

**Subpart 3-C**

**Hydraulic Dredging Scenario**

**Table 3C-1**

**Hydraulic Dredging Scenario:  
Equipment Specific Removal Volumes and Areas**

**Table 3C-1  
Hydraulic Dredging Scenario:  
Equipment-Specific Removal Volumes and Areas**

River Section 1: Location	Volume By Production Equipment (cy)	Area By Production Equipment (Acres)	Volume By Alternative Equipment (cy)	Area By Alternative Equipment (Acres)	Total Volume for Location (cy)
Around Rogers Island	67,150.95	13.99	10,115.93	2.51	77,266.88
RM 193.5 - 193.75	13,192.98	1.82	0.00	0.00	13,192.98
RM 192.5 - 193.5 E	118,310.20	27.41	4,679.22	1.01	122,989.42
RM 192.5 - 193.5 W	193,510.90	33.70	5,730.93	1.18	199,241.83
RM 191.5 - 192.5 E	189,601.90	31.29	40,294.38	8.39	229,896.28
RM 191.5 - 192.5 W	60,895.43	11.33	2,203.45	0.50	63,098.88
RM 190.5 - 191.5 E	106,338.10	21.10	3,800.18	0.80	110,138.28
RM 190.5 - 191.5 W	170,323.00	30.31	2,236.49	0.55	172,559.49
RM 189.5 - 190.5 E	144,552.10	22.22	4,581.78	0.96	149,133.88
RM 189.5 - 190.5 W	126,704.00	21.60	86,957.64	18.05	213,661.64
RM 188.5 - 189.5 E	131,246.50	17.35	9,759.28	2.57	141,005.78
RM 188.5 - 189.5 W	66,252.33	12.57	3,837.05	0.83	70,089.38
<b>Total Volume (cy)</b>	<b>1,388,078.39</b>		<b>174,196.32</b>		
<b>Total Area (Acres)</b>		<b>244.68</b>		<b>37.35</b>	<b>1,562,274.71</b>

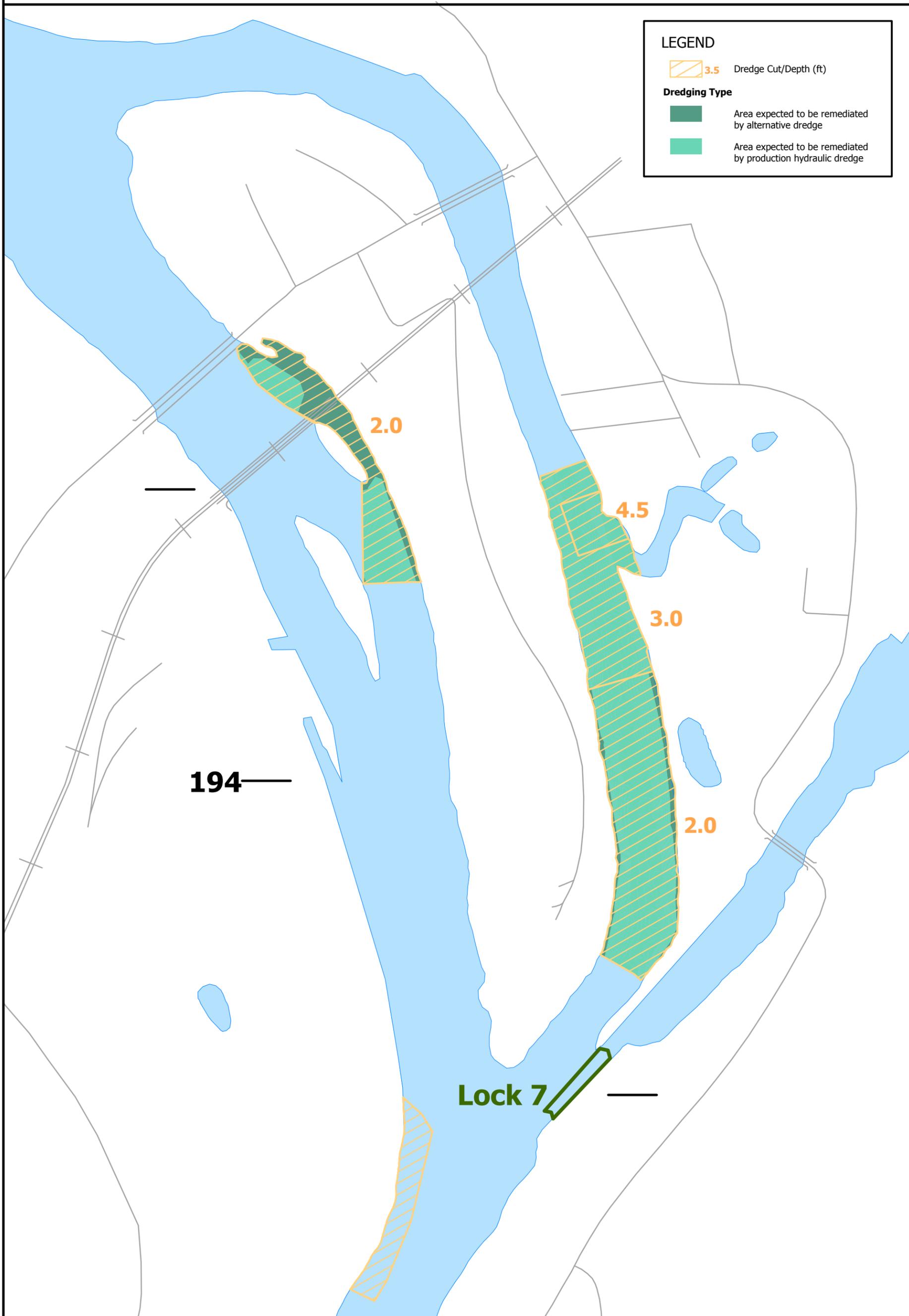
River Section 2: Location	Volume By Production Equipment (cy)	Area By Production Equipment (Acres)	Volume By Alternative Equipment (cy)	Area By Alternative Equipment (Acres)	Total Volume for Location (cy)
RM 183.25 - 184.25	178,410.00	28.30	9,994.13	2.06	188,404.13
RM 184.25 - 185.25	30,167.99	4.68	0.00	0.00	30,167.99
RM 185.25 - 186.25	223,341.20	28.36	6,563.33	1.36	229,904.53
RM 186.5 - 187.5	35,999.58	7.44	4,462.01	0.92	40,461.59
RM 187.5 - 188.5	12,122.95	2.50	904.06	0.19	13,027.01
<b>Total Area (Acres)</b>		<b>71.28</b>		<b>4.53</b>	
<b>Total Volume (cy)</b>	<b>480,041.72</b>		<b>21,923.53</b>		<b>501,965.25</b>

River Section 3: Location	Volume By Production Equipment (cy)	Area By Production Equipment (Acres)	Volume By Alternative Equipment (cy)	Area By Alternative Equipment (Acres)	Total Volume for Location (cy)
RM 163.25 - 164.25	74,850.63	11.73	0.00	0.00	74,850.63
RM 165.75 - 166.75	144,965.50	29.42	0.00	0.00	144,965.50
RM 169.25 - 170.25	224,806.20	51.44	0.00	0.00	224,806.20
<b>Total Area (Acres)</b>		<b>92.59</b>		<b>0.00</b>	
<b>Total Volume (cy)</b>	<b>444,622.33</b>		<b>0.00</b>		<b>444,622.33</b>
Navigational Channel (cy) and (acres)	117,292.20	43.00			117,292.20
<b>Total Removal for River Section 3 (cy)</b>					<b>561,914.53</b>

**Figure 3C-1**

**Hydraulic Dredging Equipment Analysis**

# Hydraulic Dredging Equipment Analysis - RM 193.75 - 194.5



**LEGEND**

 3.5 Dredge Cut/Depth (ft)

**Dredging Type**

-  Area expected to be remediated by alternative dredge
-  Area expected to be remediated by production hydraulic dredge

