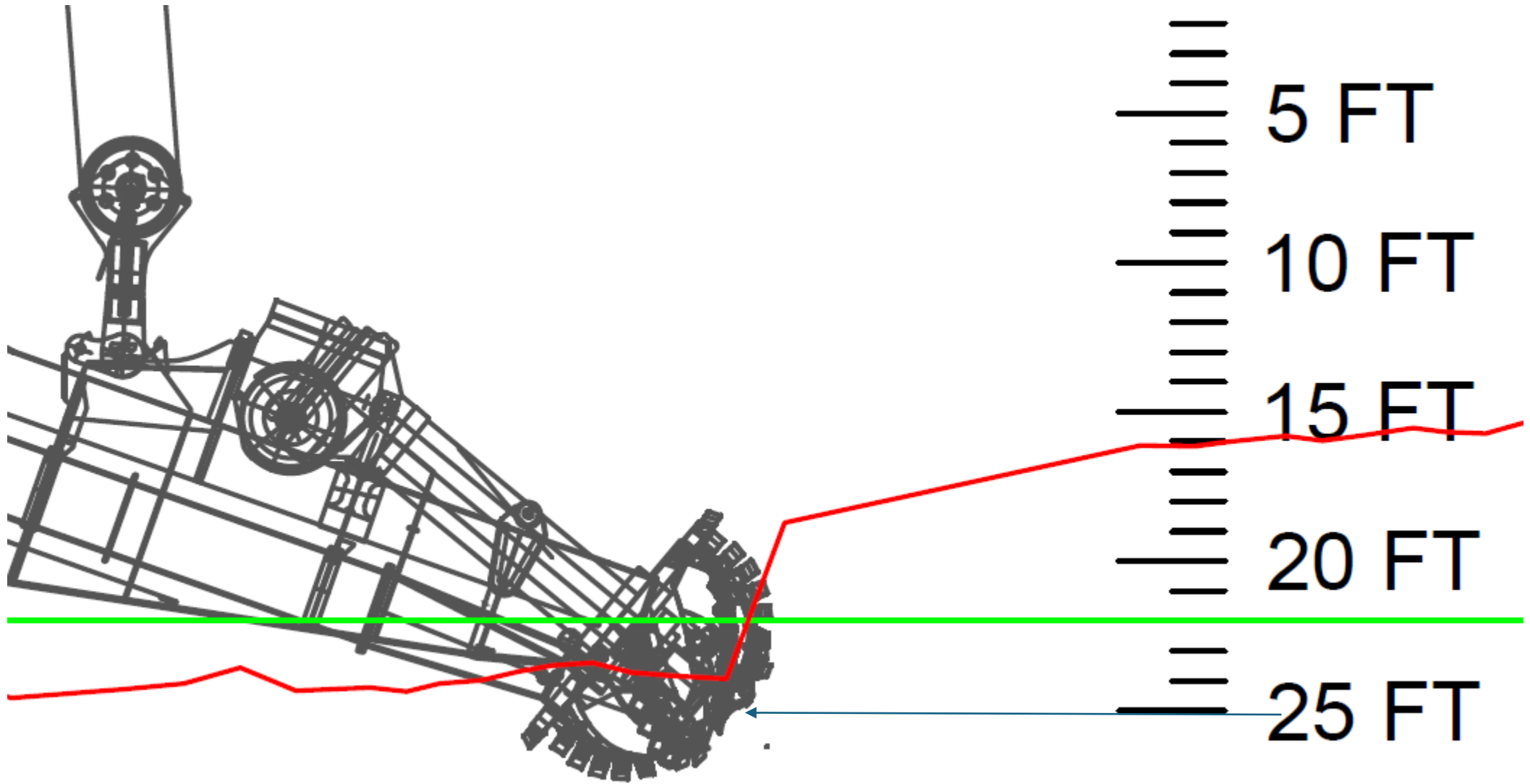
**Dredge Robert M. White**  
Atchafalaya Bar Channel Spillage

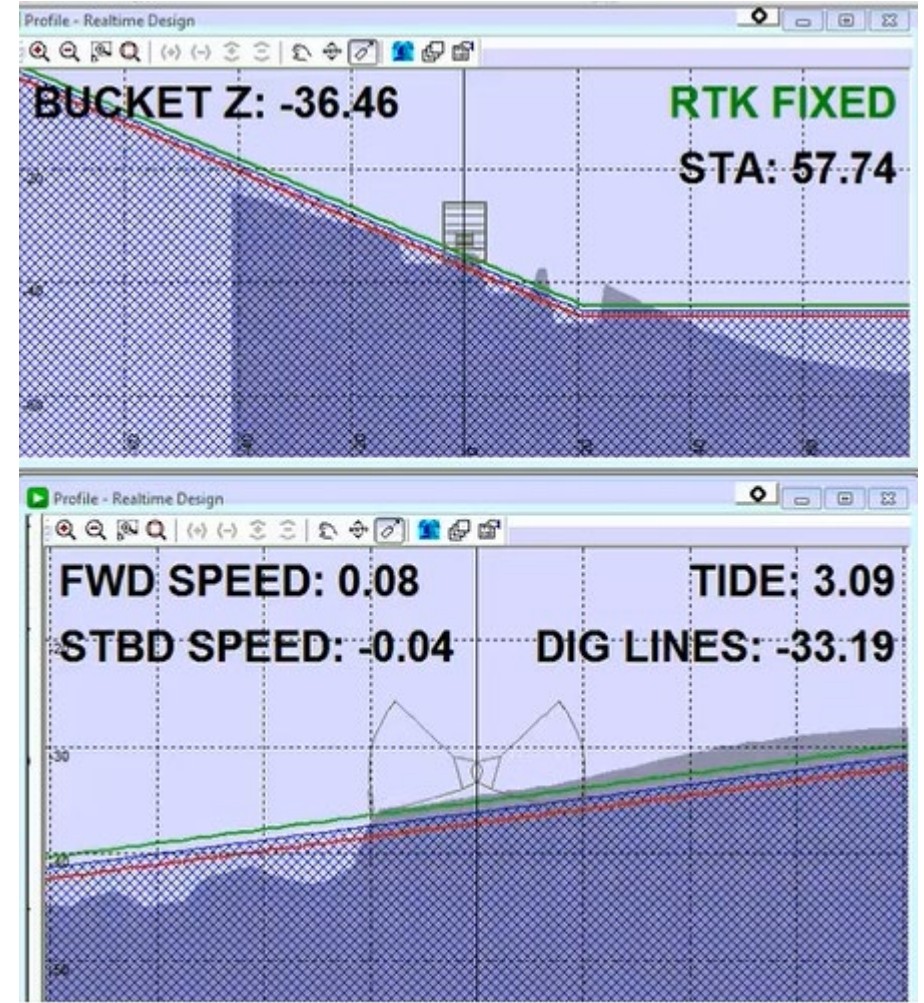
Notes:  
 Survey Date: 2019-08-05  
 Plot Date: 2019-10-24  
 Drawn By: NV  
 Checked By: JH  
 Drawing Name: RM White Atchafalaya Spillage.dwg

