

UMRR HREP
INSPECTION OF COMPLETED WORKS

I. PROJECT:

Long Island Division-Gardner Division (HREP)

II. AUTHORITY:

Upper Mississippi River Restoration (UMRR)

III. LOCATION:

River: Mississippi River

Pool: Pool 21

River Miles: 332.5-340.2

County: Adams

State: Illinois

IV. PREVIOUS REPORTS:

- Rock Island District, US Army Corps of Engineers. (2000). *Upper Mississippi River System Environmental Management Program Definite Project Report (R-15F) with Integrated Environmental Assessment: Gardner Division Rehabilitation and Enhancement Project*. Rock Island, IL: US Army Corps of Engineers.
- Rock Island District, US Army Corps of Engineers. (2006). *Operation & Maintenance Manual, Long Island Division (Gardner Division) HREP, UMRR-EMP*. Rock Island, IL: US Army Corps of Engineers.
- Rock Island District, US Army Corps of Engineers. (2003). *UMRR-EMP Post-Construction Performance Initial Evaluation Report for Long Island Division (Gardner Division) HREP*. Rock Island, IL: US Army Corps of Engineers.
- Rock Island District, US Army Corps of Engineers. (2004). *UMRR-EMP Performance Evaluation Report for Long Island Division (Gardner Division) HREP*. Rock Island, IL: US Army Corps of Engineers.
- Rock Island District, US Army Corps of Engineers. (2012). *UMRR-EMP Post-Construction Performance Evaluation Report for Long Island Division (Gardner Division) HREP*. Rock Island, IL: US Army Corps of Engineers.

V. PROJECT GOALS & OBJECTIVES:

GOALS	OBJECTIVES	RESTORATION MEASURES
Enhance aquatic habitat	Improve habitat for overwintering fish	Side channel dredging Emergent closure structure Shore and island protection
Enhance wetland habitat	Maintain terrestrial habitat	Shoreline and island protection
Enhance terrestrial habitat	Increase bottomland hardwood diversity and reduce forest fragmentation	Reforestation

A Site Vicinity Map, Site Plan and Monitoring Plan are included in Attachment A.

VI. MONITORING PLAN EVALUATION CRITERIA:

Goal	Objective	Enhancement Measure	Units	Monitoring Target Values			Monitoring Schedule
				Year 0 without project	Year 25 with project	Year 50 target with project	
Enhance Wetland and Terrestrial Habitat	Increase bottomland hardwood diversity	Establish hardwood trees on suitable sites in existing agricultural fields	Percent survival	NA	50%	20%	Every 5 years
	Maintain existing terrestrial habitat	Shoreline and island protection	Linear feet of ripped shoreline	0	3765	3765	Every 5 years
Enhance Aquatic Habitat	Increase habitat for over-wintering fish	Restore/protect O'Dell Chute closure structure	Acres with 6' depth or greater	39	39	39	Every 5 years
			Dissolved Oxygen (mg/L)	>5.0 at all times	>5.0 at all times	>5.0 at all times	April- September every 2 weeks, October-March every month
			Fish Surveys	Unknown	Data indicative of desirable fish populations	Data indicative of desirable fish populations	Annually
	Reduce sedimentation in side channels	Rock Placement along island tips and shorelines, Emergent Closure Structure	Depth below flat pool at L/D 21	Varies	-7	-6	Every 5 years
	Increase habitat diversity		Fish Surveys	Unknown	Data indicative of desirable fish populations	Data indicative of desirable fish populations	Annually

VII. SIGNIFICANT EVENTS SINCE LAST INSPECTION

Date of Last Inspection: 2 December 2015

Last Event: High water event June 2015

VIII. PROJECT SPONSOR UPDATES

Refuge Manager:

Jason Wilson

jason_wilson@ fws.gov

Great River, Clarence Cannon, and Middle Mississippi River Refuge Complex

37599 County Road 206

Annada, Mo. 63330

573/847-2333

Cell-573/754-2576

Fax-573/847-2269

IX. ONGOING MONITORING AND/OR REPORTS

None reported.

X. DATE OF FIELD VISIT: 8/18/2016

The weather reached the low 90's and was very humid. The river was generally calm, although numerous Asian Carp were observed jumping. River levels seemed high, as the closure structure was under water and was designed to be emergent most of the time. On the day of the field visit the Mississippi River elevation ranged from 474.6' to 476.6', approximately four to six feet above flat pool (470' MSL).

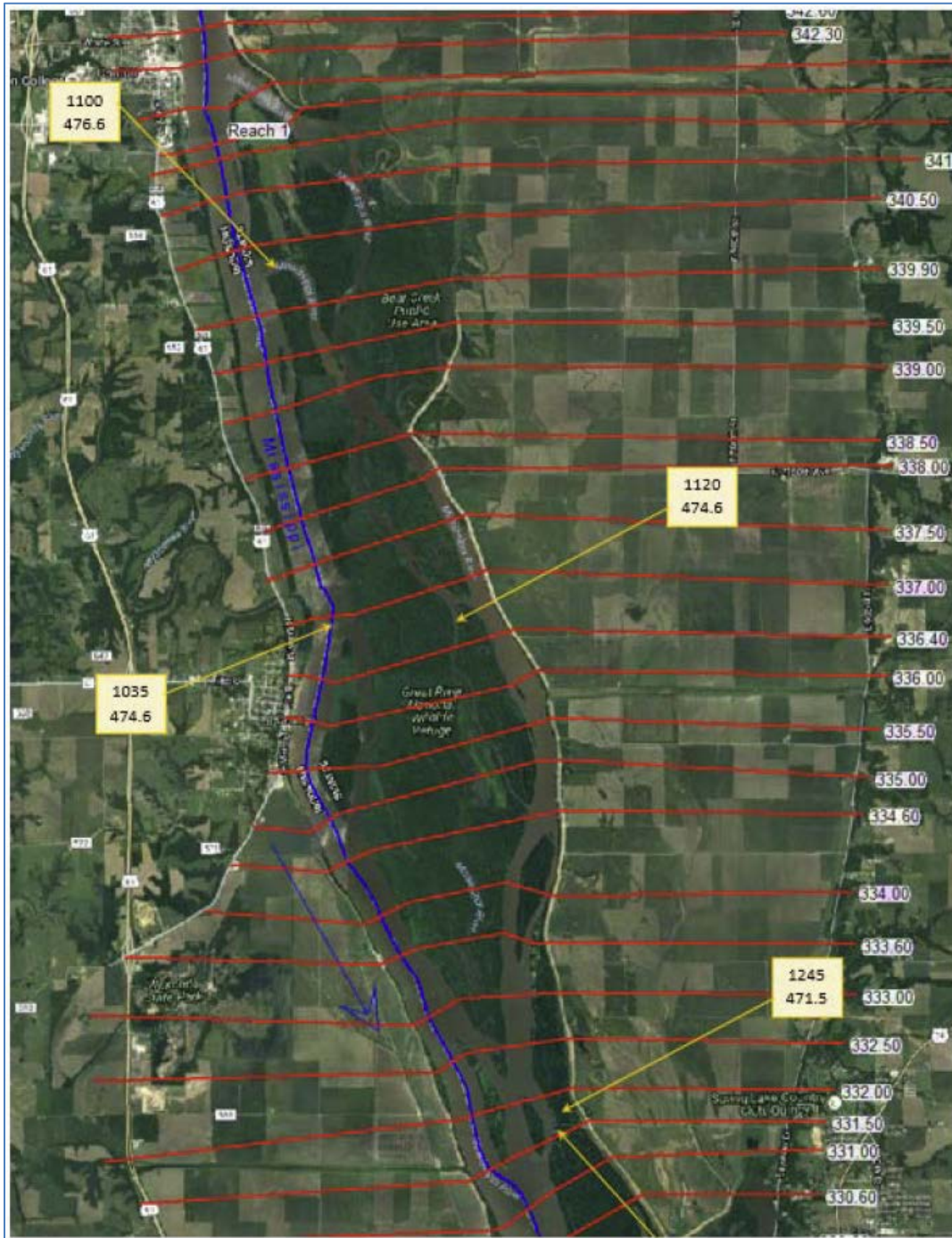


Figure 1. River stages August 18th, 2016.

