APPENDIX J - DRAFT ENVIRONMENTAL REPORT

MEMO
Riverpointe Public Infrastructure Project
Preliminary Environmental Assessment

Project Overview
The Riverpointe Public Infrastructure Project will include mass grading, tree clearing, public sanitary and storm sewer relocations, and overhead electric adjustments within an area shown on the attached map. This memo documents the preliminary environmental assessment for the project area.

Wetlands and Streams
A site visit was conducted on December 23, 2019 to observe the project area for the presence of potential wetlands and streams. The project area, which includes the developed area between S Main Street and the Katy Trail, area along the Katy Trail, and area immediately around an existing cell tower, a gravel lot, and a vacant lot where a house was recently demolished, is an upland area; no wetland features, including hydrology or vegetation were observed. One small culvert inlet was noted, but vegetation surrounding the inlet was upland vegetation that continued up the surrounding upland hillslopes. Photographs documenting the conditions observed at the time of the site visit are attached.

Potential Indiana Bat and Northern Long-Eared Bat Habitat
The project area was evaluated for suitable habitat for the Indiana and Northern long-eared bat on December 23, 2019. Suitable habitat for these species was identified as any tree over 3 inches DBH and greater than 13 feet tall with peeling bark or cavities that would provide shelter and allow the bat to move around the tree for thermoregulation. Approximately 2.5 acres of trees will be removed for the work proposed. Three potential bat habitat trees were observed within the project area. The location of the potential bat habitat trees are shown on the attached exhibit; photos of the potential bat habitat trees to be removed are also attached.

Adjacent Areas
An area east of the Katy Trail and east of the project area was preliminarily reviewed at the time of the site visit. Potential forested wetlands were observed in lowland areas closer to the existing stream channel which flows to the Missouri River. These potential wetlands may begin at the base of the toe of the slope surrounding the upland areas described previously. Within the potential wetland areas, wetland hydrology indicators were observed, including sparsely vegetated concave surfaces, watermarks on trees, and surface soil cracking. It is expected that a historic prolonged flood event in 2019 contributed to the lack of vegetation in some areas. Vegetation that could be indicative of wetlands, including sycamore (*Platanus occidentalis*), sugar maple (*Acer saccharinum*) cottonwood (*Populus deltoides*) trees, was also observed. The described lowland areas will require further study to determine if they fall within a jurisdictional boundary. A wetland determination following methods from the Midwest Regional Supplement to the 1987 US Army Corp of Engineers (USACE) Wetland Delineation Manual will be required to characterize the jurisdictional status of this area.

A potentially jurisdictional stream was also observed in this area, as seen in the attached exhibit and photolog. The stream appeared to be ephemeral, and may be a non-relatively permanent water; the US Army Corps of Engineers will need to make the final jurisdictional determination. Representative photos of the adjacent areas are attached.

Conclusions
Based on the site visit, it was determined with a high level of certainty that no part of the project area, as depicted in the attached exhibit and photographs, contains any wetlands or any other jurisdictional waters of the United States. The project area contains three potential bat habitat trees. These trees are to be removed prior to April 1 to avoid impacts to Indiana and Northern long-eared bats. The removal of the three observed potential bat habitat trees outside of the active season is expected to have no effect on the Indiana or Northern long-eared bat. This activity also falls under the thresholds in the Missouri Bat Programmatic Agreement between the USACE and the United States Fish and Wildlife Service, which is anticipated to be the only federal nexus for this project.

Any proposed work beyond the project area will require a delineation of any wetlands or streams, and a subsequent jurisdictional determination by the USACE. A full evaluation of the area for suitable summer habitat for the Indiana and Northern long-eared bat will also be necessary and an acoustic monitoring survey may be required if over 10 acres of suitable summer habitat will be removed.

Riverpointe Public Infrastructure Project

Aerial Map

CMT
Crawford, Murphy & Tilly

1. View northeast.

2. View southeast.

3. View southwest.

4. View east.

5. View along Katy Trail looking northeast.

6. View looking southeast.

7. View northeast.

8. View east.

9. View northeast.

10. View within lowland area surrounding project area looking northeast.

11. View within lowland area surrounding project area looking looking north.

12. View of culvert outlet and potentially jurisdictional stream looking west.

13. View within lowland surrounding project area looking looking northwest.

14. Potential bat habitat tree, with cavities and peeling bark, to be removed.

15. Potential bat habitat tree, with cavities and peeling bark, to be removed.

16. Potential bat habitat tree, with peeling bark, to be removed.

Initial Field Wetland/Habitat Summery for Bangert Island:

On February 25-26, 2016 USACE biologists performed an initial wetlands field review at Bangert Island and located two separate potential wetlands that had all three wetland characteristics (soil, hydrology, & plants). Roughly 3% of the approximately 195 acres could be wetland. (About 5-7 acres along the ditch that flows along the northern boundary & roughly 1.0 acres within the interior.) Additional observations include, multiple marked bike/running trails that spider web the sites interior and they seem to have frequent use. Also, much of the habitat within the interior seems to have excellent Indiana &/or northern long-eared bat habitat. Old growth cottonwood & black willow as well as large silver maples are scatted throughout. Large standing dead trees (snags) are also prevalent with most having loose bark intact. Overall the tree canopy is fairly dense, 60-90% closer. With the size, species, and amount of shaggy bark living and dead standing trees, it is likely that a majority of the property is habitat that would be conducive to Indiana &/or northern long-eared bats. See GPS photos DSCN1049-1090 for wetland photos.

Other Observations:

Approximately half or more of the properties interior is large, mature sized trees. Living black willows and snags range between 15-20 inches in diameter. Living cottonwoods and snags range from 15-36 inches in diameter. There are patches of natural succession where large trees have fallen from flooding or wind actions resulting in open areas with many standing snags and a few 3-10 inch diameter trees have starting growing. Other areas with dense canopies and large mature trees have little to no mid or understory vegetation. See GPS photos DSCN1091-1145 for habitat photos.

Fish and wildlife observations include small fish or minnows, evidence of crayfish borrows, beaver and/or muskrat signs within the flowing ditch along the north boundary. Other beaver signs can also be seen along the banks of the Missouri River. Plentiful whitetail deer signs and game trail were seen throughout and well as active small mammal signs; likely raccoon, opossum, squirrel, and groundhogs/woodchuck. Many various song birds were also observed.

Besides the network of labeled running and biking trails for recreation, numerous portable hunting stands were observed as well. Most of these hunting stands seem to fairly new and likely from the previous winters hunting seasons.

KC DISTRICT WETLAND INVESTIGATION FEBRUARY 2016

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 1-A

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave

Slope (%): 3 Lat: 38°45'9.73"N Long: 90°30'2.17"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: PFOE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes X No ___

Remarks:

Historic Channel Scar/Drainage

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	5	Y	OBL
2. *Populus deltoids*	2	Y	FAC
3. *Platanus occidentalis*	2	Y	FACW
4.			
5.			
	9	= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1. *Acer negundo*	15	Y	FAC
2. *Salix nigra*	5	Y	OBL
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: ______)			
1. *carex*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1. *Vitis aestivalis*	5	Y	FACU
2.			
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	2	x 2 =	4
FAC species	22	x 3 =	66
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	39 (A)		100 (B)

Prevalence Index = B/A = 2.56

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photo 1049-1053

SOIL

Sampling Point: 1-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/1	70					SiCl	
	10YR3/2	10						
	10YR2/2	10						
6-18	10YR3/1	70	10YR3/6	25	D	M	SiCl	Organic Material
			10YR5/6	5				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes X No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches): ________

Water Table Present? Yes ____ No ____ Depth (inches): ________

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 1-B

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 15 Lat: 38°45'10.19"N Long: 90°30'1.65"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?	X	
Is the Sampled Area within a Wetland?		X

Remarks:

Edge of a historic channel scar/drainage

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	5	Y	FACW
2. *Morus alba*	5	Y	FAC
3. *Platanus occidentalis*	25	Y	FACW
4. *Populus deltoids*	5	N	FAC
5.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1. *Salix nigra*	5	Y	OBL
2. *Acer negundo*	10	Y	FAC
3.			
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: ______)			
1. *polgonum*	10	Y	FAC
2. *cares*	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30	= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	30	x 2 = 60
FAC species	50	x 3 = 150
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	85 (A)	215 (B)

Prevalence Index = B/A = 2.53

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photo 1049-1053

SOIL

Sampling Point: 1-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/2	90					SiCl	
10-18	10YR4/2	90					SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 2-A

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave

Slope (%): 3 Lat: 38°45'14.71"N Long: 90°30'0.84"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: PFOE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?	X	
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? Yes X No ___

Remarks:

Historic Channel Scar/Drainage

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1. *Acer saccharinum*	5	Y	FACW
2.			
3.			
4.			
5.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1. *Acer negundo*	25	Y	FAC
2.			
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: ______)			
1. *carex*	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	5	x 2 = 10
FAC species	30	x 3 = 90
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	35 (A)	100 (B)

