

# MUSCATINE COUNTY UNIFORM LEVEE IMPROVEMENTS

July 1, 2020

*Prepared for:*

## MUSCATINE ISLAND LEVEE DISTRICT

18238 County Road X61  
Muscatine, IA 52761-8637

*Prepared by:*

## KLINGNER & ASSOCIATES, P.C.

610 North 4th Street, Suite 100  
Burlington, IA 52601

Project No. 6496-10/20-2942.002

## TABLE OF CONTENTS

---

1.0	Description of Project Components & Project Feasibility .....	1
2.0	Method of Construction .....	2
3.0	Construction Cost Estimate .....	3
4.0	Property Acquisition.....	3
5.0	Permits.....	4
6.0	Project Schedule .....	4

### Appendix A PROJECT PLANS

## 1.0 DESCRIPTION OF PROJECT COMPONENTS & PROJECT FEASIBILITY

---

The Muscatine Island Levee District, along with a cohort of governmental and business community stakeholders, is proposing a project to uniformly improve approximately 16,000 lineal feet of mainstem Mississippi River levee in Muscatine County, Iowa. The proposed project will include placement of additional earthen fill upon the landside and crown of the levee to improve the level of protection from recurring floods on the Mississippi River from station 170+00 to 330+00 at the southern boundary between Muscatine County and Louisa County. Due to some locations being close to existing commercial/industrial facilities, approximately 2,000 lineal feet of flood wall may be necessary where earthen berms cannot be adequately extended and right-of-way cannot be extended without demolition of existing structures. Much of the landside levee has additional rights-of-way where seepage berms have been constructed at the toe of the slope. The earthen fill will be placed upon the existing seepage berms wherever possible. However, some rights-of-way may need to be obtained to extend seepage berms further inland. All construction will be conducted on the landside of the levee outside the regulated floodway. The Muscatine Island levee is currently certified by FEMA under 44 CFR 65.10.

The goal of the currently proposed project is to provide for more uniform flood protection for the Muscatine Island area. The original design and construction of the levee system in this area allowed for a lower level of flood protection (~1% Annual Chance) in the southern areas of Muscatine County and in the northern portion of Louisa County. The levee north of this project is at a higher level of flood protection (~0.2% Annual Chance). However, subsequent inundation modeling by the U.S. Army Corps of Engineers showed that a breach anywhere on the levee system resulted in the same catastrophic loss to property and the need for emergency evacuation of residents and workers. The project will improve the reliability of the flood protection system which protects major industrial facilities, the local community water wells, the waste water treatment plant, commercial offices, residential developments, and agricultural ground. This project will not eliminate the requirement for flood insurance. However, flood insurance rates for industrial facilities should improve from a risk management perspective.

The construction of this uniform levee improvement will include the stripping of top soil and depositing it at the landside toe of the levee to be improved. Sand meeting the requirements of the U.S. Army Corps of Engineers will be sourced (~50,000 cubic yards of earthen materials) within the area, excavated, hauled, placed, graded, and compacted as necessary to meet the necessary lines and grades of the uniform levee design. The final improvements will be reseeded to establish vegetative cover which will retard erosion and loss of material.

The proposed project location is under ownership of the Muscatine Island Levee District, with the necessary fill materials readily available in the nearby area. Most, if not all, of the rights-of-way are already owned by Muscatine Island Levee District. Similar projects have occurred on the levee system in the past and on other levees in the region along the Mississippi River, therefore the Project appears extremely feasible.

The proposed project as described is consistent with the project description included in Section B.2 of ED-900.

## **2.0 METHOD OF CONSTRUCTION**

---

The project is proposed to be performed under the Design-Bid-Build method with bidding being performed competitively. The project design will be completed first with bidding documents prepared and ready for the advertisement for bids. It is anticipated that all improvements (earthwork and floodwalls) will be performed under single construction contract.

None of the project will be performed under design-build, construction management at risk, the applicant's own forces (with exception to in-kind match of material purchases or right-of-way acquisition), or a third-party construction manager.

The project will largely be completed under one phase. However, the work could be broken into more than one phase if it is determined to be expedient due to funding, permitting, or property access issues.