XI. ATTENDEES:

Name	Office	Title	Number
Kara Mitvalsky	USACE-EC-DN	Environmental Engineer	309-794-5623
Jason Wilson	US FWS	Refuge Manager	573-847-2333
Cody Alger	US FWS	Biologist	573-847-2333
Tom Kirkeeng	USACE-EC-HQ	Hydraulic Engineer	309-794-5433
Ben Vandermyde	USACE-OD-MN	Forester	309-794-4522
Kyle Slifka	USACE-OD-MN	Forester	309-794-4523
Wendy Frohlich	USACE-PD-C	Biologist	309-794-5573
Steve Gustafson	USACE-EC-DN	Env. Protection Specialist	309-794-5202

XII. OBSERVATIONS:

Side channel dredging

O'Dell Chute was entered at the southern end. Depths of 10 feet or deeper were observed in the entire dredge cut. However, due to elevated pool levels, the actual remaining depth of dredge cuts (below flat pool) were in the 4 to 5 feet range. O'Dell Chute was originally dredged to 7.5 feet below flat pool. Numerous Asian Carp were observed jumping in this chute, following the lead boat. One bald eagle was observed. There have been no concerns with depth in this chute. Several logs were attached to the bank line creating optimum fish habitat. See Photos 1, 2, 3 and 4 in Attachment B.

No new water quality data has been collected at the HREP since the 2012 PER. Dissolved oxygen at that time was meeting the criteria of 5 mg/L, and concentrations were deemed sufficient to support aquatic life.

Emergent closure structure

The closure at the upstream end of the O'Dell Chute was observed to be underwater, however, based on breaks on the surface of the water it was clearly recognizable. The entrance to the closure structure was very shallow (2 feet), indicating that the access dredge cut has filled in (as was expected). The closure structure was constructed to stop bed load and suspended sediment from entering O'Dell Chute. The river was pushing the boats away from the closure structure out to the main channel, so it appears that flows are being diverted. Additionally, depths downstream of the structure continue to be deep. (Photos 5, 6 in Attachment B).

Shore and island protection

The island further upstream of Canton Chute (Island A) was surrounded by shallower water. A sand stockpile was noted slightly downstream of the west end tie in of the riprap. (Photos 7, 8, and 9 in Attachment B).

The protection at the head of Shandrew Island remains. Some erosion downstream of the protection areas was noted, but not as significant as the other islands in the Chute. (Photos 10, 11 in Attachment B).

The chevron at the head end of LaGrange Island structure was submerged at the time of the field visit, but disturbances at the surface allowed the boat around the outside circumference of the structure. Depth finders indicated that for the most part the structure is still at the appropriate location. Riprap on the Island bank remains in place, and active erosion does not appear to be rapidly continuing on the island. The depth finder in the interior of the chevron indicated about 6.5 feet at the time of the site visit. The depth finder read about 14 feet on the upstream end of the chevron (Photo 12, Attachment B). An air photo timeline of the erosion at the upstream end of LaGrange Island is included in Attachment C.

The riprap on Islands D and E remains, however on the west bank immediately downstream of each island, erosion was apparent. It seems that once the riprap ends, the perimeter of the island steps back several feet, creating a narrower island downstream of the riprap. This was observed on all other islands as well, particularly on the west banks. (Photos 13, 14, and 15 in Attachment B).

Erosion was observed at the upstream end of Long Island. Water depths adjacent to shore at the upstream end continue to be very deep (up to 25 feet). The head end has degraded to more of a point than in years past. (Photos 16, 17 in Attachment B).

Island's B and C have similar riprap protection and downstream erosion to islands D and E. The vegetation on island B is significantly overtaken by grape vine, Japanese hops, reed canary grass, and morning glory, which is likely to damage the floodplain forest. (Photos 18, 19, and 20 in Attachment B).

Reforestation

The reforestation site was visited. Following tree mat removals, an experience referred to as a special bonding time, the trees have started to thrive. Three years of aerial spraying helped control the vine species (see timeline below), and willow and silver maple are growing in between the planted trees, providing shade cover so that the weeds do not over take the trees, and forcing the planted trees to grow straight and up. A thinning may occur in the near future at this site to remove some trees adjacent to the hard mast trees. Several pecan and oak trees were located and they look very healthy. Several stump sprouts were also observed. Closer to the bank line, there was indication of beaver activity, but generally on black willow and silver maple. The berms have filled in the interior with sediment, but based on different soil colors, the berm locations can still be identified. (Photos 21, 22 in Attachment B)

No known biological studies have occurred at this location. The area is hunted for turkey and deer. Waterfowl hunting occurs around the island in permanent blind locations. One cabin remains on the island, and continues to be passed down over time. The Refuge added a new sign to the island. A few fisherman were observed in the area, but were not close enough to ask what they were catching. Very few turtles were observed, even though it was perfect basking weather. It was postulated that the carp may be consuming them. Vertical bank erosion was noted on

almost all bank lines that were not being protected by rock. Other tree planting efforts have occurred on this island by the Corps, including the 1135 plantings in the 1990's and more recent plantings to mitigate for pipeline work.

CEMVR-OD-MN Management and Maintenance Timeline:

2010

- 75.0 Acre tree planting site was treated with aerial application of Transline to reduce the dominance of Giant Ragweed in the summer of 2010
- 2.0 Acre supplemental tree planting consisting of 60 containerized Overcup Oak, 47 containerized Bur Oak and 48 containerized Swamp White Oak trees.

2011

- 75.0 Acres was treated again with Transline for weed suppression.

2012

- 75.0 Acres was treated again with Transline for weed suppression.

2013

- Tree planting 1,000 cottonwood and Black Willow cuttings. Planting failed due to 4 month drought following planting.
- 60 Acres, Removal of 450 tree mats on Long Island EMP-HREP.

2014

- 60.0 Acres, 350 Tree mats removed from tree planting on EMP-HREP.

Enbridge Mitigation Project

2014

- A 10.5 Acre mitigation site was selected for tree/shrub planting at the downstream end of the original planting site. Mitigation required due to construction of Enbridge pipeline. Ten years of monitoring to follow planting efforts. The mitigation site was planted at a rate of 120 containerized trees and 60 containerized shrubs per acre, for a total of 1,260 trees and 630 shrubs.

XIII. SUMMARY

The aquatic habitat appears to be adequate, a moderate amount of dredging depth remains, and the emergent closure structure appears to be diverting some sediment and flow from O'Dell Chute,

Shore/island protection has remained in place, however erosion is occurring downstream of the riprap areas.

Forest reforestation efforts are mostly successful.

XIV. RECOMMENDATIONS

Bathymetric survey on the O'Dell Chute dredge cut is needed to accurately determine the magnitude and rate of sedimentation.

XV. LESSONS LEARNED

- Use of tree mats is not recommended.
- Key-in of rip-rap has proved to be an important step in preservation of the protection measures.