Prevalence Index = B/A = 2.86

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS photo 1054-1059

SOIL

Sampling Point: 2-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/1	80	10YR4/6	15	RM		SiCl	
6-10	10YR4/3	25	10YR5/6	40	RM		SSiCl	SANDY
			10YR4/6	30				
10-18	10YR4/1	90	10YR3/6	15	RM		SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- X Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- X Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- X Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes X No ______ Depth (inches): 0

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 2-B

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 10 Lat: 38°45'14.72"N Long: 90°30'0.50"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

Edge of drainage path

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ______)			
1. *Platanus occidentalis*	10	Y	FACW
2. *Acer saccharinum*	40	Y	FACW
3.			
4.			
5.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1. *Acer saccharinum*	50	Y	FACW
2.			
3.			
4.			
5.			
	50	= Total Cover	
Herb Stratum (Plot size: ______)			
1. *carex*	5	Y	FAC
2. *polygonum*	15	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		260 (B)

Prevalence Index = B/A = 2.17

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

GPS photos 1054-1059

SOIL

Sampling Point: 2-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR3/2						SiCl	
8-18	10YR4/2						SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No _X_

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
_X_ Water Marks (B1)
___ Sediment Deposits (B2)
_X_ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
_X_ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
_X_ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
_X_ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ______
Water Table Present? Yes ___ No ___ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ______

Wetland Hydrology Present? Yes _X_ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 3-A

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave

Slope (%): 3 Lat: 38°45'22.13"N Long: 90°29'50.38"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: PFOE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

Drainage path

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	10	Y	FACW
2. *Acer negundo*	15	Y	FAC
3. *Salix nigra*	5	N	OBL
4. *Populus deltoids*	5	N	FAC
5.			
= Total Cover	35		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: ______)			
1. *polygonum*	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
= Total Cover	25		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
= Total Cover	0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	10	x 2 = 20
FAC species	45	x 3 = 135
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	60 (A)	160 (B)

Prevalence Index = B/A = 2.67

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No ___**

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1062-1068

SOIL

Sampling Point: 3-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR3/1	80	10YR3/6	15	RM		SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ______

Water Table Present? Yes ___ No ___ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island , City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 3-B

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 10 Lat: 38°45'21.82"N Long: 90°29'49.97"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

Edge of a drainage

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoids*	25	Y	FAC
2. *Morus alba*	5	N	FAC
3. *Acer saccharinum*	5	N	FACW
4.			
5.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ______)			
1. *polygonum*	15	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15	= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1. *Vitis aestivalis*	5	Y	FACU
2.			
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	45	x 3 =	135
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	55 (A)		165 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1062-1068

SOIL

Sampling Point: 3-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR3/2	90						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______________________

Depth (inches): ______________________

Hydric Soil Present? Yes _____ No _X_

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- _X_ Water Marks (B1)
- _X_ Sediment Deposits (B2)
- _X_ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- _X_ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- _X_ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- _X_ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): ___________

Water Table Present? Yes _____ No _____ Depth (inches): ___________

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): ___________

Wetland Hydrology Present? Yes _X_ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island   City/County: St. Charles   Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD   State: MO   Sampling Point: 3-C

Investigator(s): Chris Name, Rick Morrow   Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain   Local relief (concave, convex, none): convex

Slope (%): 5   Lat: 38°45'23.35"N   Long: 90°29'50.45"W   Datum: ______

Soil Map Unit Name: ______   NWI or WWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed?   Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic?   (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

Edge of a drainage

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	30	Y	FACW
2. *Populus deltoids*	10	Y	FAC
3.			
4.			
5.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1. *Acer negundo*	10	Y	FAC
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: ______)			
1. *polygonum*	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	25	= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1. *Vitis aestivalis*	10	Y	FACU
2.			
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	30	x 2 = 60
FAC species	45	x 3 = 135
FACU species	10	x 4 = 40
UPL species	0	x 5 = 0
Column Totals:	85 (A)	235 (B)

Prevalence Index = B/A = 2.76

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1062-1068

SOIL

Sampling Point: 3-C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2							
6-12	10YR4/2							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
_X_ Sediment Deposits (B2)
_X_ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
_X_ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
_X_ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ____________

Water Table Present? Yes ______ No ______ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ____________

Wetland Hydrology Present? Yes __X__ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 25 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 3-C

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 5 Lat: 38°45'23.35"N Long: 90°29'50.45"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?	X	

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

Edge of a drainage

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	30	Y	FACW
2. *Populus deltoids*	10	Y	FAC
3.			
4.			
5.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1. *Acer negundo*	10	Y	FAC
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: ______)			
1. *polygonum*	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	25	= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1. *Vitis aestivalis*	10	Y	FACU
2.			
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	45	x 3 =	135
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	85 (A)		235 (B)