**194**

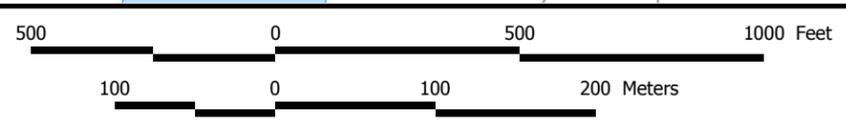
**2.0**

**4.5**

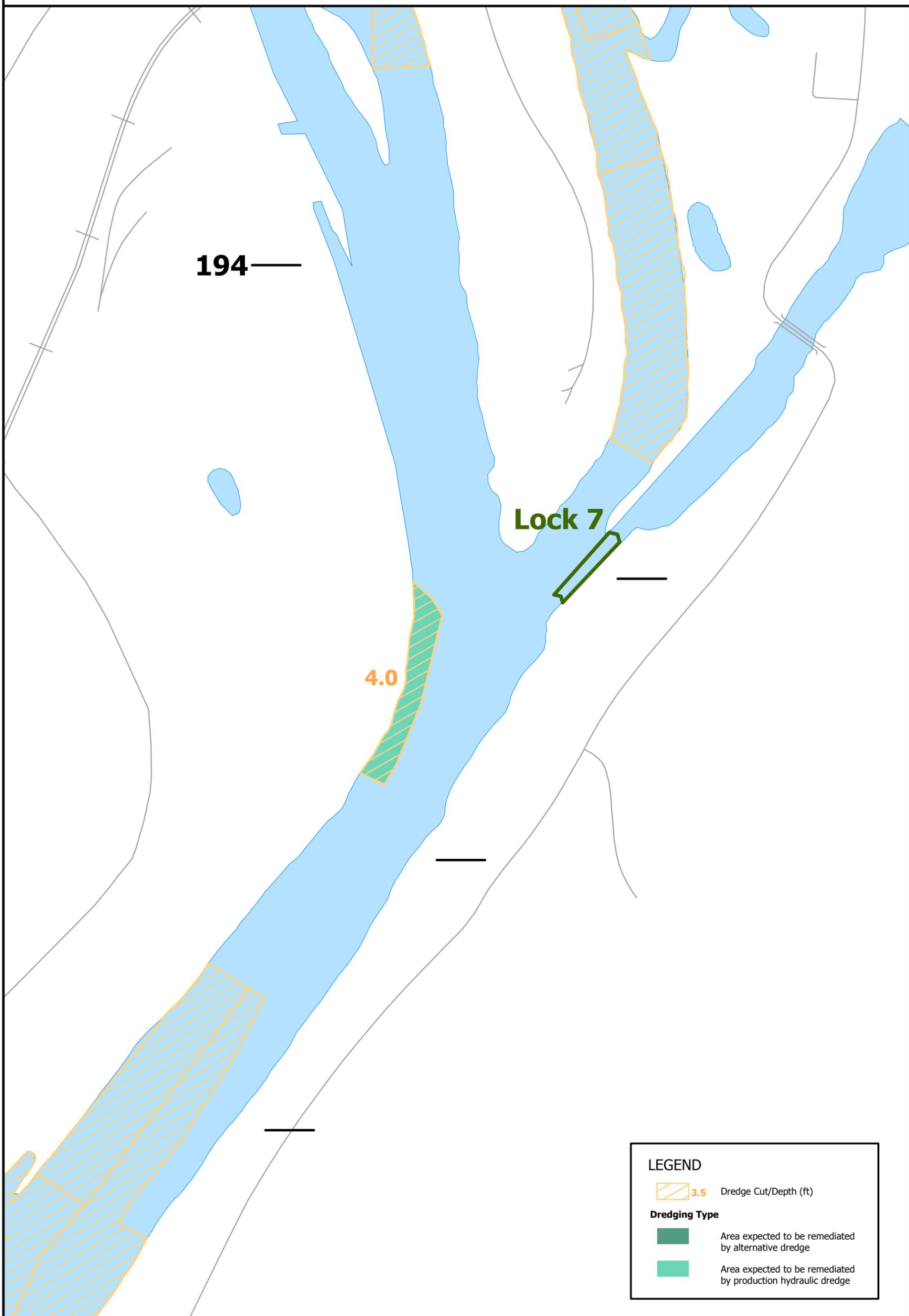
**3.0**

**2.0**

**Lock 7**



# Hydraulic Dredging Equipment Analysis - RM 193.5 - 193.75



194

Lock 7

4.0

**LEGEND**

 3.5 Dredge Cut/Depth (ft)

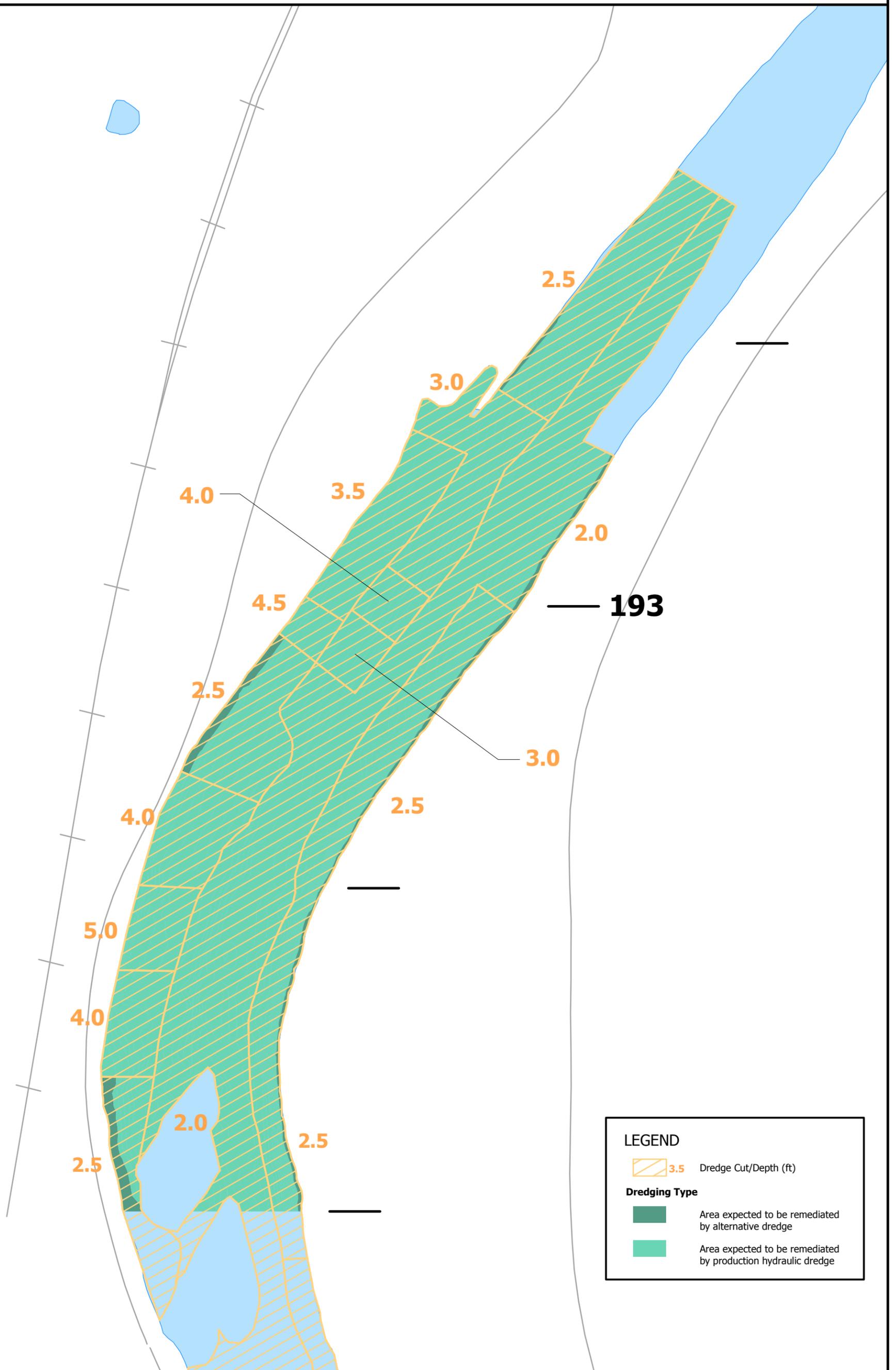
**Dredging Type**

 Area expected to be remediated by alternative dredge

 Area expected to be remediated by production hydraulic dredge



# Hydraulic Dredging Equipment Analysis - RM 192.5 - 193.5

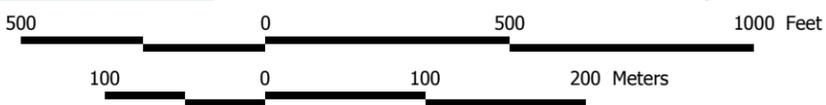