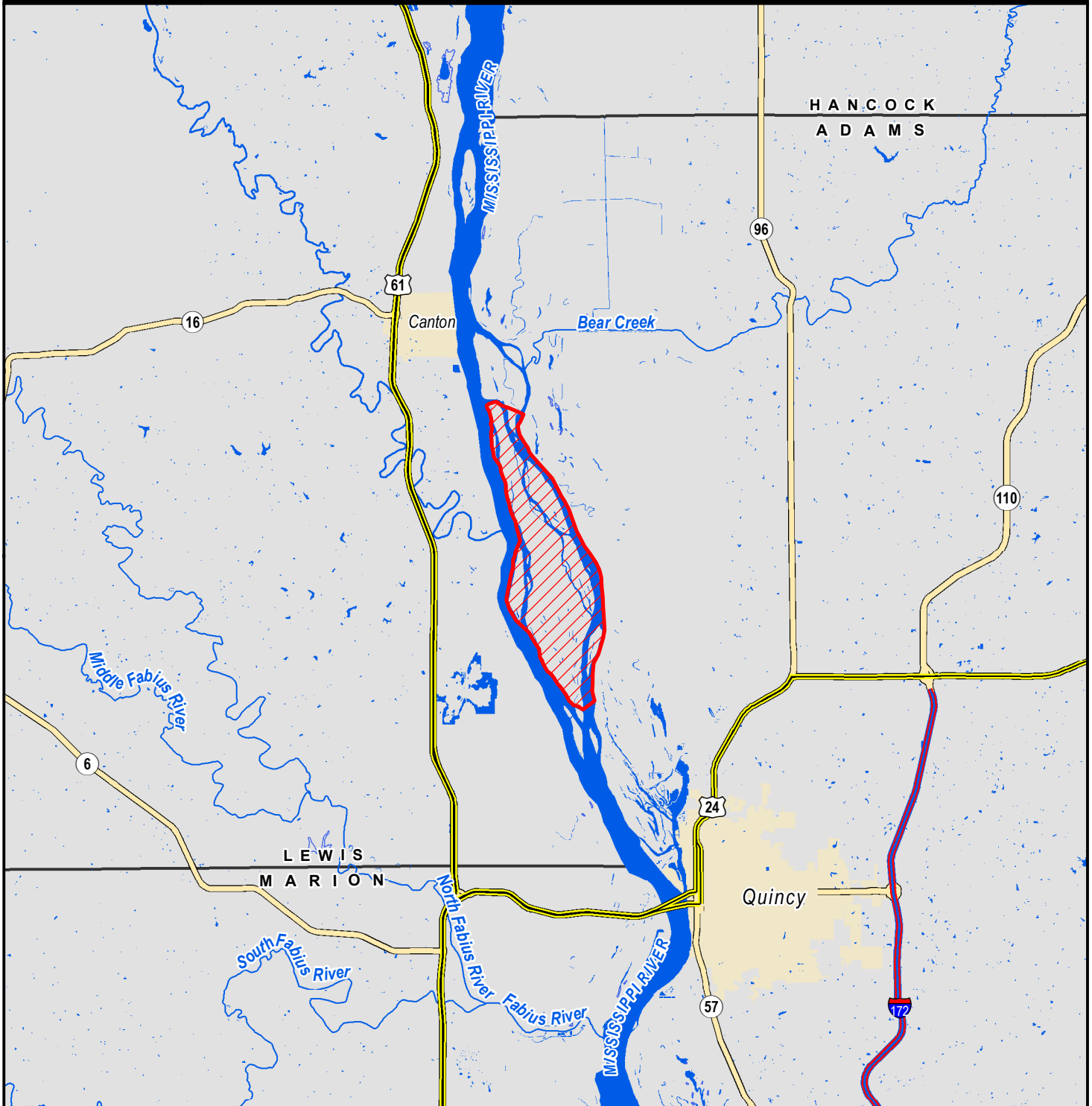
Attachment A







Site Vicinity Map

Site Plan

Monitoring Plan

2016 Gardner Division (Long Island Division) Site Visit



-  Gardner Division (Long Island Division) Project Boundary
-  Interstates
-  US Highways
-  State Highways
-  Cities
-  Counties

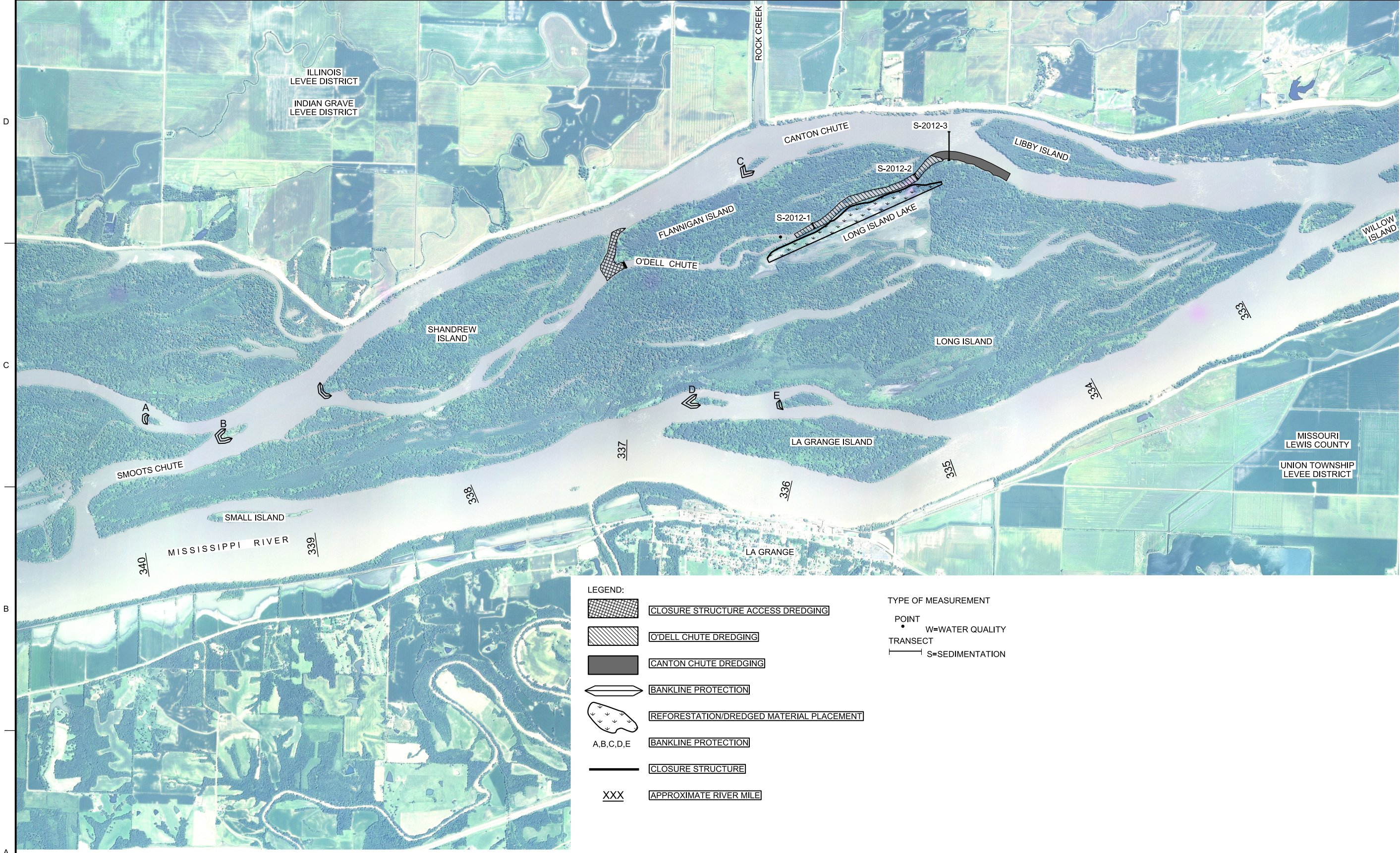
0 1.75 3.5 7 Miles





US Army Corps of Engineers

MARK	DATE	DESCRIPTION



LEGEND:

- CLOSURE STRUCTURE ACCESS DREDGING
- O'DELL CHUTE DREDGING
- CANTON CHUTE DREDGING
- BANKLINE PROTECTION
- REFORESTATION/DREDGED MATERIAL PLACEMENT
- A,B,C,D,E BANKLINE PROTECTION
- CLOSURE STRUCTURE
- XXX APPROXIMATE RIVER MILE

TYPE OF MEASUREMENT

- POINT W=WATER QUALITY
- TRANSECT S=SEDIMENTATION

DWG REF(s) : _____

A1 SITE PLAN
 SCALE: 1"=1500'-0"



DESIGNED BY:	DATE:	SOLICITATION NO.:
DWN BY:	CHK BY:	CONTRACT NO.:
SUBMITTED BY:	PLOT SCALE:	PLOT DATE:
	PLOT DATE:	PROJECT CODE:
	PER:	PER:
	FILE NAME:	PERC-101.docx.gip
	ANSI D:	

MISSISSIPPI RIVER
 ILLINOIS LEVEE DISTRICT
 ADMIRALTY LEVEE DISTRICT
 GARDNER DIVISION HREP
 PERFORMANCE EVALUATION REPORT
 SITE PLAN

