

Upland Dredged Material Management “The Basics”

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US Army Corps of Engineers
BUILDING STRONG[®]



Material Management Goals

Ensure Dike and Weir Integrity

Provide Sufficient Seasonal Capacity

Maintain Floor Elevations

Incrementally Raise Perimeter Dikes

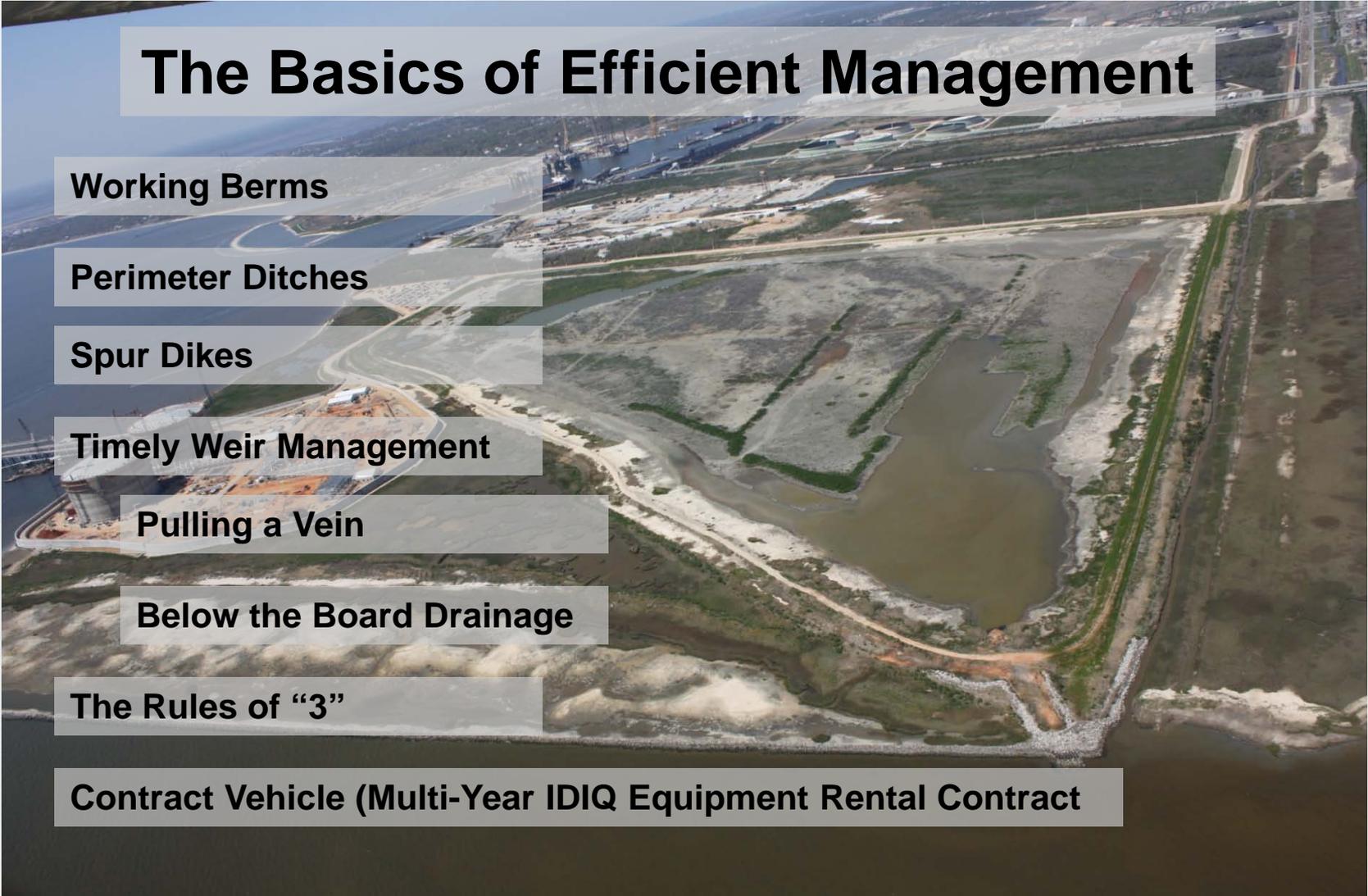
Manage Coarse Grain Material

Prep Site For Next Placement Event

Identify Beneficial Use Opportunities



The Basics of Efficient Management



Working Berms

Perimeter Ditches

Spur Dikes

Timely Weir Management

Pulling a Vein

Below the Board Drainage

The Rules of "3"

Contract Vehicle (Multi-Year IDIQ Equipment Rental Contract)





The Rules of 3

No more than 3 ft of dredge fill

No more than 3 ft per dike raising

No more than 3 relays

No more than a 3 ft thick layer per relay



No more than 3 ft of dredge fill

- Compute 3 ft of disposal volume to establish max gross in-situ dredging yardage.
- Roughly 160,000 cu yds/100 acres/ft of fill
- Max 0.5M cu yds per 100 acres of disposal area
- Dike height needed for dredge event:
 - Triple the dike height needed for gross in-situ fill
 - Add 2 ft for freeboard
 - Add 2 ft for ponding