### 3.0 CONSTRUCTION COST ESTIMATE

Client		Project			
Muscatine Island Levee District		Uniform Levee Improvement - Muscatine County			
Mechanical Dredge from Interior Borrow Site, Haul, and Place On-Site (Stations 170+00 to 330+00)					
NO	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL COST
1	Admin + Legal	1	LS	\$75,000	\$ 75,000.00
2	Wetland Mitigation	5	ACRE	\$25,000	\$ 125,000.00
3	ROW Acquisition	10	ACRE	\$7,500	\$ 75,000.00
4	Mob/Demob	1	LS	\$100,000	\$ 100,000.00
5	Strip & Relocate Top Soil	60,000	CY	\$5	\$ 300,000.00
6	Concrete Flood Walls (~184 - ~190, ~207 - ~215, ~246 - ~252)	2,000	LF	\$2,000	\$ 4,000,000.00
7	Mechanical Dredge Fill, Haul, & Place	50,000	CY	\$25	\$ 1,250,000.00
8	Erosion Control - Silt Fence or Wattles	16,000	LF	\$8	\$ 128,000.00
9	Crossing Restoration	1	LS	\$25,000	\$ 25,000.00
10	Project Inspection	1	LS	\$100,000	\$ 100,000.00
11	Project Contingency	1	LS	5%	\$ 308,900.00
Total Opinion of Probable Construction Costs:					\$ 6,486,900

A five (5) percent contingency is included on the project due to several factors including: (1) current status of the design, (2) the availability of recent bid information used for unit price reference, and (3) uncertainty associated in competitive bidding (i.e. fuel price fluctuations).

### 4.0 PROPERTY ACQUISITION

It is anticipated that property acquisition may be required as a part of this project. The Muscatine Island Levee District owns right-of-way for the mainstem levee, but certain portions of the uniform levee improvement project may require additional property. In addition, some construction easements may be necessary in order to complete the construction activities.

## 5.0 PERMITS

---

It is anticipated that United States Army Corps of Engineer permits will be required for the work on or near the Muscatine Island Levee District's levee (federal interest levee system). It is likely that a Section 408 Permission will be required by USACE for this portion of the work, which will include a review of the design, a National Environmental Policy Act (NEPA) review, and a review of impacted Real Estate. A 408 Permission for a uniform levee improvement project involves detailed hydraulic and hydrologic modeling that looks at offsite impacts to other properties upstream and downstream of the project in accordance with the Rivers and Harbors Act of 1899.

Wetland impacts (Sections 401/404) and Threatened & Endangered Species (Section 10) are anticipated, but are expected to be minimal. Additionally, archaeological resources are not expected to be disturbed, but the State Historic Preservation Office (SHPO) will be consulted (Section 106). All of these permits will be submitted through the Joint Permit Application process that involves the U.S. Army Corps of Engineers and the State of Iowa.

A Stormwater Pollution Prevention Plan (SWPPP) plan sheet will be developed by the Project Engineer and to be completed by the Contractor. The Contractor will be required to adhere to the requirements set forth by the SWPPP and their National Pollution Discharge Elimination System (NPDES) permit. This includes the proper installation, monitoring, and maintenance of silt fence and other means to control erosion and runoff during the project. Final grades of the levee improvement will be developed to reduce erosion or route runoff into a stormwater drainage system. The uniform levee improvements will receive fertilizer, seed, and mulch to slow runoff and reduce erosion potential.

## 6.0 PROJECT SCHEDULE

---

**Design Period** – The design plans and specifications for all project components have not been developed beyond a basic conceptual stage. It is estimated that it would take approximately six (6) months to complete the plans and specifications for bidding. This design will be completed in conjunction with the USACE 408 Permission process.

**Period of Time to Obtain Required Permits** – USACE Section 408 permission will be required for the uniform levee improvement. It is believed that to obtain this permission it will take approximately twelve (12) to eighteen (18) months. The USACE 408 permission request has not been initiated. All of the rest of the anticipated permitting previously outlined can occur within the same timeline.

Period of Time to Obtain any Required Easements or Rights-of-way – The location and quantity of easement and/or rights-of-way anticipated for the proposed project has not been determined, but can be obtained during the design and permitting phase schedule.

Solicitation of Bids and Awarding of Contracts – It is anticipated that bidders would be provided four (4) weeks to review the bid documents and formulate / submit their bid. Bidding would not be allowed to commence until both the permitting and right-of-way / easement acquisition was complete.