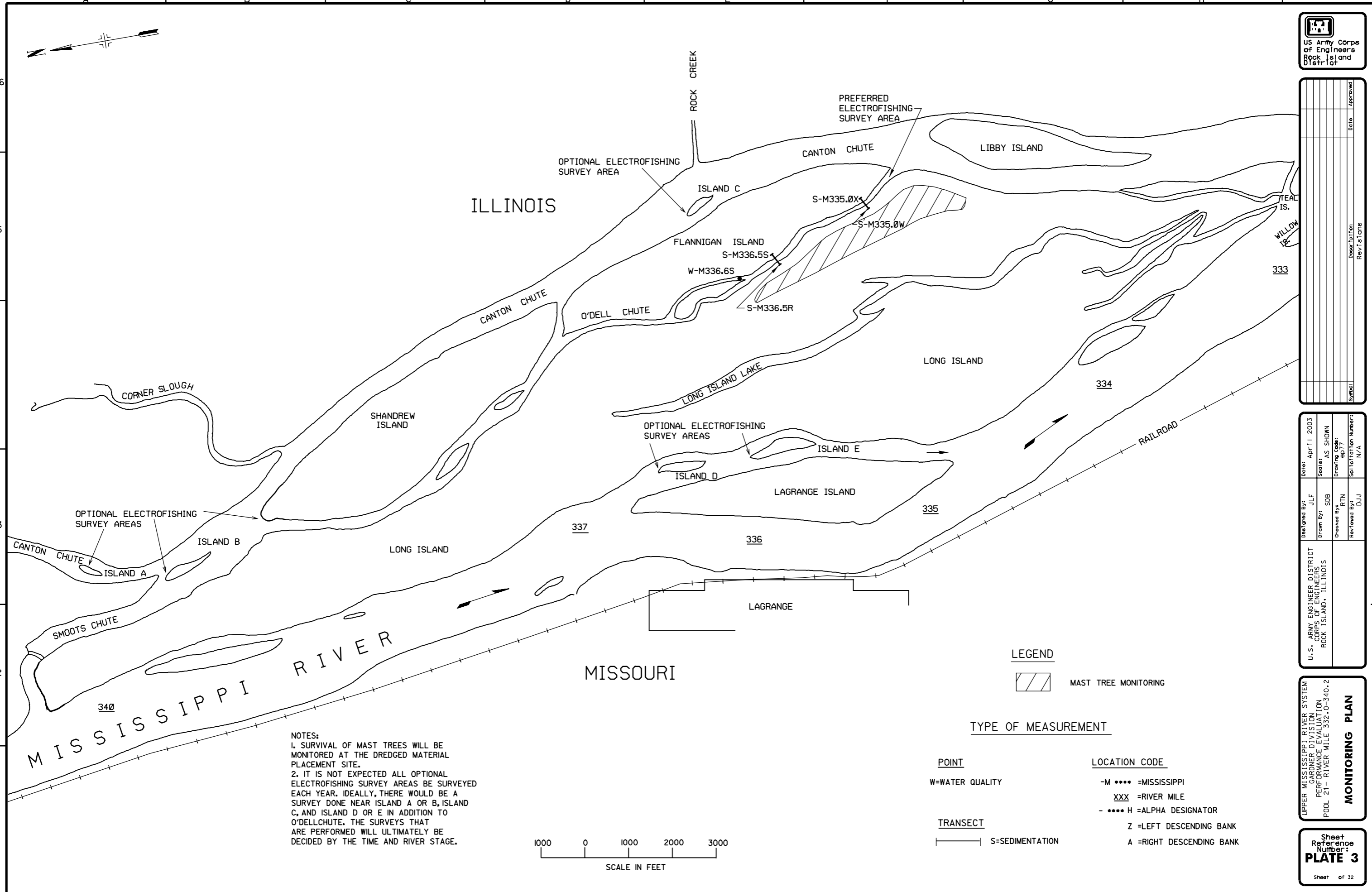
Sheet ID
C-101
 PLATE 2

Symbol	Description	Date	Approved

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS	Designed By: JLF	Date: Apr 11, 2003
Drawn By: SDB	Scale: AS SHOWN	
Checked By: RTN	Drawing Code: 09177	
Reviewed By: DUJ	Specification Number: N/A	

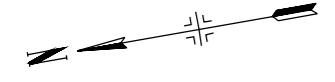
UPPER MISSISSIPPI RIVER SYSTEM
GARDNER DIVISION
PERFORMANCE EVALUATION
POOL 21 - RIVER MILE 332.0-340.2

MONITORING PLAN



NOTES:

1. SURVIVAL OF MAST TREES WILL BE MONITORED AT THE DREDGED MATERIAL PLACEMENT SITE.
2. IT IS NOT EXPECTED ALL OPTIONAL ELECTROFISHING SURVEY AREAS BE SURVEYED EACH YEAR. IDEALLY, THERE WOULD BE A SURVEY DONE NEAR ISLAND A OR B, ISLAND C, AND ISLAND D OR E IN ADDITION TO O'DELLCHUTE. THE SURVEYS THAT ARE PERFORMED WILL ULTIMATELY BE DECIDED BY THE TIME AND RIVER STAGE.



MISSISSIPPI RIVER

MISSOURI

ILLINOIS

ROCK CREEK

CANTON CHUTE

O'DELL CHUTE

SMOOTS CHUTE

CORNER SLOUGH

ISLAND A

ISLAND B

ISLAND C

ISLAND D

ISLAND E

LAGRANGE ISLAND

LONG ISLAND LAKE

LONG ISLAND

LIBBY ISLAND

FLANNIGAN ISLAND

SHANDREW ISLAND

LAGRANGE

RAILROAD

WILLOW IS.

TEAL IS.

330

333

334

335

336

337

340

S-M335.0X

S-M335.0W

S-M336.5S

W-M336.6S

S-M336.5R

PREFERRED ELECTROFISHING SURVEY AREA

OPTIONAL ELECTROFISHING SURVEY AREA

OPTIONAL ELECTROFISHING SURVEY AREAS

Attachment B

Site Visit Photos

Photo 1: O'Dell Chute



Photo 2: O'Dell Chute



Photo 3: O'Dell Chute left descending bank.



Photo 4: O'Dell Chute right descending bank. Logs creating fish habitat.



Photo 5: Emergent Closure Structure.



Photo 6: Access channel to Emergent Closure Structure.



Photo 7: Island A east bank.



Photo 8: Island A upstream end.



Photo 9: Island A west bank.



Photo 10: Upstream protection on Shandrew Island.



Photo 11: Shandrew Island upstream end.



Photo 12: LaGrange Island, upstream chevron (submerged).



Photo 13: Island D, end of riprap, westbank.



Photo 14: Island E, upstream end.



Photo 15: Island E, end of riprap, west bank.



Photo 16: Long Island upstream end.



Photo 17: Long Island east bank, upper end.



Photo 18: Island B, upstream end.



Photo 19: Island B, upstream end, riprap.



Photo 20: Island B, Japanese hops over wild grape.



Photo 21: Reforestation area.



Photo 22: Pecan Tree (largest observed).