**LEGEND**

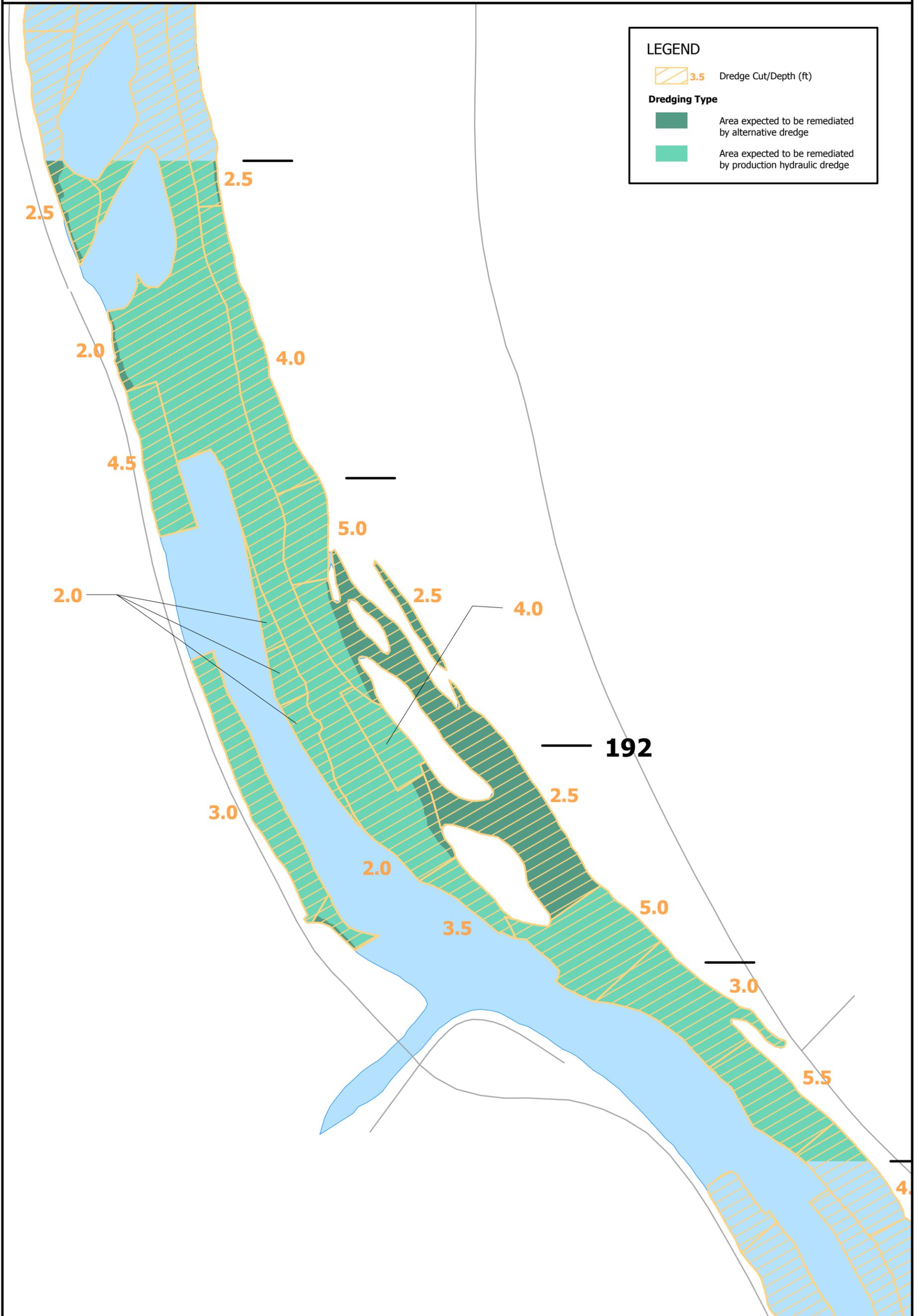
 3.5 Dredge Cut/Depth (ft)

**Dredging Type**

-  Area expected to be remediated by alternative dredge
-  Area expected to be remediated by production hydraulic dredge



# Hydraulic Dredging Equipment Analysis - RM 191.5 - 192.5

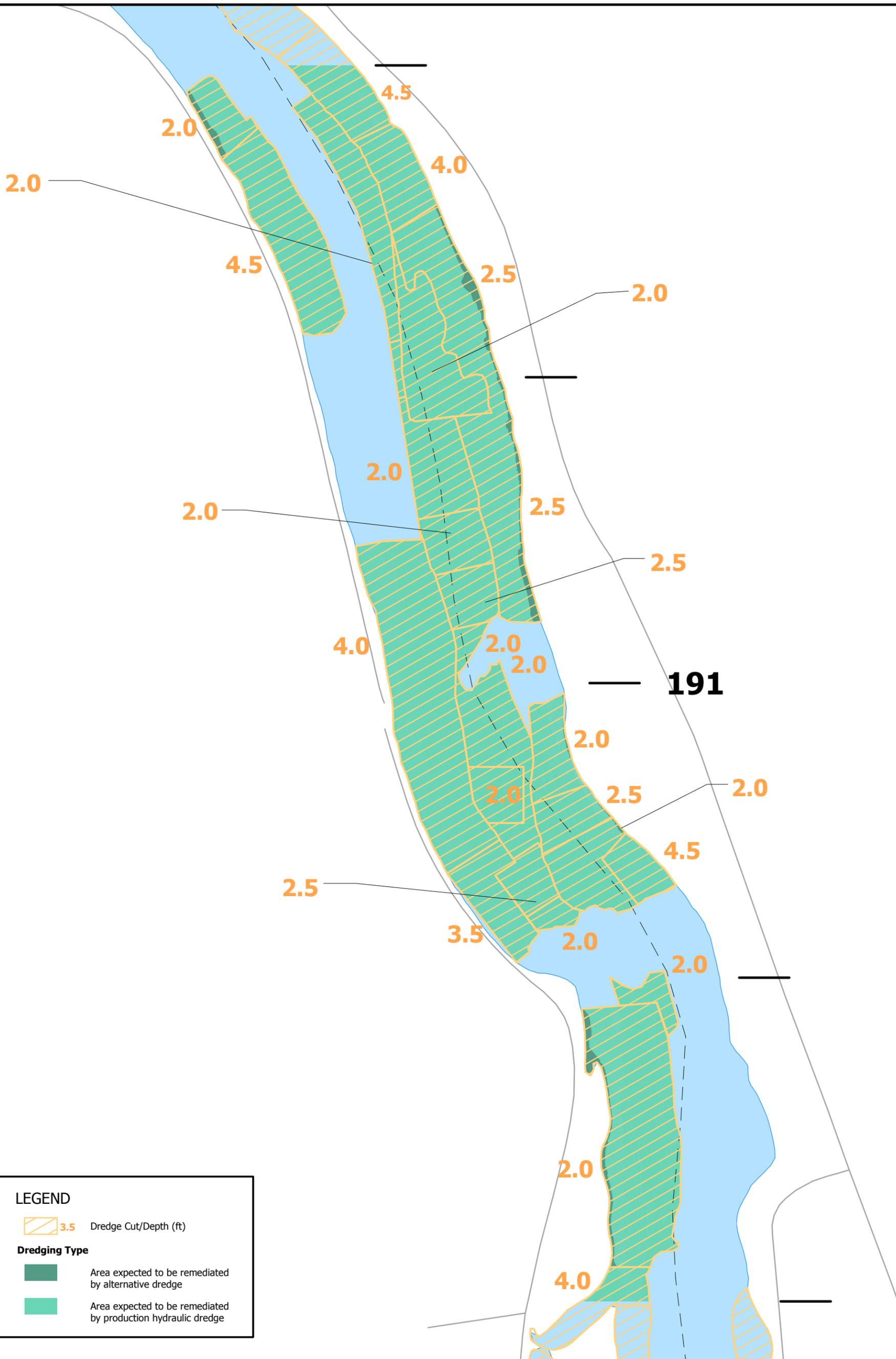


**LEGEND**

- 3.5 Dredge Cut/Depth (ft)
- Dredging Type**
  - Area expected to be remediated by alternative dredge
  - Area expected to be remediated by production hydraulic dredge



