

**FOCUSED FEASIBILITY STUDY REPORT
FOR
40TH AVENUE PROJECT AREA
IN THE ST. LOUIS RIVER AREA OF CONCERN**

August 28, 2015

APPENDIX P. DREDGE VOLUMES

Presented in this Appendix are dredge removal and dredge placement volumes for design concepts evaluated during this Focused Feasibility Study. The accompanying tables contain estimated material volumes for island and shoal concepts as well as dredge volumes required for the creation of deep water habitat areas.

Table 20. Island Dredge/Dredge Placement Volumes for Original Concept Design

Feature	Dredge Volume (CY)	Dredge Placement Volume (CY)	Dredge Placement Volume (CY) Adjusted for Consolidation
I1 - Island 1	0	55,500	81,930
I2 - Island 2	0	15,430	26,181
I3 - Island 3	0	17,730	28,843
I4 - Island 4	0	24,720	40,210
I5 - Island 5	0	44,740	70,868
S6 - Shoal 6	0	7,020	10,370
D1 - Dredge Area 1 near Shoal 6	7,030	0	0
D2- Dredge Area 2 for Fish Passage East of Island 1	101,160	0	0
D-3 Dredge Area 3 North of MN Power Plant	67,080	0	0
F1- Shoreline 1 Placement Area Southwest of MN Power	0	7,010	12,035
F2 - Shoreline 2 Placement Area South of MN Power Plant	0	9,390	13,400
F3 - Dredge Placement Area Between Erie Pier and Bong Bridge	0	37,240	37,240
Total	175,270	218,780	321,077

Table 21. Island Concept Dredge/Dredge Placement Volumes for 10:1 Maximum Slopes

Feature	Dredge Volume (CY)	Dredge Placement Volume (CY)	Dredge Placement Volume (CY) Adjusted for Consolidation
I1 - Island 1	0	71,140	105,017
I2 - Island 2	0	20,400	34,614
I3 - Island 3	0	23,800	38,718
I4 - Island 4	0	31,070	50,539
I5 - Island 5	0	52,740	83,540
S6 - Shoal 6	0	7,020	10,370
D1 - Dredge Area 1 near Shoal 6	7,030	0	0
D2- Dredge Area 2 for Fish Passage East of Island 1	101,160	0	0
D-3 Dredge Area 3 North of MN Power Plant	67,080	0	0
F1- Shoreline 1 Placement Area Southwest of MN Power	0	7,010	12,035
F2 - Shoreline 2 Placement Area South of MN Power Plant	0	9,390	13,400
F3 - Dredge Placement Area Between Erie Pier and Bong Bridge	0	37,240	37,240
Total	175,270	259,810	385,473

During the FFS the concept of replacing the 5 islands with shoals was discussed at length. The following tables reflect the required dredge volumes for shoals.

Table 22. Shoal Concept Dredge/Dredge Placement Volumes for Original Concept Design.

Feature	Dredge Volume (CY)	Dredge Placement Volume (CY)	Dredge Placement Volume (CY) Adjusted for Consolidation
S1 - Shoal 1	0	34,450	60,880
S2 - Shoal 2	0	7,880	18,631
S3 - Shoal 3	0	10,010	21,123
S4 - Shoal 4	0	12,390	27,880
S5 - Shoal 5	0	23,880	50,008
S6 - Shoal 6	0	7,020	10,370
D1 - Dredge Area 1 near Shoal 6	7,030	0	0
D2- Dredge Area 2 for Fish Passage East of Island 1	101,160	0	0
D-3 Dredge Area 3 North of MN Power Plant	67,080	0	0
F1- Shoreline 1 Placement Area Southwest of MN Power	0	7,010	12,035
F2 - Shoreline 2 Placement Area South of MN Power Plant	0	9,390	13,400
F3 - Dredge Placement Area Between Erie Pier and Bong Bridge	0	37,240	37,240
Total	175,270	149,270	251,567

Table 23. Shoal Concept Dredge/Dredge Placement Volumes for 10:1 Maximum Slopes

Feature	Dredge Volume (CY)	Dredge Placement Volume (CY)	Dredge Placement Volume (CY) Adjusted for Consolidation
S1 - Shoal 1	0	43,240	77,118
S2 - Shoal 2	0	9,800	24,014
S3 - Shoal 3	0	12,600	27,518
S4 - Shoal 4	0	14,850	34,319
S5 - Shoal 5	0	27,280	58,080
S6 - Shoal 6	0	7,020	10,370
D1 - Dredge Area 1 near Shoal 6	7,030	0	0
D2- Dredge Area 2 for Fish Passage East of Island 1	101,160	0	0
D-3 Dredge Area 3 North of MN Power Plant	67,080	0	0
F1- Shoreline 1 Placement Area Southwest of MN Power	0	7,010	12,035
F2 - Shoreline 2 Placement Area South of MN Power Plant	0	9,390	13,400
F3 - Dredge Placement Area Between Erie Pier and Bong Bridge	0	37,240	37,240
Total	175,270	168,430	294,094

Table 24. Shoal Concept Dredge/Dredge Placement Volumes for Refined Concept Design

Feature	Dredge Volume (CY)	Dredge Placement Volume (CY)	Dredge Placement Volume (CY) Adjusted for Consolidation
S1 - Shoal 1	0	27,900	49,305
S2 - Shoal 2	0	10,600	25,062
S3 - Shoal 3	0	11,200	23,634
S4 & S5 - Shoal 4 & 5	0	41,680	93,788
S6 - Shoal 6	0	15,880	17,750
D1 - Dredge Area 1 near Shoal 6	7,030	0	0
D2- Dredge Area 2 for Fish Passage East of Island 1	101,160	0	0
D-3 Dredge Area 3 North of MN Power Plant	67,080	0	0
F1- Shoreline 1 Placement Area Southwest of MN Power	0	7,010	12,035
F2 - Shoreline 2 Placement Area South of MN Power Plant	0	9,390	13,400
F3 - Dredge Placement Area Between Erie Pier and Bong Bridge	0	37,240	37,240
Total	175,270	339,486	550,267