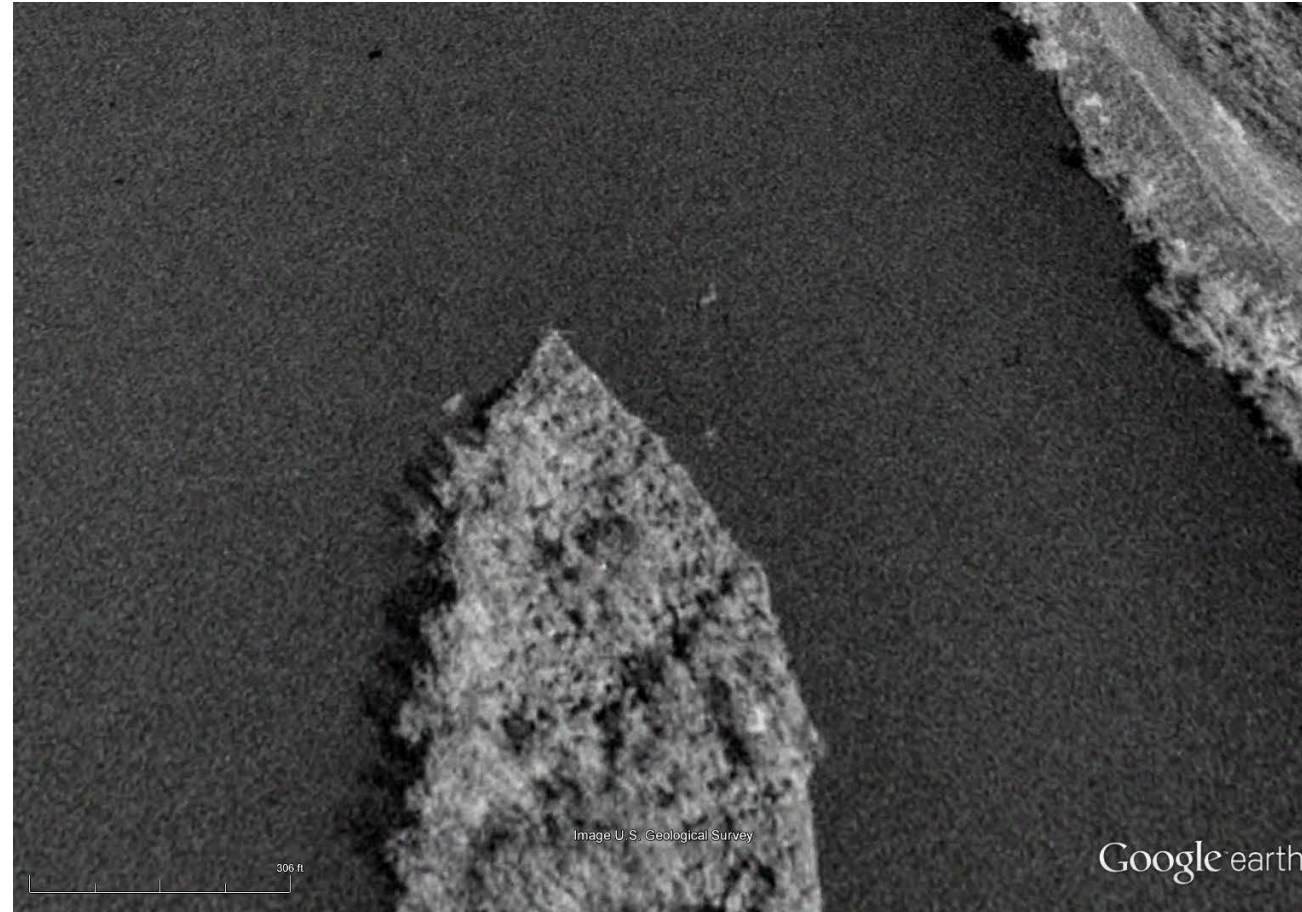


Attachment C

LaGrange Island Erosion History

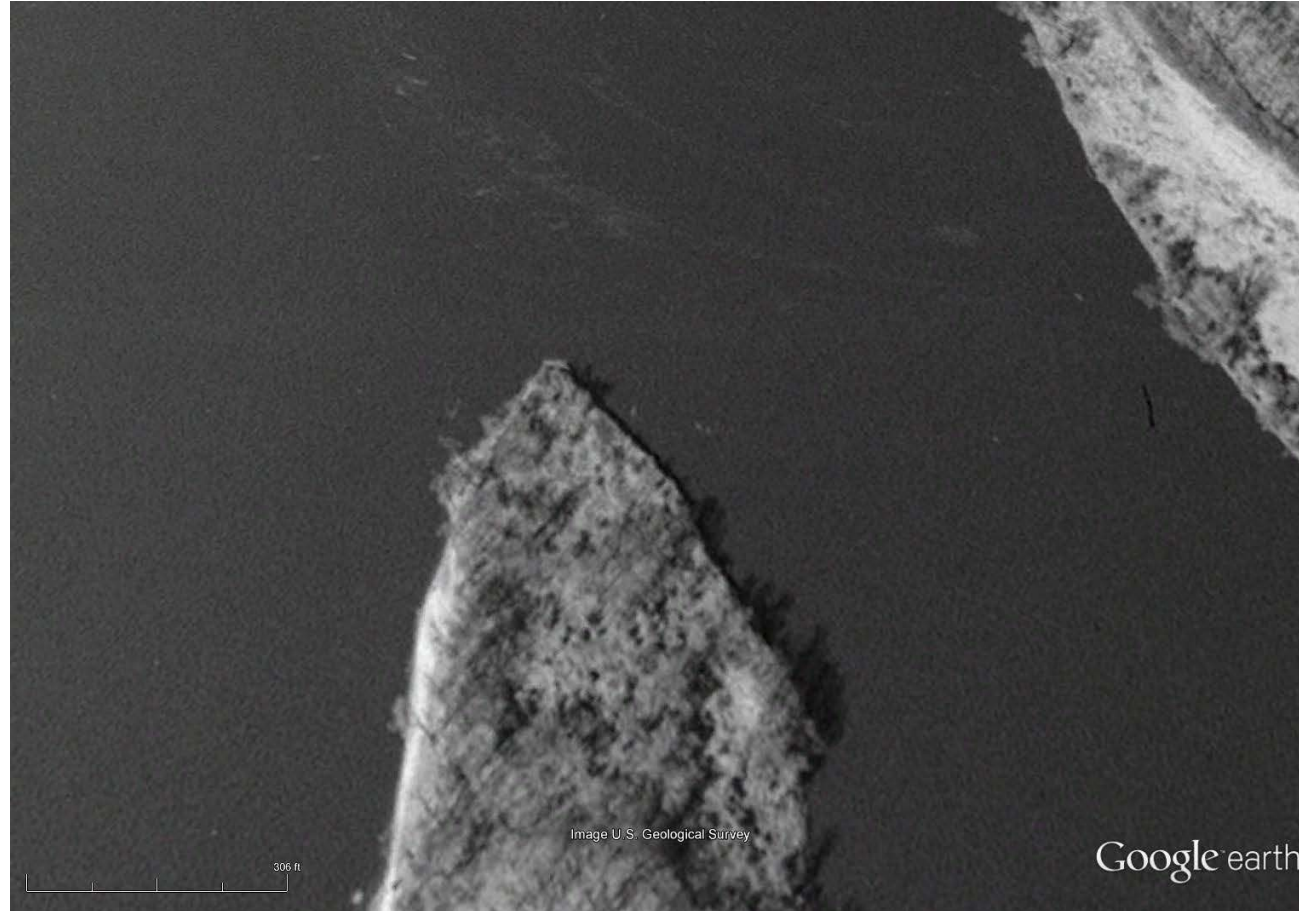
4APR95

20 Tail @ 479.43



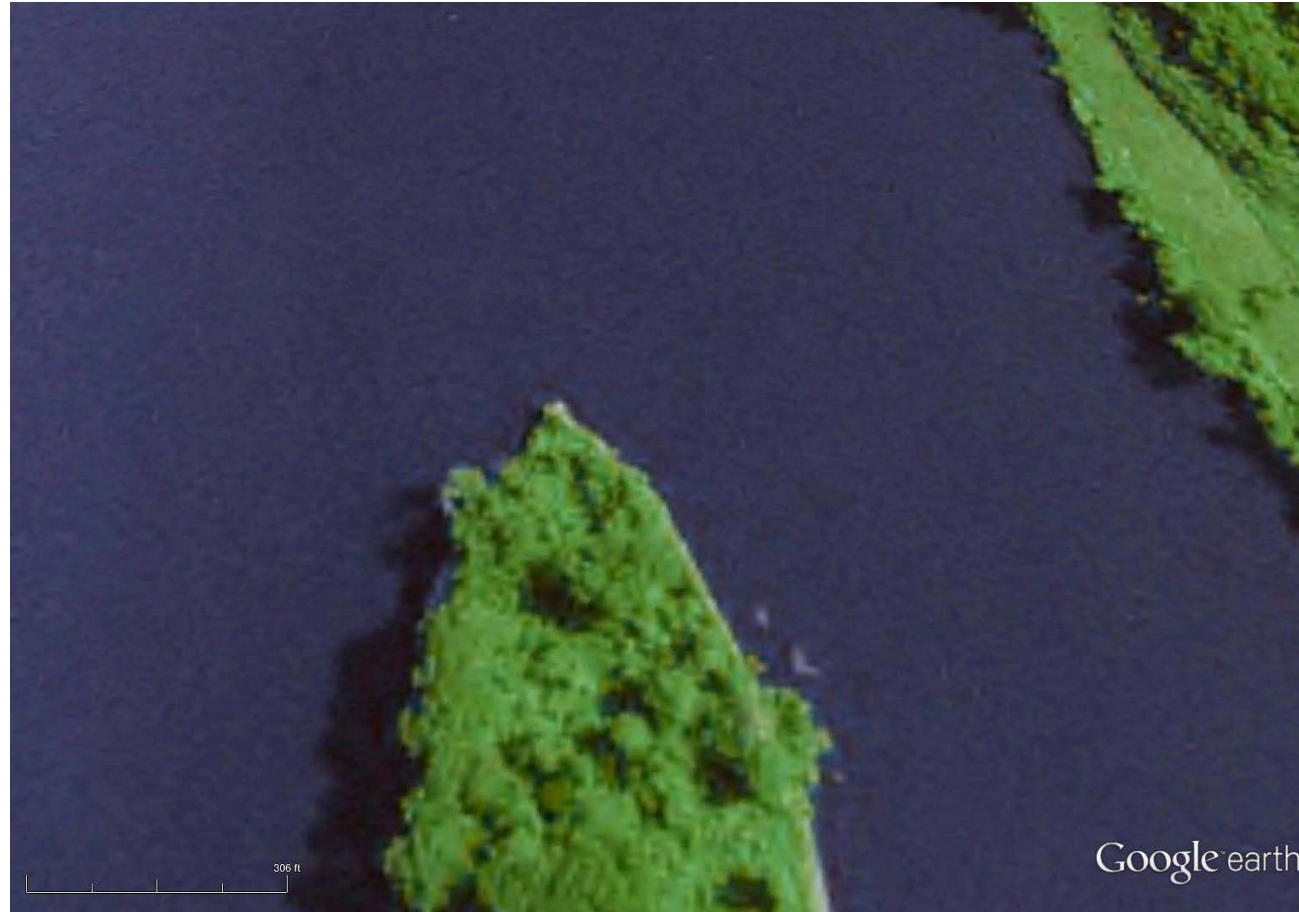
22MAR99

20 Tail @ 474.78



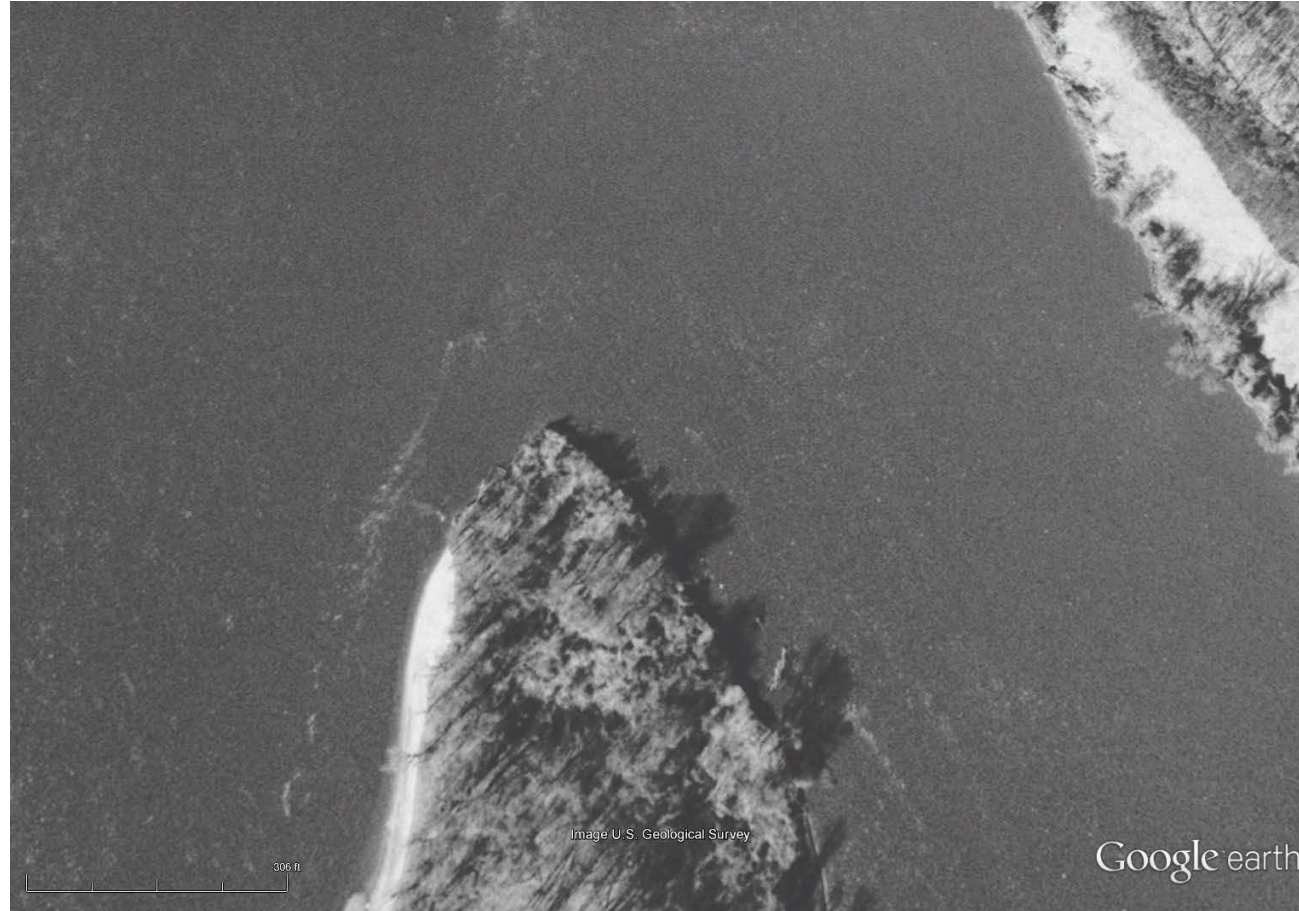