# Hydraulic Dredging Equipment Analysis - RM 190.5 - 191.5



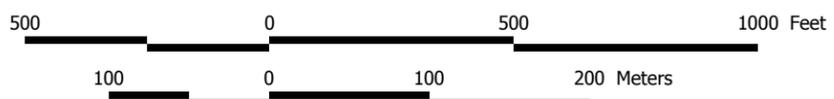
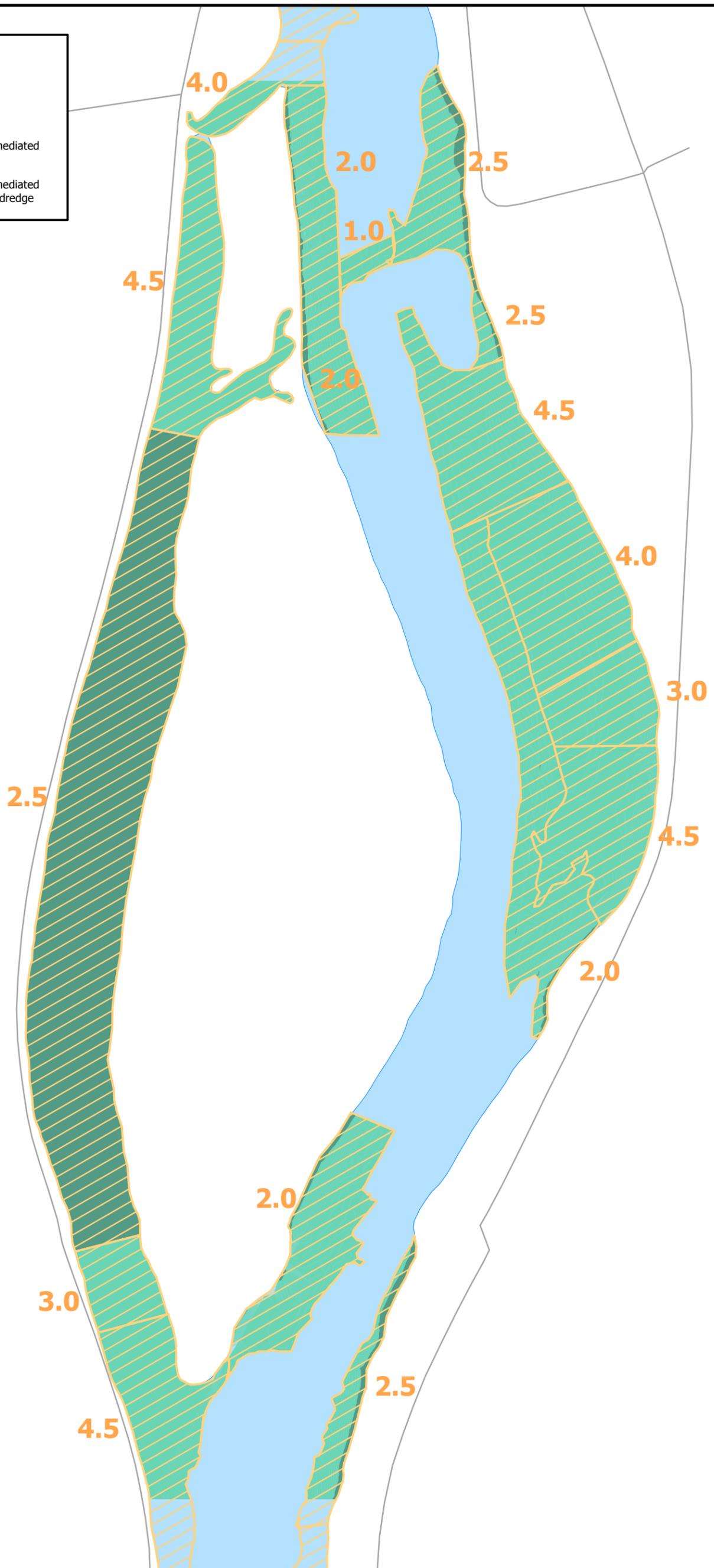
# Hydraulic Dredging Equipment Analysis - RM 189.5 - 190.5

**LEGEND**

 3.5 Dredge Cut/Depth (ft)

**Dredging Type**

-  Area expected to be remediated by alternative dredge
-  Area expected to be remediated by production hydraulic dredge



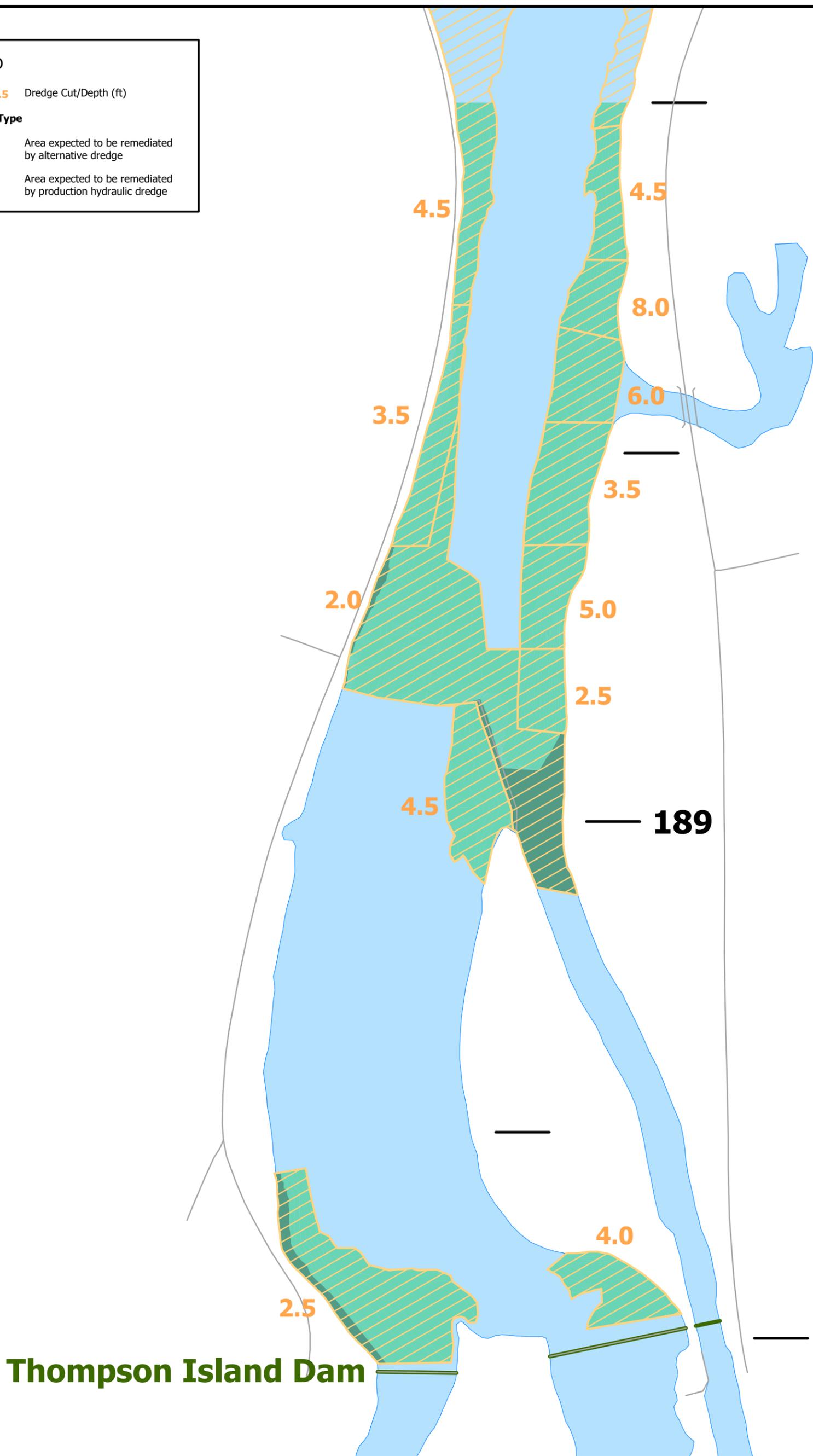
# Hydraulic Dredging Equipment Analysis - RM 188.5 - 189.5