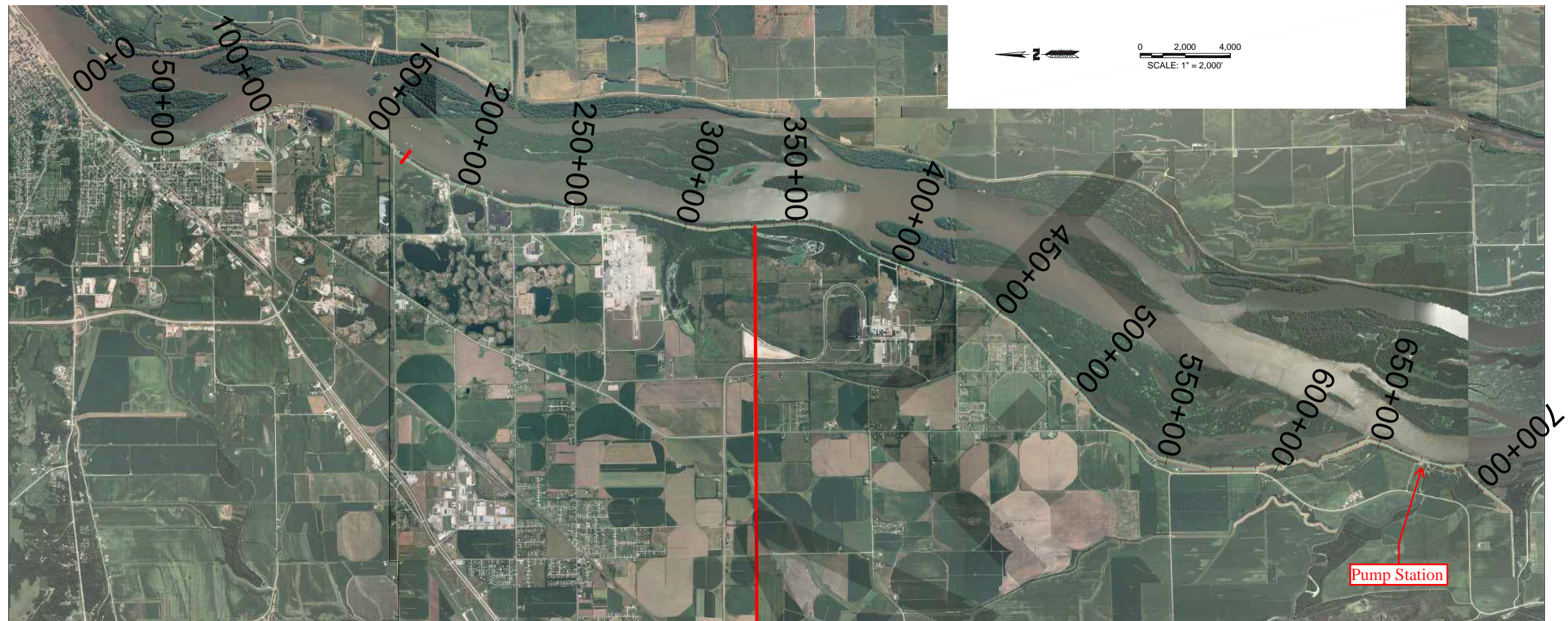
Construction Period – Approximately six (6) months anticipated to be necessary for completion of the entire project. None of the construction has been performed to date.

DRAFT

# **APPENDIX A PROJECT PLANS**

DRAFT



[illegible]