31DEC02

20 Tail @ 472.53



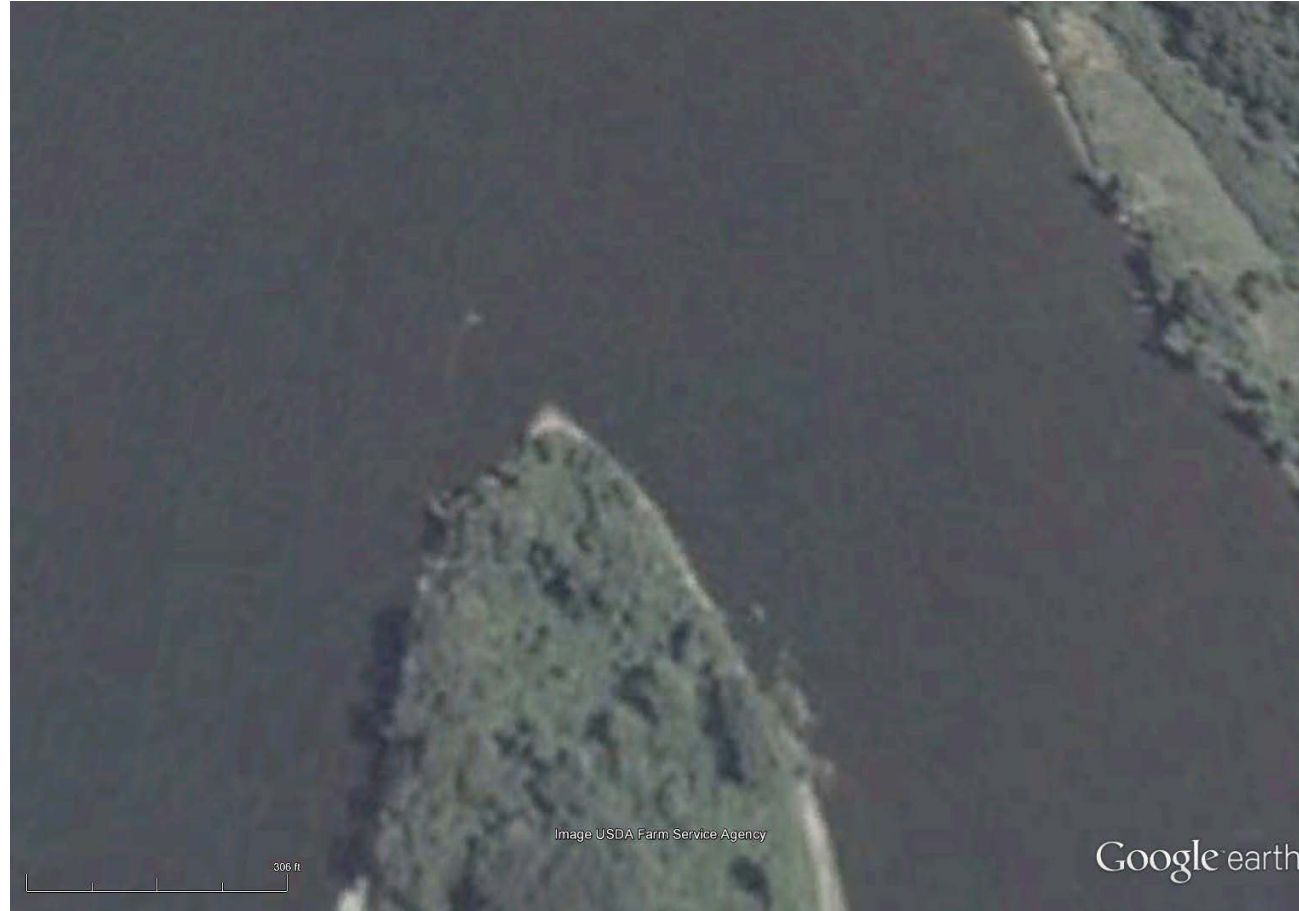
8MAR05

20 Tail @ 473.14



30JUN05

20 Tail @ 476.67



9JUN06

20 Tail @ 474.30



22JUN06

20 Tail @ 472.94



6JUN07

20 Tail @ 477.64



27JUN09

20 Tail @479.36



8JUL10

20 Tail @ 485.30