**LEGEND**

 3.5 Dredge Cut/Depth (ft)

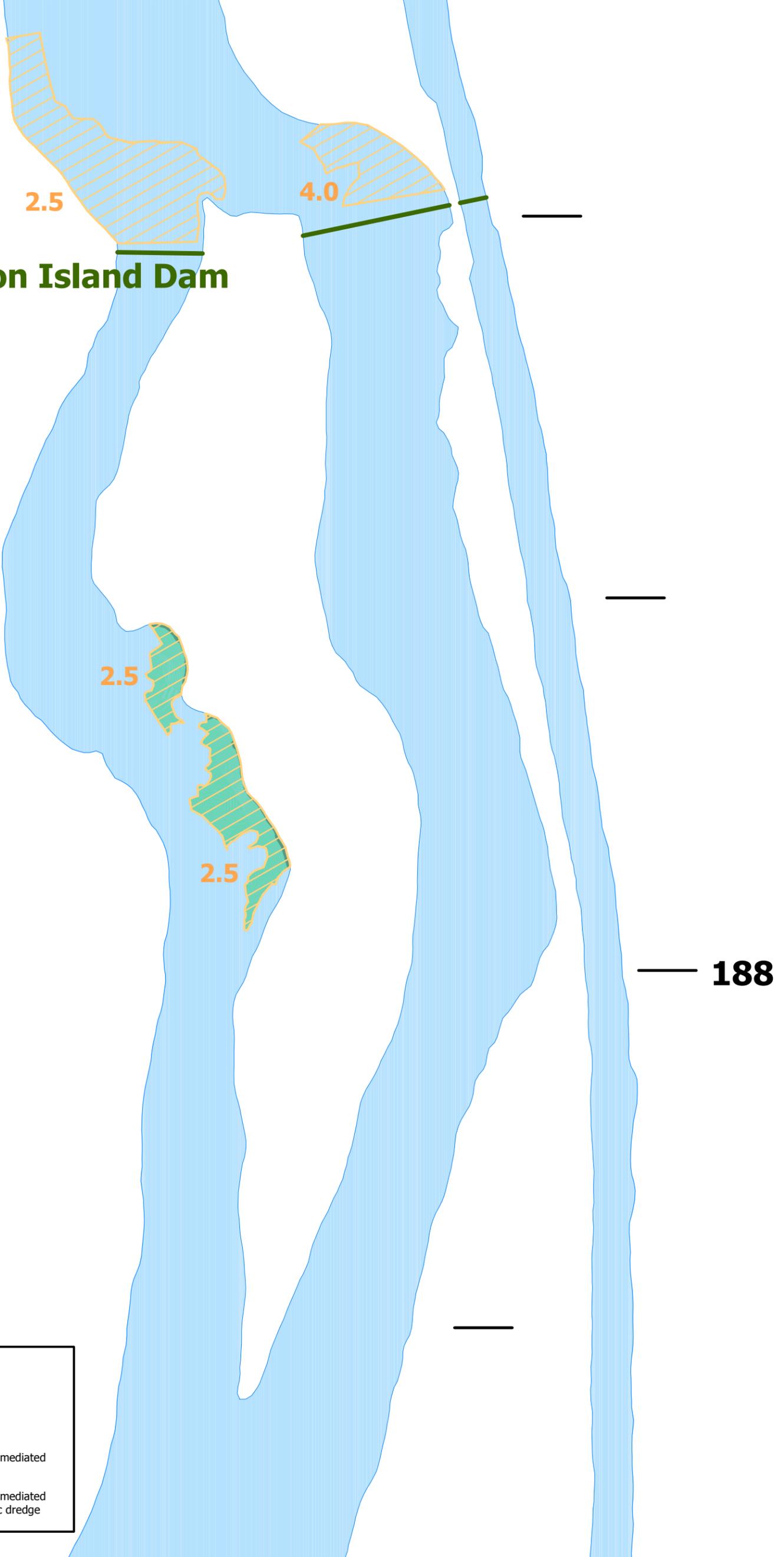
**Dredging Type**

-  Area expected to be remediated by alternative dredge
-  Area expected to be remediated by production hydraulic dredge



# Hydraulic Dredging Equipment Analysis - RM 187.5 - 188.5

**Thompson Island Dam**



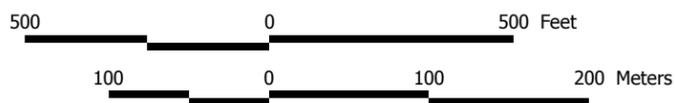
**LEGEND**

 3.5 Dredge Cut/Depth (ft)

**Dredging Type**

 Area expected to be remediated by alternative dredge

 Area expected to be remediated by production hydraulic dredge



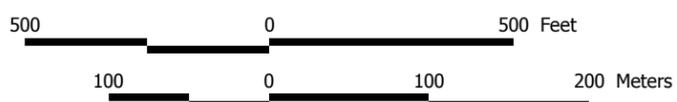
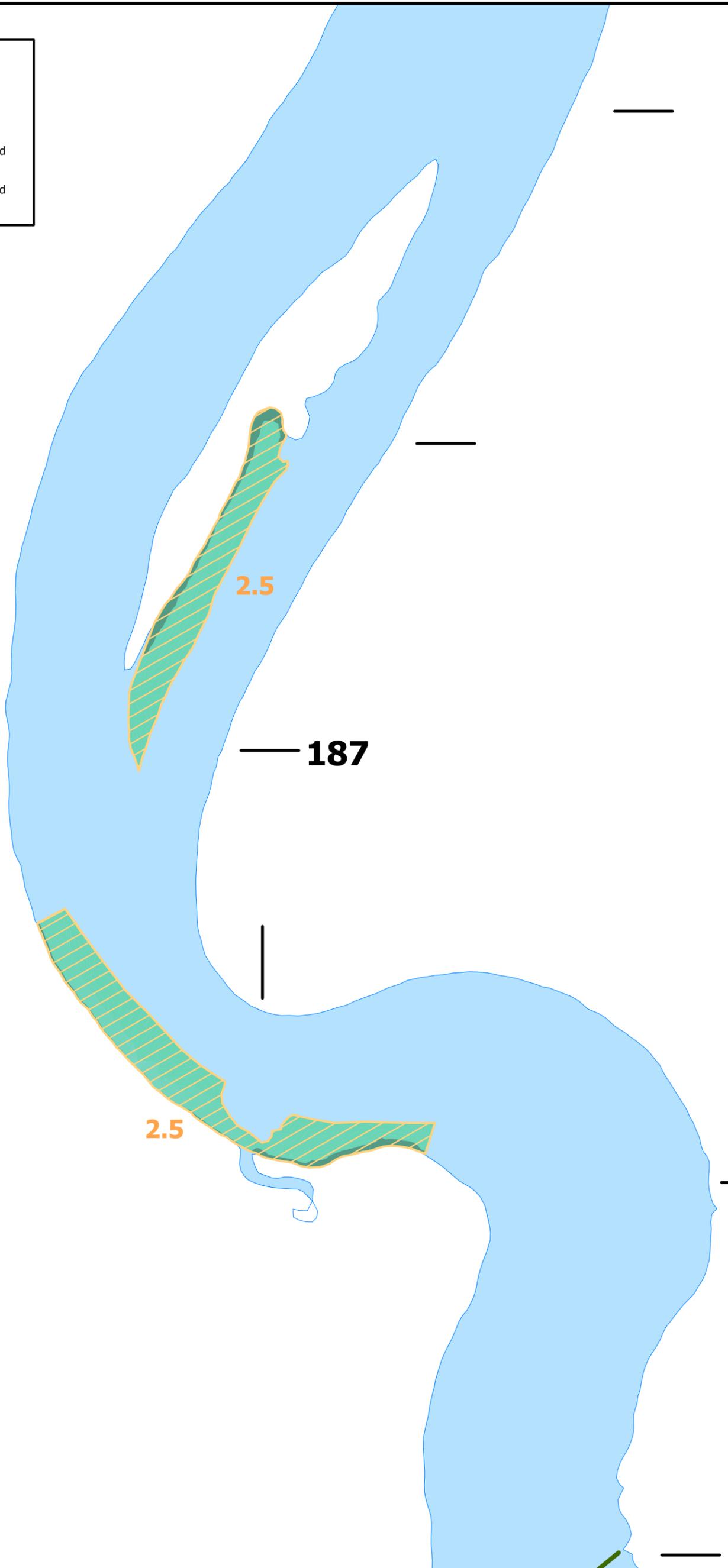
# Hydraulic Dredging Equipment Analysis - RM 186.5 - 187.5

**LEGEND**

 3.5 Dredge Cut/Depth (ft)

**Dredging Type**

-  Area expected to be remediated by alternative dredge
-  Area expected to be remediated by production hydraulic dredge



# Hydraulic Dredging Equipment Analysis - RM 185.25 - 186.25

**Fort Miller Dam**

**Lock 6**

**Lock 6**

**186**

2.5

5.5

2.5

4.0

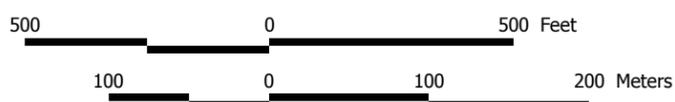
5.5

**LEGEND**

 3.5 Dredge Cut/Depth (ft)

**Dredging Type**

-  Area expected to be remediated by alternative dredge
-  Area expected to be remediated by production hydraulic dredge



# Hydraulic Dredging Equipment Analysis - RM 184.25 - 185.25

**LEGEND**

 3.5 Dredge Cut/Depth (ft)

**Dredging Type**

-  Area expected to be remediated by alternative dredge
-  Area expected to be remediated by production hydraulic dredge