# PLAN AND PROFILE 100-YEAR FLOOD + FREEBOARD & 500-YEAR FLOOD PROFILES

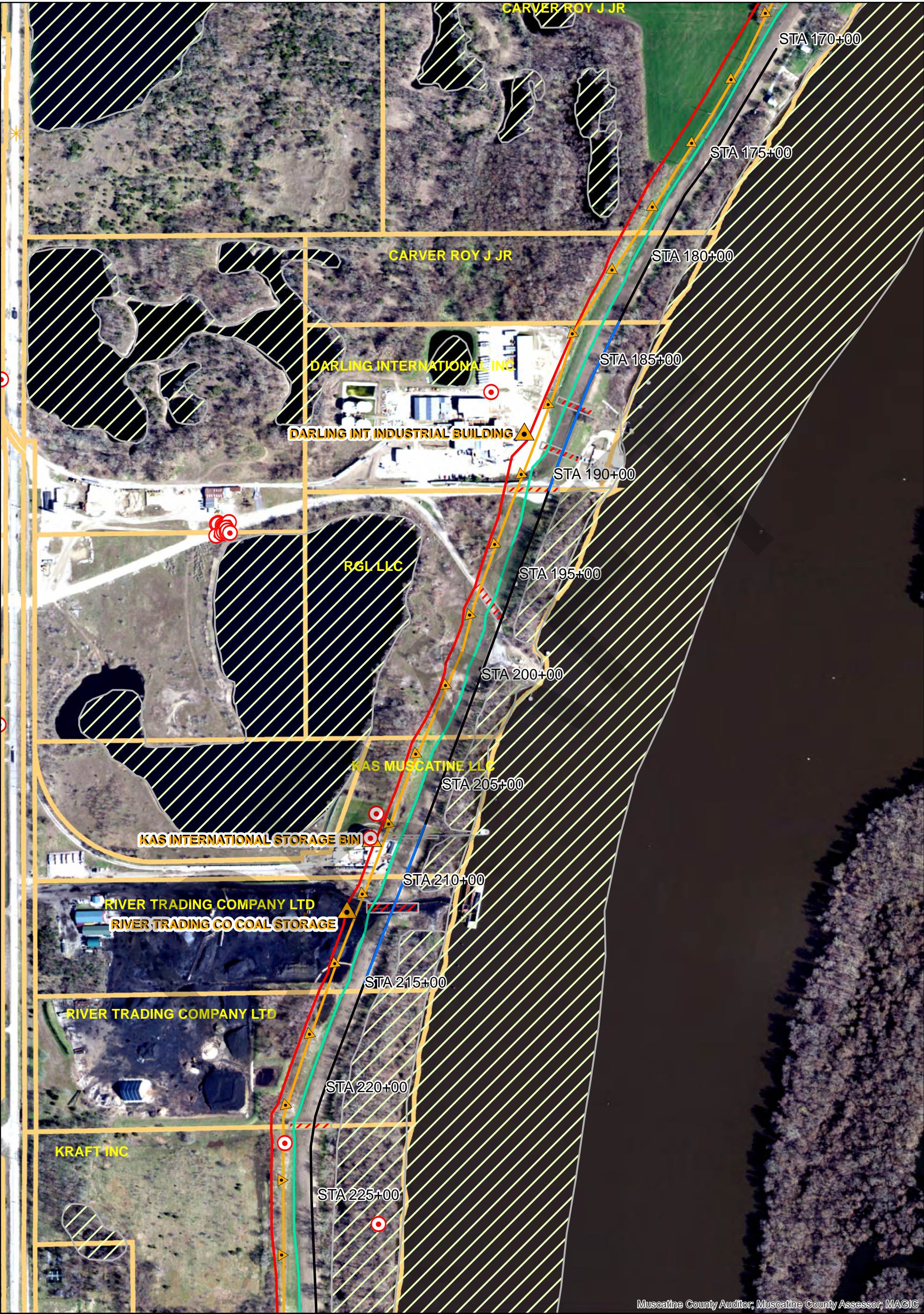
MUSCATINE ISLAND  
LEVEE & DRAINAGE DISTRICT

Full sized plans have been prepared using standard scales. Reduced sized plans may not conform to standard scales. Use graphic scales when making measurements on reduced plans.

PROJECT NO. 10-2037
DRAWING DATE 12/09/2013
SHEET <b>1</b>

**KLINGER**  
**& ASSOCIATES, P. C.**  
**Engineers • Architects • Surveyors**  
 Ph: 217.223.3630 • Fax: 217.223.3693  
 516 North 24th Street, Quincy, IL  
 Ph: 512.211.0200 • Fax: 512.211.0012  
 4510 Patis Court, Round Rock, TX  
 Ph: 319.572.3693 • Fax: 319.572.3675  
 Ph: 309.342.4042 • Fax: 309.341.3781  
 59 North Prairie Street, Galesburg, IL  
 www.klinger.com  
 Internet Address:





Muscatine County Auditor, Muscatine County Assessor, MAGIC

# Levee Improvement Impact

0 200 400  
Feet

**KLINGNER**  
& ASSOCIATES, P. C.  
Engineers • Architects • Surveyors

Map 4  
Prepared By: JAC  
Prepared On: 5/12/2020



## Legend

- |                            |  |
|----------------------------|--|
| Levee Toe                  | National Wetland Inventory                     |
| 100' Construction Easement | Underground Storage Tank                       |
| Wells                      | Structure within 100' Construction Easement    |
| Parcels                    | Overhead Utility in Construction Easement      |
| Levee Crossing             | Possible Raised Earthen Levee or Concrete Wall |
| Possible Flood Wall        |  |