No more than 3 ft per Dike Raising (Wet Lift)

- Minimize height of lift when using relayed – wet material. Allows bottom material to dry and prevents future “pumping” of haul roads
- A wet relayed lift results in max $\frac{1}{2}$ its original placement thickness once it has been dried and compacted
- A dry hauled lift results in $\frac{3}{4}$ its original placement thickness



No more than 3 Relays

- **Transporting material over 195 ft with a Marshbuggy has proven inefficient**
- **Layout spur dikes in relation to perimeter dikes to prevent a long transport**
- **Typical relay per day is 2,100 cu yds assuming their cut is 3 ft deep, 65 ft wide and 300 ft long**
- **Careful when estimating – A 3 wide relay actually involves 6 total relays to reach your final destination**



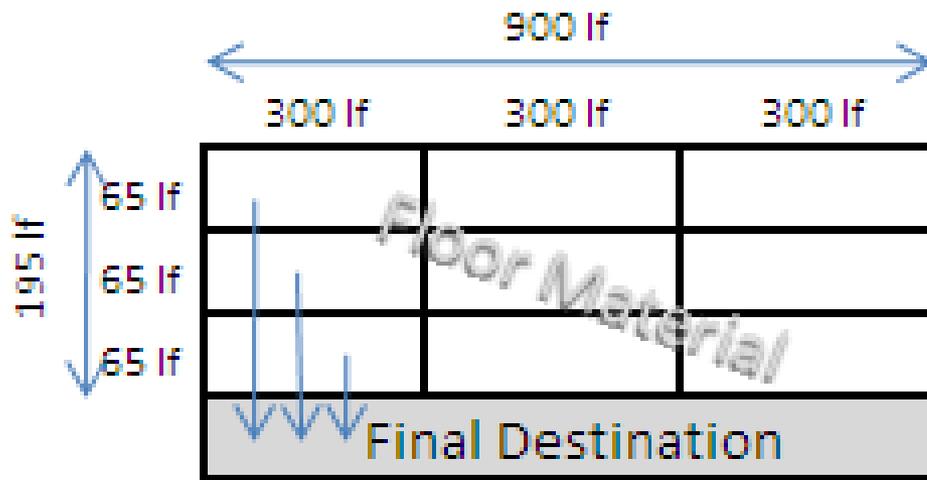


Figure 1

Floor Material Approx. 19,500 cu yds
 (Typical Section for Estimating Purposes)





**No more than a 3 ft
thick layer per relay**

- **Common mistake for marshbuggy operators – trying to carry more material than will stack without sliding back into the cut overnight!!**
- **Special considerations should be given to areas surrounding weir boxes. Usually a 2 ft thick layer is difficult to remove without adjacent material sliding in.**
- **Common practices include digging holding cells adjacent weir boxes to hold soupy material when relayed**



In a Perfect World....

Pump

Ditch

Relay

Stockpile

Raise Dikes

Reset Spur Dikes

2+

Y

E

A

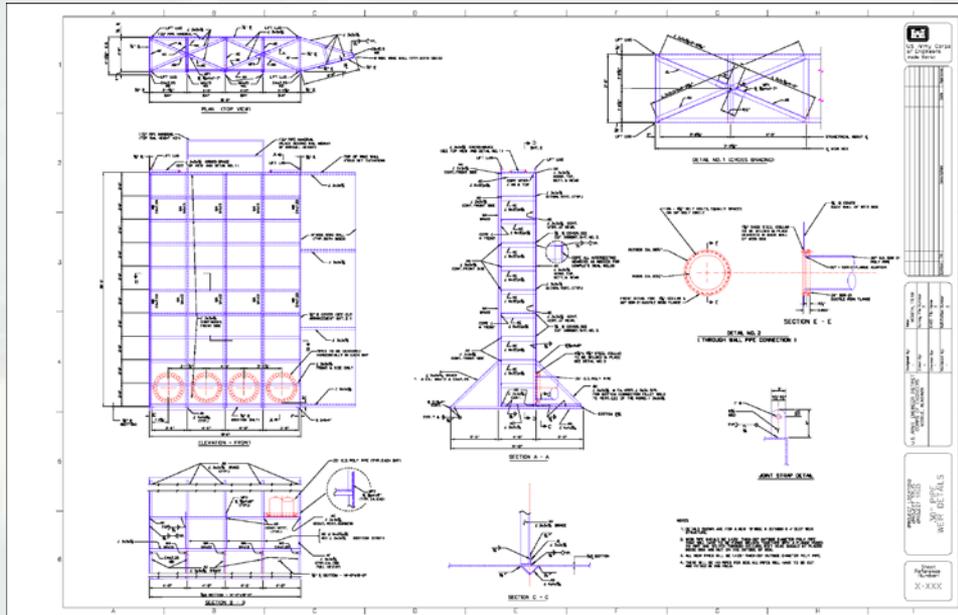
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Weir Boxes