500 0 500 Feet

100 0 100 200 Meters

# Hydraulic Dredging Equipment Analysis - RM 183.25 - 184.25

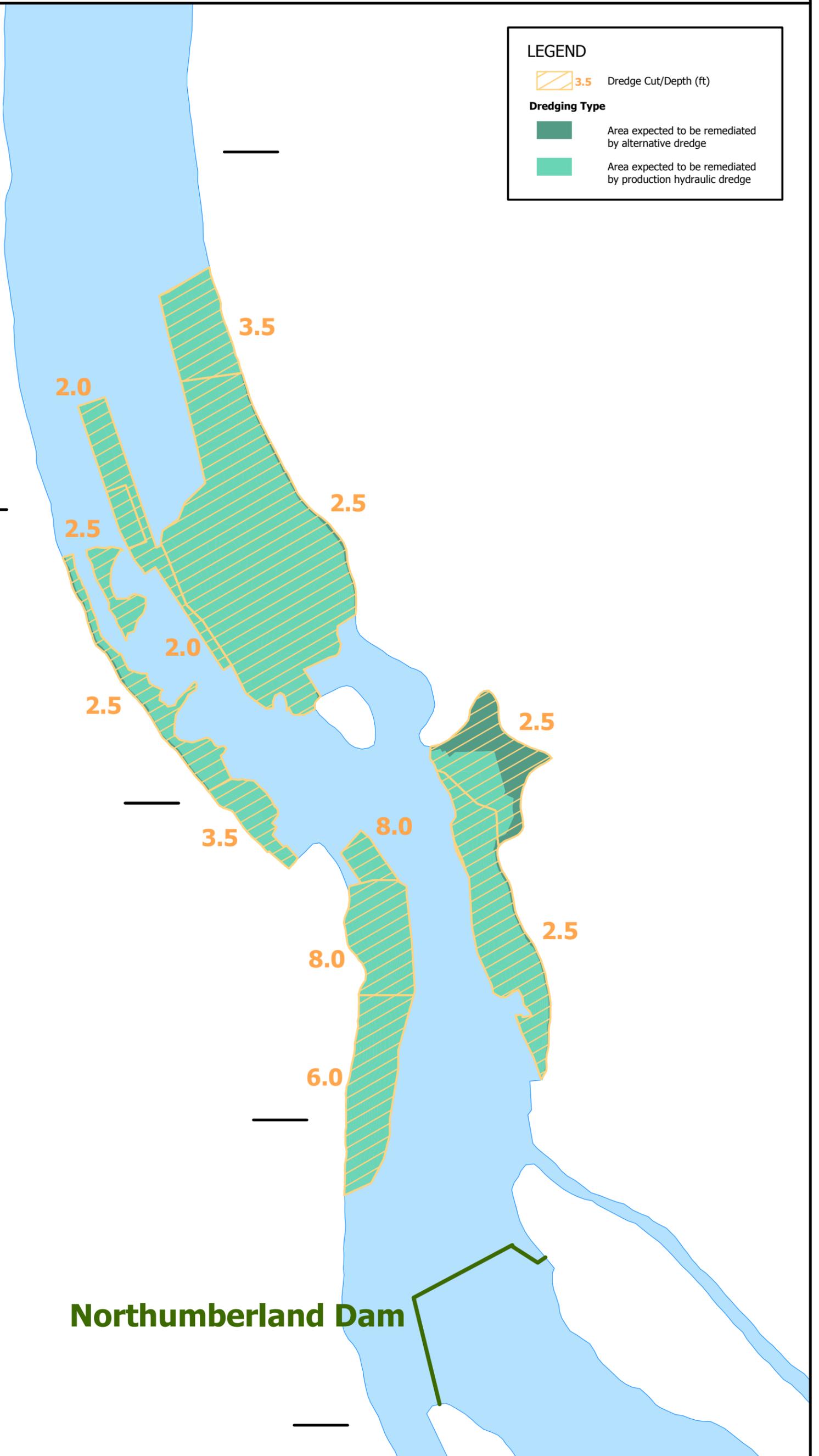
184

**LEGEND**

 3.5 Dredge Cut/Depth (ft)

**Dredging Type**

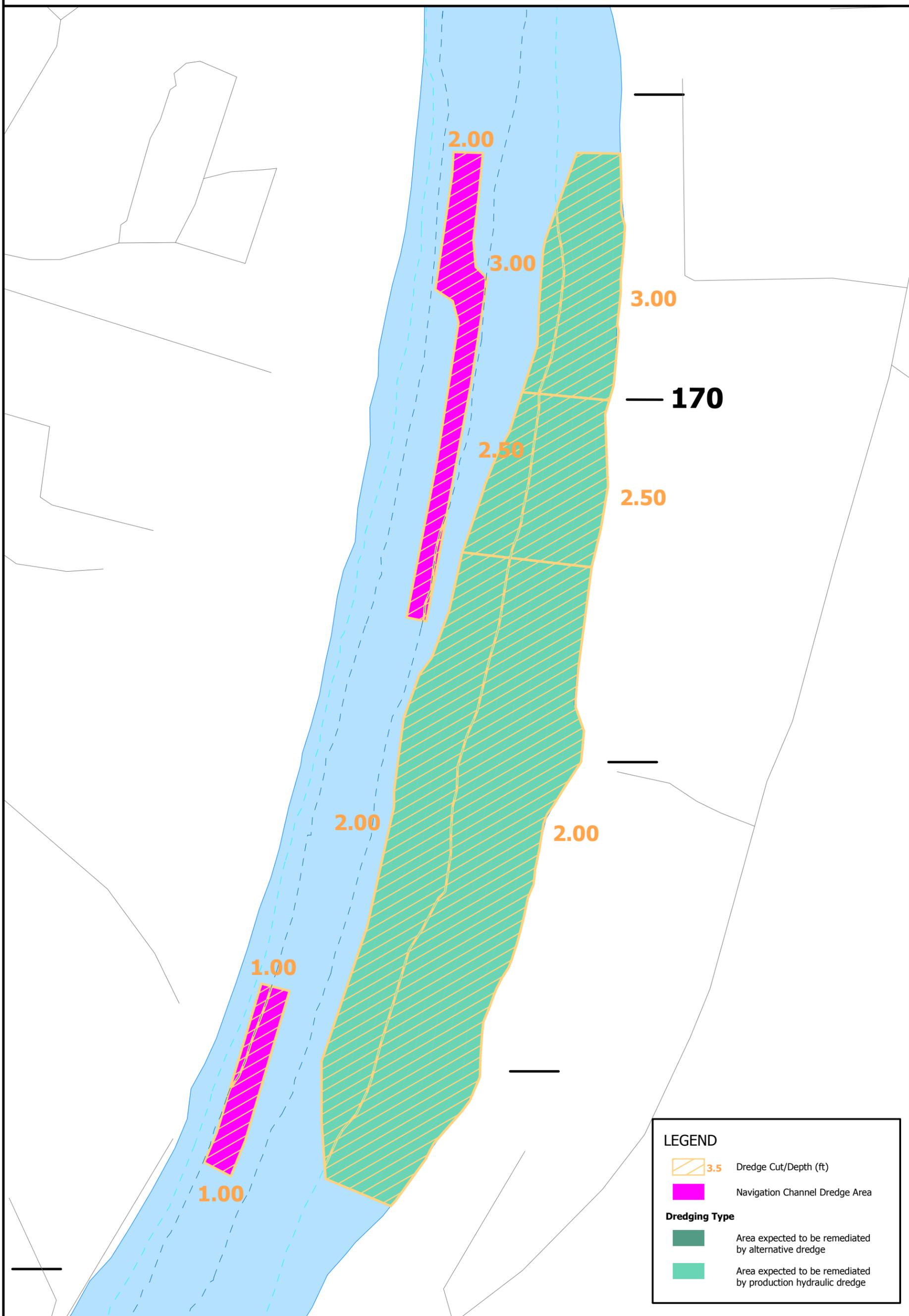
-  Area expected to be remediated by alternative dredge
-  Area expected to be remediated by production hydraulic dredge



**Northumberland Dam**

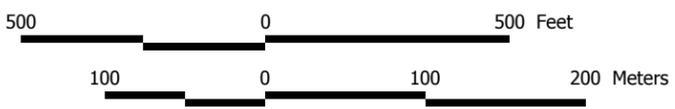


# Hydraulic Dredging Equipment Analysis - RM 169.25 - 170.25



**LEGEND**

-  3.5 Dredge Cut/Depth (ft)
-  Navigation Channel Dredge Area
- Dredging Type**
-  Area expected to be remediated by alternative dredge
-  Area expected to be remediated by production hydraulic dredge