14SEP11

20 Tail @ 472.39



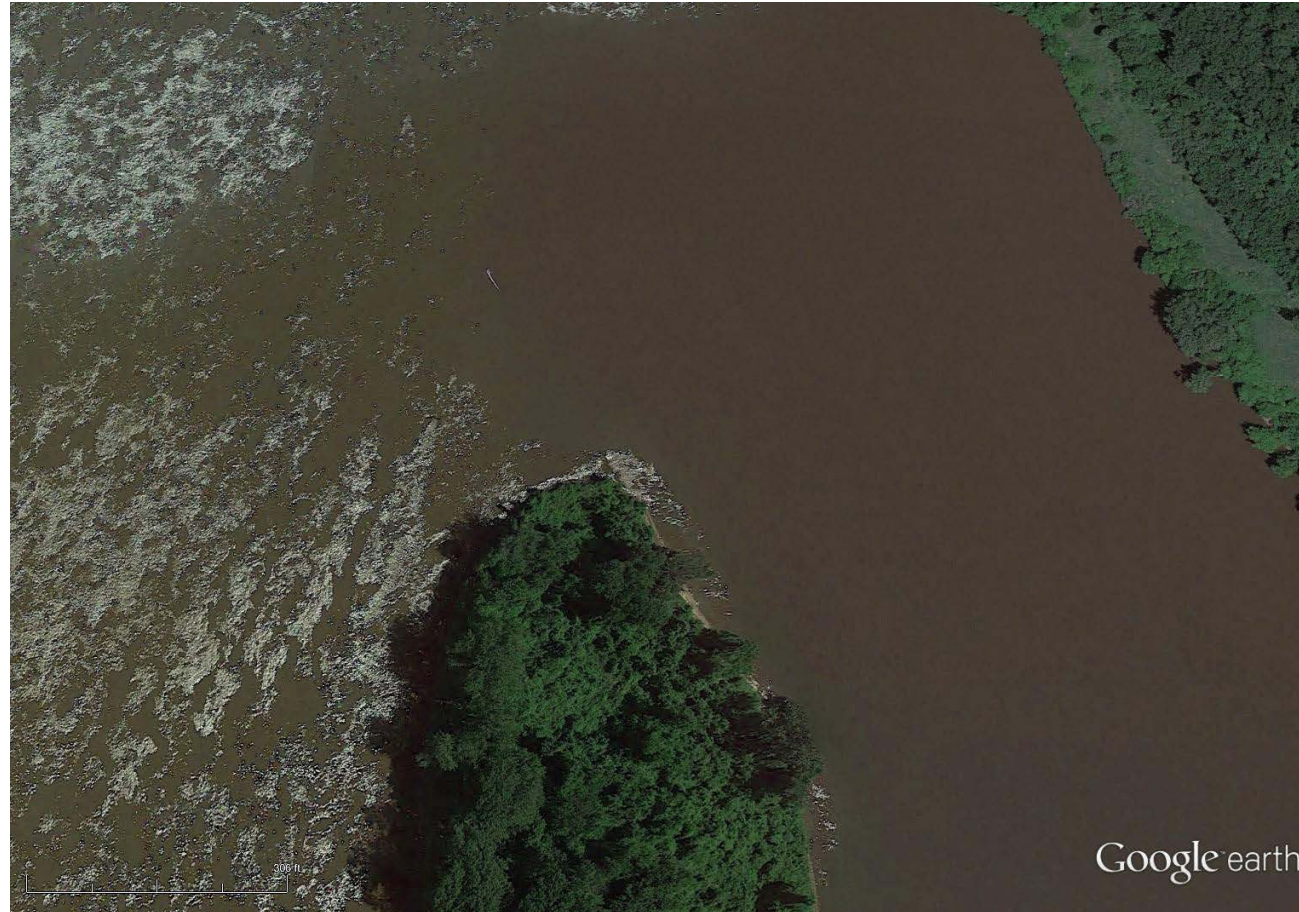
7APR12

20 Tail @ 473.21



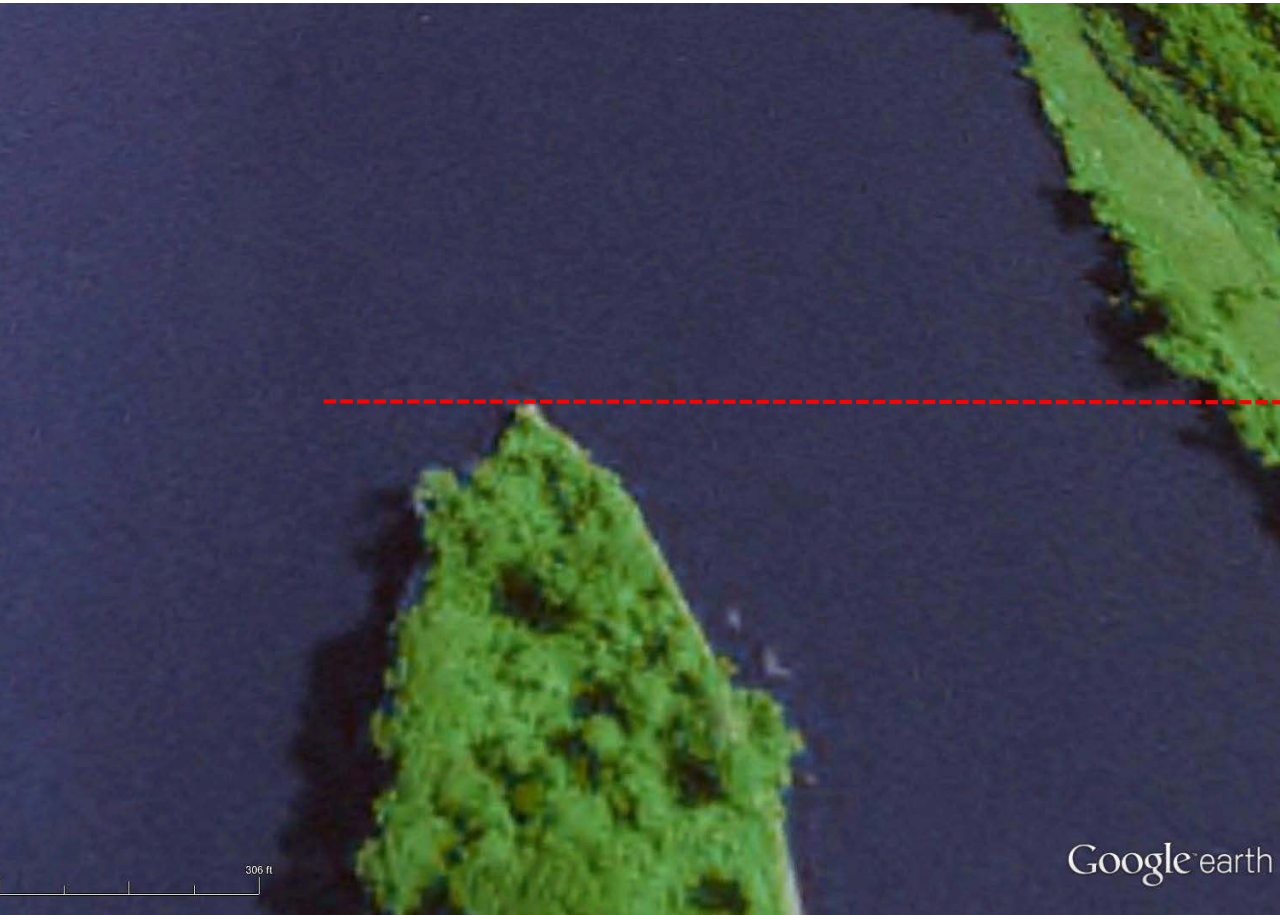
12JUN14

20 Tail @ 479.58



COMPARISONS

Compare @ LD 20 Tail Stage of 472.4

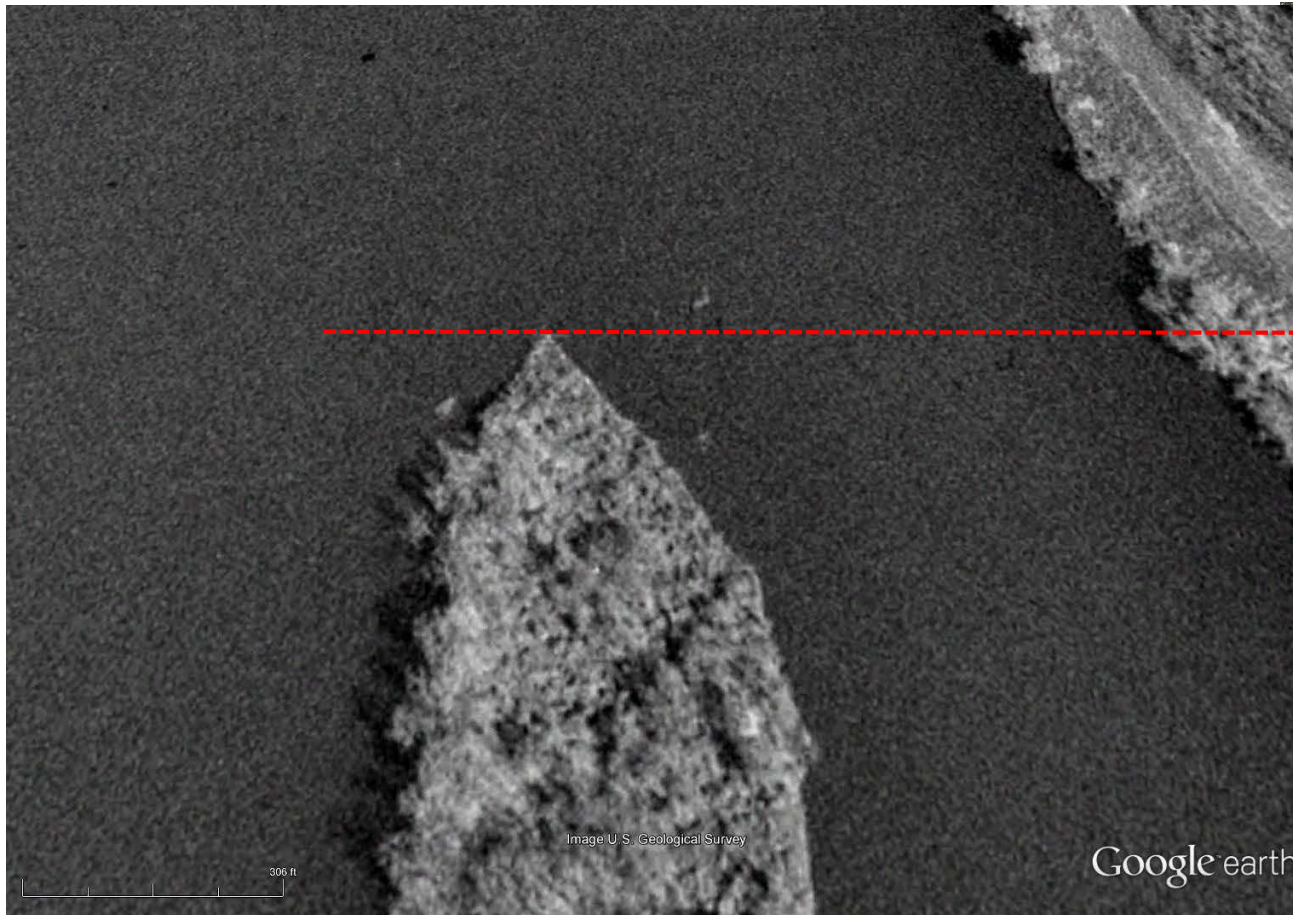