Cutter depth set to -25 FT on single pass pattern.  
 — Centerline AD Profile Survey  
 — Grade (-22 FT)



Sheet  
1 of 1









# Typical Digging Curve – Clamshell Bucket

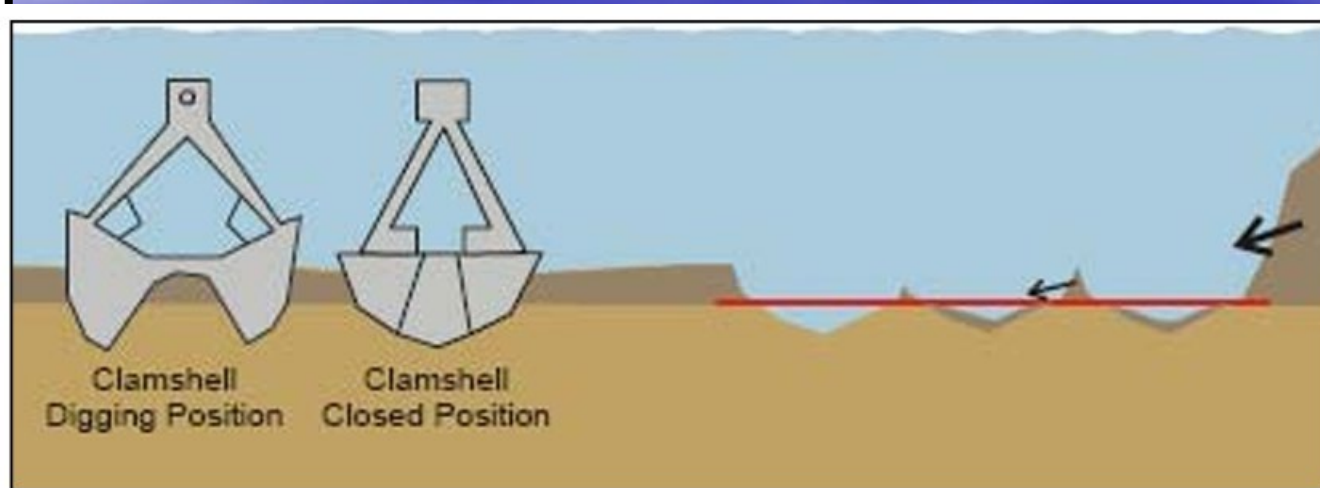


Figure 4. General conventional clamshell excavation profile.



# Helpful References

- [https://www.publications.usace.army.mil/Portals/76/Publications/EngineerRegulations/er\\_1130-2-520.pdf](https://www.publications.usace.army.mil/Portals/76/Publications/EngineerRegulations/er_1130-2-520.pdf)
- <https://apps.dtic.mil/sti/tr/pdf/ADA470164.pdf>
- <https://www.westerndredging.org/index.php/education-portal/presentations-library/category/424-2023-in-galveston-tx?download=2290:overdepth-a-lesson-on-tolerance>
- [https://dots.el.erdc.dren.mil/workshops/2008-04-15-doer/30\\_OT\\_Overdepth\\_Welp.pdf](https://dots.el.erdc.dren.mil/workshops/2008-04-15-doer/30_OT_Overdepth_Welp.pdf)
- <https://www.westerndredging.org/index.php/education-portal/presentations-library/category/422-2023-in-jacksonville?download=2247:panel-discussion-dredging-technology-innovation>
- <https://apps.dtic.mil/sti/tr/pdf/ADA297463.pdf>
- [https://www.westerndredging.org/phocadownload/ConferencePresentations/2005\\_NewOrleans/TAMU-37/6%20-%20Johnson,%20K%20-%20Geotechnical%20Investigations%20for%20Dredging%20Projects.pdf](https://www.westerndredging.org/phocadownload/ConferencePresentations/2005_NewOrleans/TAMU-37/6%20-%20Johnson,%20K%20-%20Geotechnical%20Investigations%20for%20Dredging%20Projects.pdf)
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