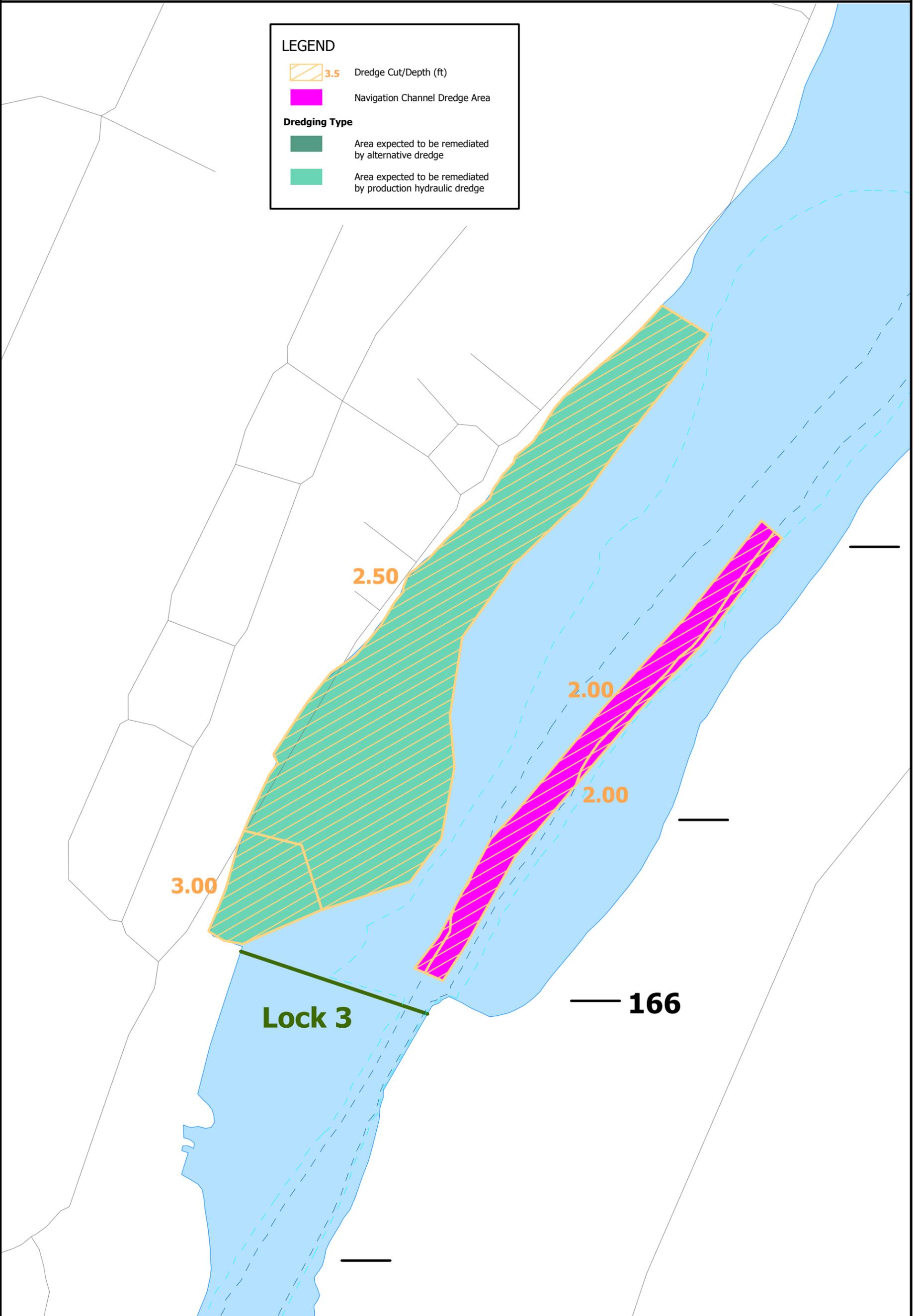
# Hydraulic Dredging Equipment Analysis - RM 165.75 - 166.75

**LEGEND**

-  3.5 Dredge Cut/Depth (ft)
-  Navigation Channel Dredge Area

**Dredging Type**

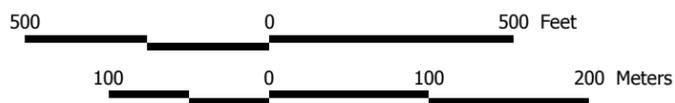
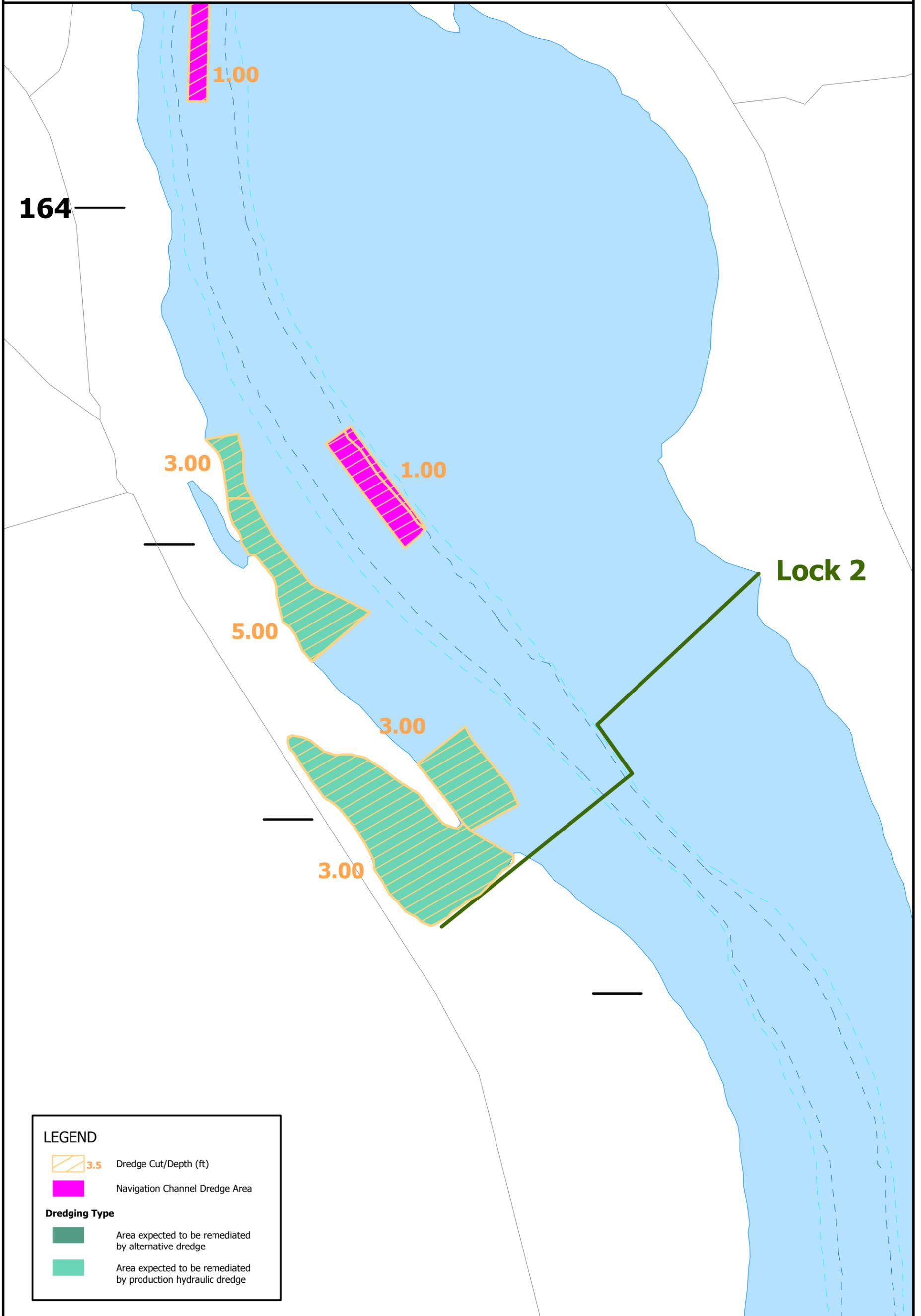
-  Area expected to be remediated by alternative dredge
-  Area expected to be remediated by production hydraulic dredge



500 0 500 Feet

100 0 100 200 Meters

# Hydraulic Dredging Equipment Analysis - RM 163.25 - 164.25



**Attachment 4.0**

**Issues Associated with Processing 4500 Tons/Day at Moreau Landfill Site**

## **Attachment 4.0**

### **Issues Associated with Processing 4500 Tons/Day at Moreau Landfill Site**

During preparation of the project's FS and RS, consideration was given to the availability and capacity of sites for transferring and processing dredged sediments. The conclusion reached at that time was that it would be preferable to identify at least two transfer/processing sites so that both in-river transport difficulties and the scale of on-site operations would be reduced in comparison to the situation wherein only one site were available.

However, from the standpoint of demonstrating that the required productivity performance standards can be attained, an analysis based on one operational transfer/processing site would be more conservative than an analysis based on two functioning sites. This is particularly the case if the transfer/processing site were to be situated at either the northern or southern limits of the upper Hudson remedial work zone.

The discussion that follows presents issues associated with processing and exporting 4500 tons per day of stabilized or dewatered sediment from the Moreau site which has been referred to, in the FS and RS, as the northern transfer/processing facility. At 4500 tons per day, the Moreau site would essentially be handling sediments at the average rate required by the performance standards developed herein. No assessment is provided for a southern transfer/processing site in the Port of Albany area since a single full-scale processing operation at that location would preclude use of hydraulic dredging technology, a potentially viable technology for removing targeted sediments in River Section 1.

At this time, the selection of transfer/processing site(s) has not been finalized. USEPA is following the site selection process as defined in the Facility Siting Concept Document (USEPA, December 2002).