Bentonite Collars



Wing Walls



Dredge Material Ratios:

In-Situ Channel Material

1 : 2

Initial Placement Into Site

In-Situ Channel Material

1 : 1

Within Site Relay Material

In-Situ Channel Material

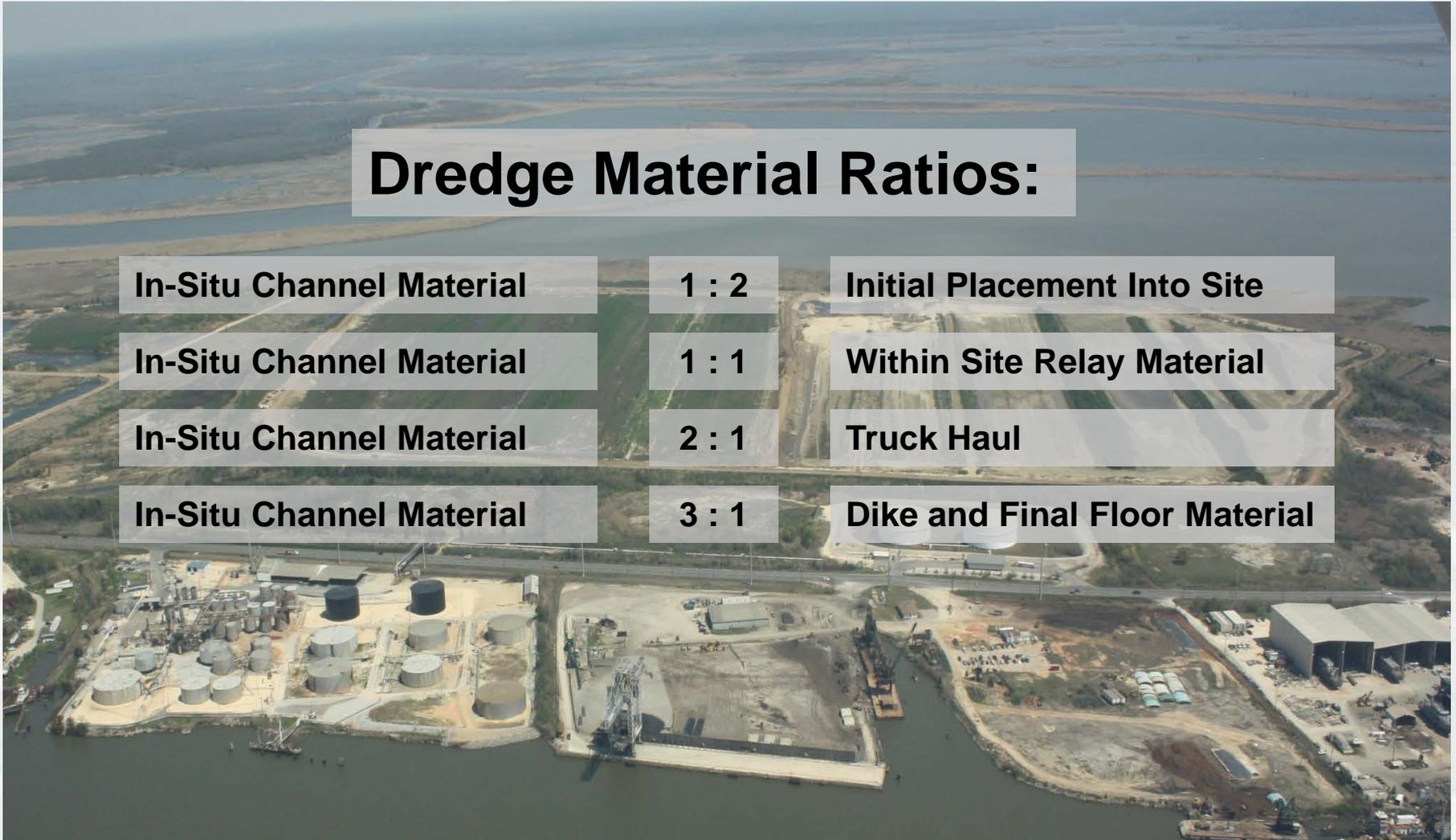
2 : 1

Truck Haul

In-Situ Channel Material

3 : 1

Dike and Final Floor Material



Non-Corps User Rates

Estimate a yardage rate to manage the material from placement thru removal. Relate every aspect to \$/yd

Establish the value of 1 cu yd for each site (Worst Case)

Establish an agreement for either a ratio of material to be removed or complete compensation to manage and remove

Example 1: Total Cost per yard to manage and haul to a cost-free location

\$13.37

Estimate 2: Total Cost per yard to manage and haul to a fee site (\$4.25 tip)

\$17.62

Estimate 3: Yardage haul-out ratio for users electing to haul-out equivalent dried material

2:1