2002

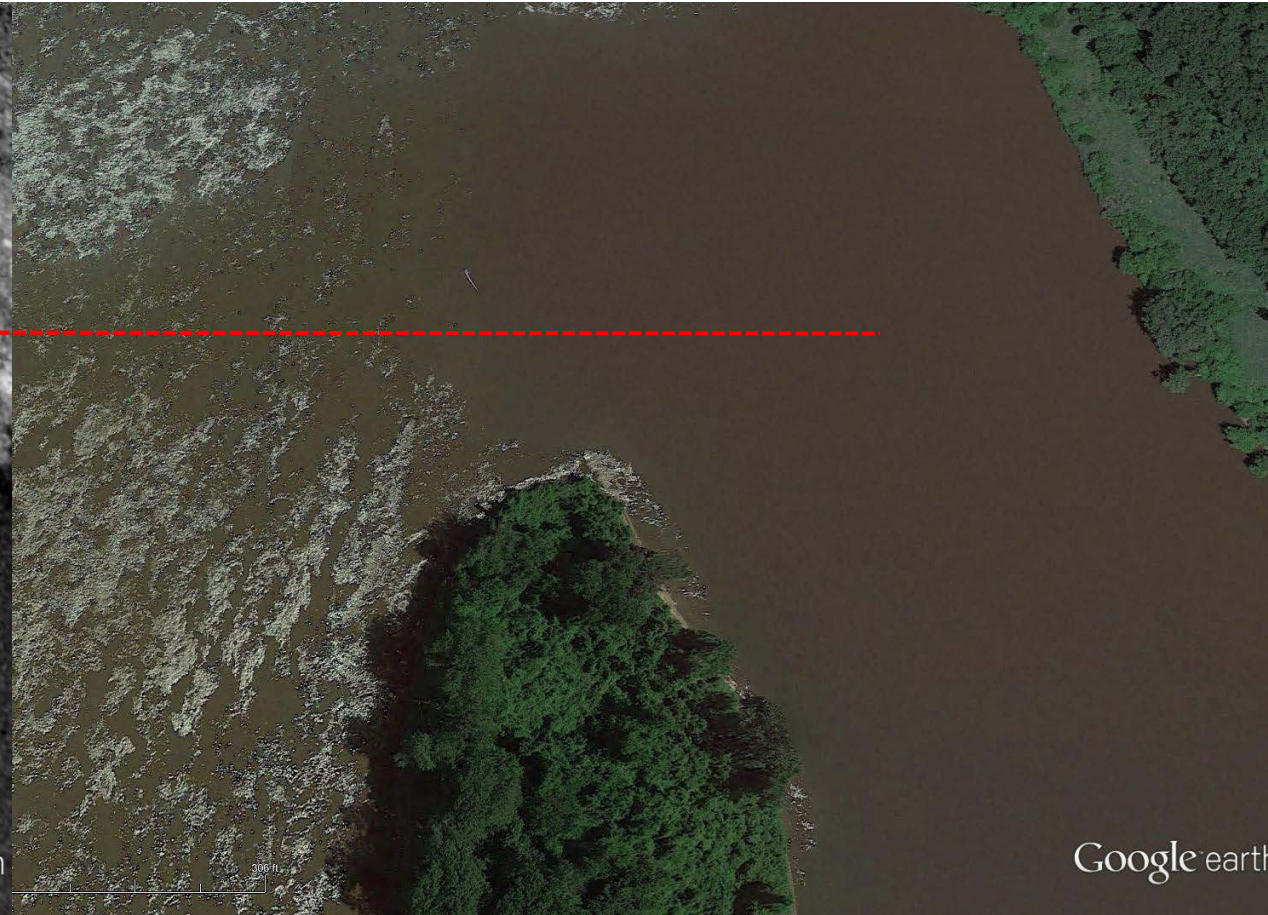


2011

Compare @ LD 20 Tail Stage of 479.5

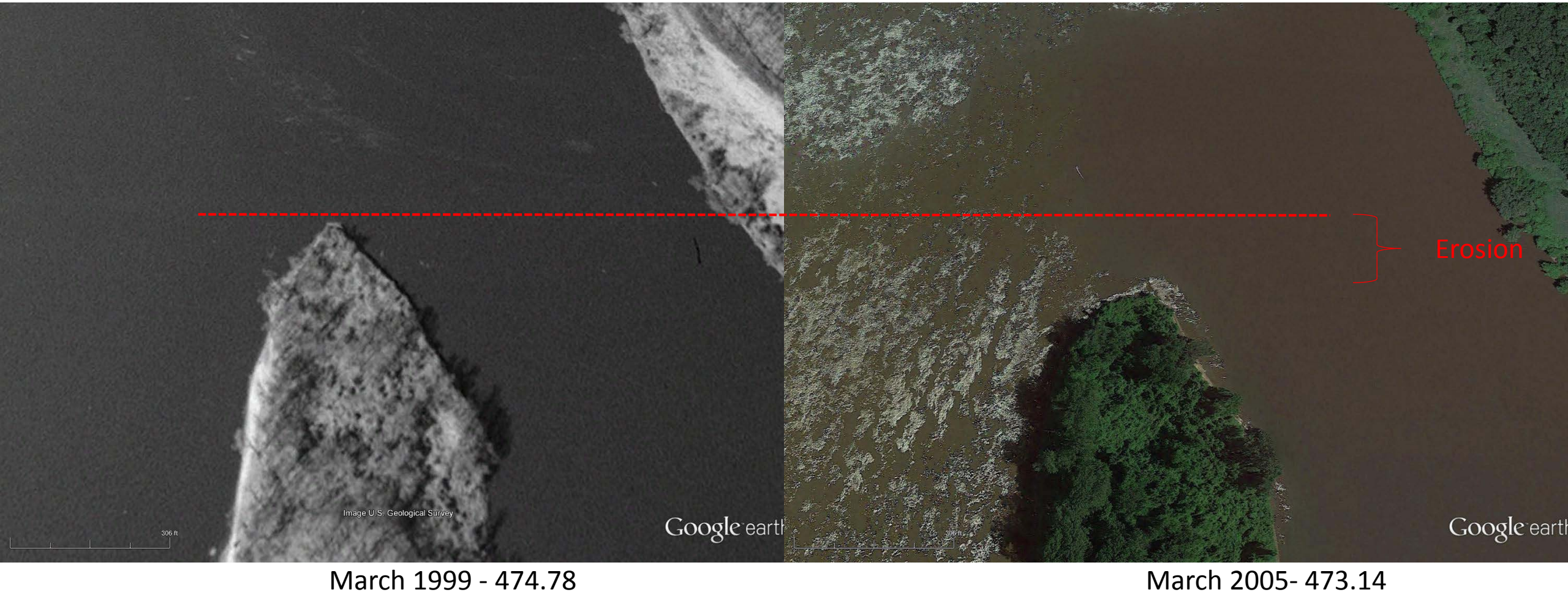


1995



2014

Island Erosion Prior to Chevron



Island Erosion Post Chevron Construction



June 2006 - 472.94



April 2012- 473.21