#### **Site Area**

As presented elsewhere in this report, a single site providing about 15 to 20 acres of usable area is required to transfer and process sediments at a rate that would meet the required average productivity performance standards (about 4500 tons per day). The key issue here is that the area be usable and configured so that waterfront transfer and landside processing operations can be optimally situated in relationship to the site's rail load-out facilities. The required increase in site throughput, from approximately 1600 tons per day (as per the FS and RS for Moreau) to about 4500 tons per day, increases the required usable site area by about one-third. However, the Moreau locale, which includes old Moreau landfill and additional properties south of the landfill, has adequate area to accommodate transfer/processing operations with a throughput of 4500 tons per day. A key issue here is the availability of the properties south of the old landfill.

## **Waterfront Requirements**

As site throughput increases from about 1600 tons per day to 4500 tons per day, it becomes necessary to expand waterfront transfer capacity, particularly for the mechanical dredging alternative. Figures 4-1 shows two active, hopper-barge unloading positions for 4500 tons per day throughput whereas the FS and RS indicated that the northern transfer facility could function with one active barge unloading position (at 1600 tons per day).

To accommodate two hopper barges, the site's wharf would be expanded to a length of approximately 400 feet, about 50 feet more than had been previously shown. In addition, operations at the waterfront appear to become somewhat more complex given the limited space within which barges can be maneuvered and the considerable time needed to remove (pump) excess water and unload dredged sediment. A detailed waterfront operational analysis is needed to fully evaluate reliable transfer of 4500 tons per day.

## **Processing and Storage Facilities**

Previous reports indicated that it would be beneficial to provide limited on-site storage for processed sediments to accommodate inconsistencies in rail operations (mechanical dredging) or rail and barging operations (hydraulic dredging). The scale of on-site storage would have to more than double should throughput be increased from 1600 to 4500 tons per day. Since it is expected that the primary storage facility would be enclosed to control fugitive dust, the cost associated with storage and materials reclamation (see next item) will increase significantly.

## **Materials Handling**

It is anticipated that loading 4500 tons per day of processed sediment into gondolas, would best be accomplished by a fully automated system using enclosed or covered conveyors. The FS and RS analysis assumed that dumpsters could be used, at Moreau, to haul material from the storage area to the on-site rail yard. Rail car loading would then be accomplished by front-end loaders. However, once handling requirements reach 4500 tons per day, it is not likely that trucking will be found efficient. In addition, at 4500 tons per day, the level of trucking activity, and associated air emissions, may prove to be unacceptable at Moreau. In order to provide a more thorough assessment of materials handling needs there, it would be necessary to perform additional, detailed engineering analyses.

## **Rail Yard**

The scale of the on-site rail yard increases significantly when throughput is expanded from 1600 tons per day to about 4500 tons per day. The enclosed illustration shows the yard to consist of three tracks of adequate length to store up to 15 gondolas each. While it appears that the Moreau site has room for the yard on its upper terrace (the old Moreau landfill), a geotechnical evaluation will be needed to ascertain the stability of the old landfill in relationship to the load imposed by rail operations. Historically, a smaller rail

yard had been situated on the old landfill and the scale of yard illustrated in the FS and RS was not altogether different than that former facility.

## **Rail Operations**

At the FS and RS stage, USEPA had discussed Hudson Valley rail operations with the Canadian Pacific Railroad (CPR). The CPR indicated that they could pick up eight loaded rail cars twice each day and haul them to either the Ft. Edward or Saratoga yards for temporary storage while a full train (75 cars or more) of stabilized sediments is made-up. In order to move 4500 tons per day out of Moreau, it will be necessary for the CPR to pick up (and drop off) 15 cars, three times each day and bring them to temporary storage at either yard location. As of this date input has not been obtained from the CPR as to whether or not they would have any difficulty in handling the expanded throughput of a single processing facility being situated at Moreau.

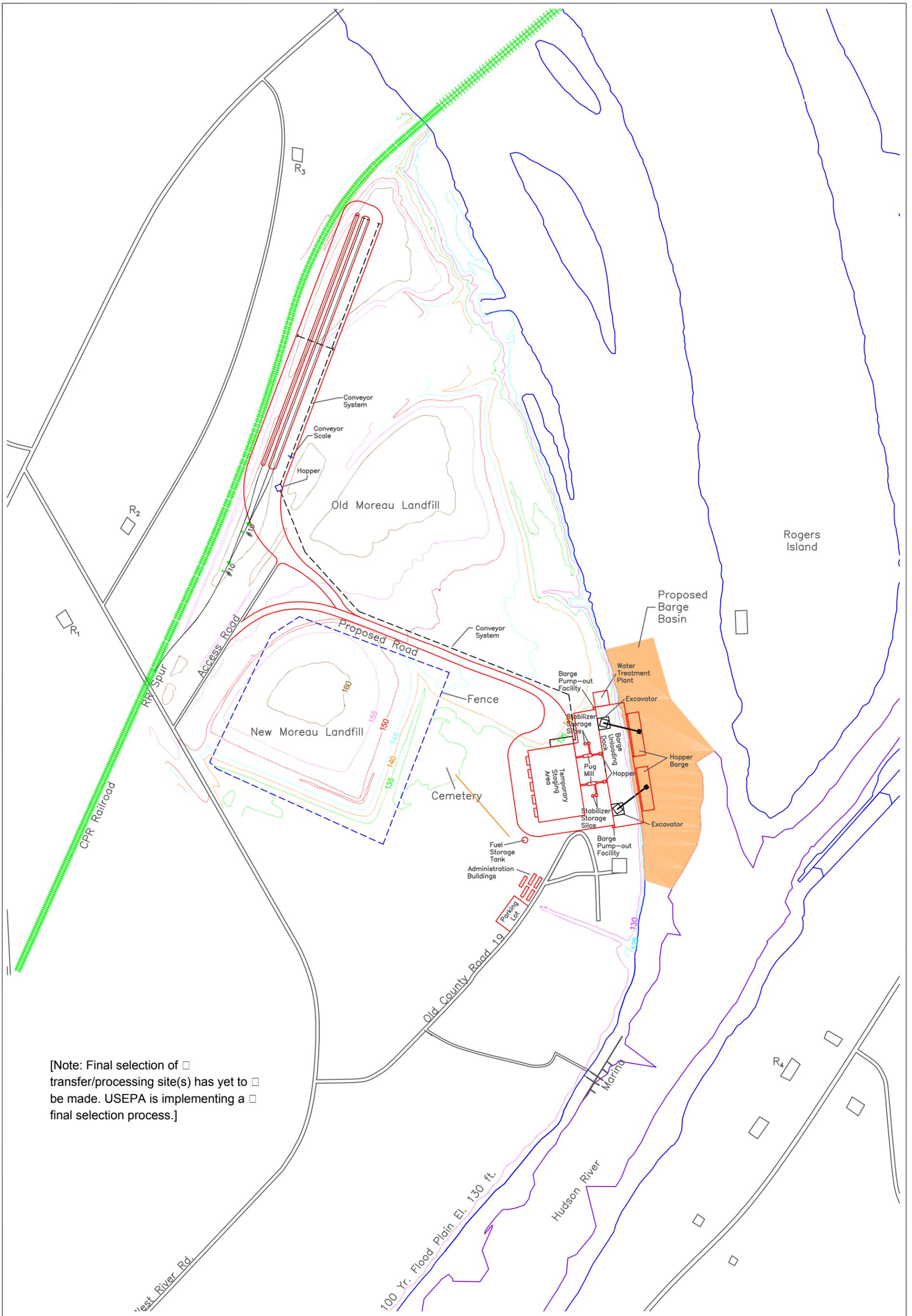
## **Summary**

Adequate land area appears to be available at the Moreau site (northern transfer facility) to situate the facilities needed to transfer and process 4500 tons per day of dredged sediments. However, it is unknown whether engineering and operational constraints will permit that scale of throughput there.

At the waterfront, management of several, sediment-laden barges simultaneously may prove a challenge to attaining the project's productivity goals. Barges have to be maneuvered within a relatively confined basin, tied up to the new wharf, and then undergo removal of excess water (by pumping). Operations at the waterfront have to be consistent with water quality criteria, a circumstance that may slow and, therefore, extend unloading operations.

Neither processing nor materials handling systems are expected to limit the ability to handle 4500 tons per day at Moreau. However, the technologies that will be needed to do so are likely to be significantly more sophisticated than those described in the FS and RS. One advantage in using automated materials handling systems is that fugitive emissions can be better controlled than would be possible under a trucking alternative.

The viability of developing a rail yard to accommodate 4500 tons per day output needs to be evaluated further from both geotechnical and operational perspectives. Ultimately, it will be necessary to discuss the increased level of operations with the CPR to ascertain the plausibility of moving 4500 tons per day reliably from Moreau.



[Note: Final selection of transfer/processing site(s) has yet to be made. USEPA is implementing a final selection process.]



<p>Hudson River PCB Site</p>	<p>Figure 4-1 Northern Transfer Facility Layout for Mechanical Dredging Approximately 4500 Tons/Day Output May 2003</p>
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