Muscatine County Auditor, Muscatine County Assessor, MAGIC

0 200 400  
Feet

# Levee Improvement Impact

**KLINGNER**  
& ASSOCIATES, P. C.  
Engineers • Architects • Surveyors

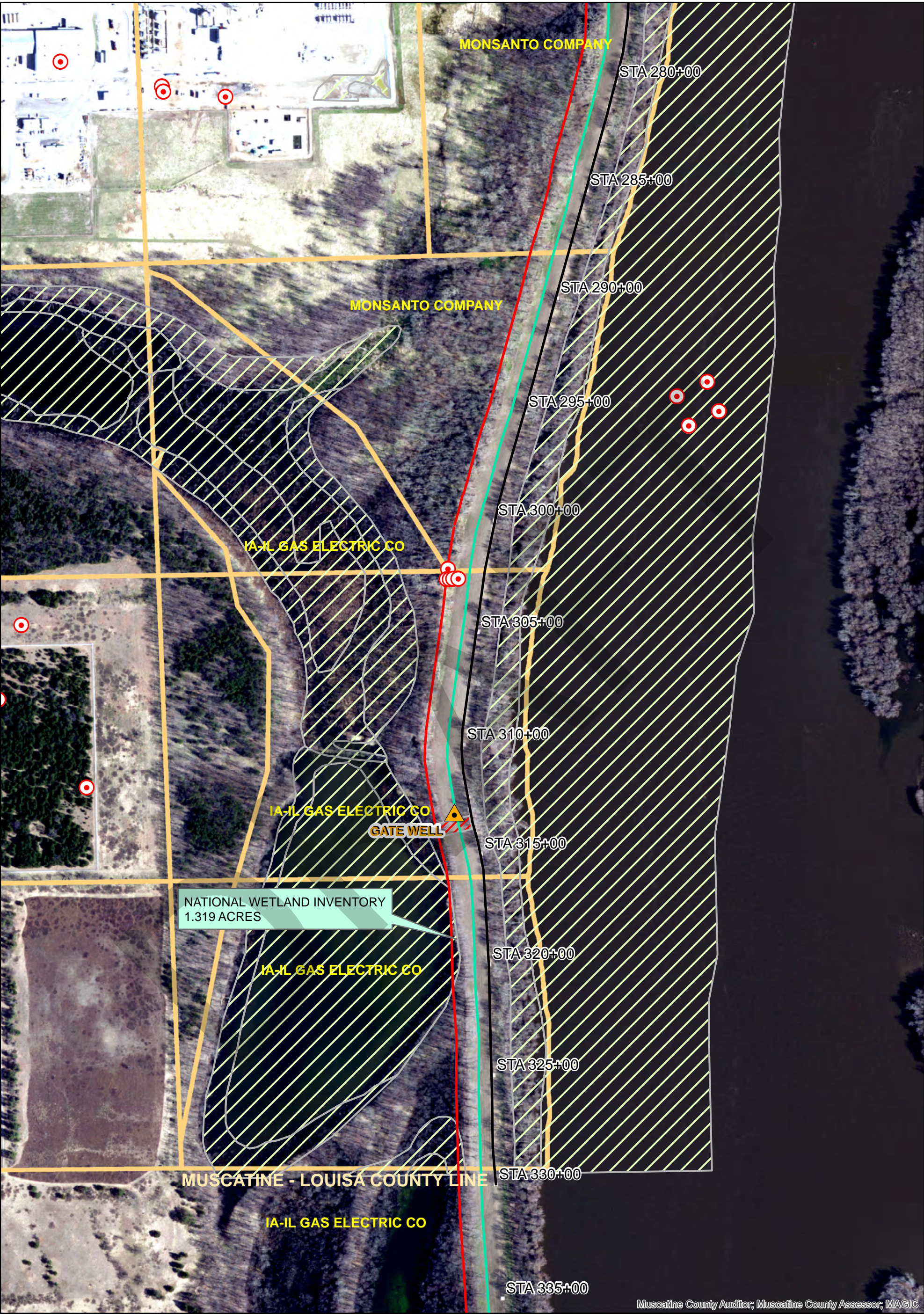
Map 5  
Prepared By: JAC  
Prepared On: 5/12/2020



## Legend

- |                            |  |
|----------------------------|--|
| Levee Toe                  | National Wetland Inventory                     |
| 100' Construction Easement | Underground Storage Tank                       |
| Wells                      | Structure within 100' Construction Easement    |
| Parcels                    | Overhead Utility in Construction Easement      |
| Levee Crossing             | Possible Raised Earthen Levee or Concrete Wall |
| Possible Flood Wall        |  |





Muscatine County Auditor; Muscatine County Assessor; MAGIC

0 200 400  
Feet

# Levee Improvement Impact

**KLINGNER**  
& ASSOCIATES, P. C.  
Engineers • Architects • Surveyors

Map 6  
Prepared By: JAC  
Prepared On: 5/12/2020



## Legend

- |                            |  |
|----------------------------|--|
| Levee Toe                  | National Wetland Inventory                     |
| 100' Construction Easement | Underground Storage Tank                       |
| Wells                      | Structure within 100' Construction Easement    |
| Parcels                    | Overhead Utility in Construction Easement      |
| Levee Crossing             | Possible Raised Earthen Levee or Concrete Wall |
| Possible Flood Wall        |  |