Prevalence Index = B/A = 2.76

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1062-1068

SOIL

Sampling Point: 3-C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2							
6-12	10YR4/2							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
X Sediment Deposits (B2)
X Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
X Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
X Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ____________

Water Table Present? Yes ______ No ______ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ____________

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 26 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 4-A

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave

Slope (%): 3 Lat: 38°45'50.93"N Long: 90°29'19.93"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: PFOE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes X No ___

Remarks:

Floodplain depression

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	25	Y	OBL
2. *Acer saccharinum*	5	N	FACW
3.			
4.			
5.			
	30 = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	30 (A)		35 (B)

Prevalence Index = B/A = 1.17

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1069,1071-1075

SOIL

Sampling Point: 4-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR2/1	90	10YR3/6	10	RM		SiCl	
12-18	10YR3/2	60	10YR3/6	5	RM		SiCl	
	10YR3/1	30						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches): ____

Water Table Present? Yes ____ No ____ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 26 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 4-B

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 10 Lat: 38°45'51.25"N Long: 90°29'19.99"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✗ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✗ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✗	No ___
Hydric Soil Present?	Yes ___	No ✗
Wetland Hydrology Present?	Yes ✗	No ___

Is the Sampled Area within a Wetland? **Yes** ___ **No** ✗

Remarks:

Edge of a floodplain depression

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	20	Y	OBL
2. *Acer saccharinum*	20	Y	FACW
3.			
4.			
5.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1. *Acer saccharinum*	15	Y	FACW
2.			
3.			
4.			
5.			
	15	= Total Cover	
Herb Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1. *Vitis aestivalis*	5	Y	FACU
2.			
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	35	x 2 =	70
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	60 (A)		110 (B)

Prevalence Index = B/A = 1.83

Hydrophytic Vegetation Indicators:

- ✗ Dominance Test is >50%
- ✗ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✗ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

GPS Photos 1069,1071-1075

SOIL

Sampling Point: 4-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/2	90						
10-18	10YR4/2	80						
	10YR3/1	30						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
X Water Marks (B1)
X Sediment Deposits (B2)
X Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
X Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes __X__ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 26 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 5-A

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ____

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave

Slope (%): 3 Lat: 38°45'43.06"N Long: 90°29'17.29"W Datum: ____

Soil Map Unit Name: ____ NWI or WWI classification: PFOE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

Remarks:

GPS Photo 1080-1090

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	20	Y	OBL
2. *Populus deltoids*	5	Y	FAC
3.			
4.			
5.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	25 (A)		35 (B)

Prevalence Index = B/A = 1.4

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Trees of 15-20"
GPS Photo 1080-1090

SOIL

Sampling Point: 5-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR2/1	90					SiCl	
6-18	10YR4/2	70	10YR3/6	10	D	M	SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X No ______

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes X No ______ Depth (inches): 0

Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Bangert Island City/County: St. Charles Sampling Date: 26 Feb 2016

Applicant/Owner: USACE KCD State: MO Sampling Point: 5-B

Investigator(s): Chris Name, Rick Morrow Section, Township, Range: ______

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): convex

Slope (%): 3 Lat: 38°45'43.34"N Long: 90°29'17.87"W Datum: ______

Soil Map Unit Name: ______ NWI or WWI classification: ______

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? Yes ___ No X

Remarks:

Edge of a floodplain depression

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoids*	10	Y	FAC
2. *Acer saccharinum*	10	Y	FACW
3. *Salix nigra*	5	Y	OBL
4.			
5.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	
Woody Vine Stratum (Plot size: ______)			
1. *Vitis aestivalis*	5	Y	FACU
2.			
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	10	x 2 =	20
FAC species	10	x 3 =	30
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	30 (A)		75 (B)

Prevalence Index = B/A = 2.5

Hydrophytic Vegetation Indicators:

- X Dominance Test is >50%
- X Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Trees 15-20" diameter
GPS Photos 1080-1090

SOIL

Sampling Point: 5-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2							
6-12	10YR4/2							
12-18	10YR3/2							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No __X__

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): ____________

Water Table Present? Yes _____ No _____ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): ____________

Wetland Hydrology Present? Yes __X__ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Daniel Mann

From:	Thompson, Dustin A <DustinThompson@MissouriState.edu>
Sent:	Friday, May 15, 2020 12:07 PM
To:	Daniel Mann; 'Powell, Gina S CIV USARMY CENWK (US)'; Lopinot, Neal H; Meade, Timothy M CIV (USA)
Cc:	Totten, Laura A CIV USARMY CENWK (USA); 'Denlinger, John'; Heather Lacey; Brad Temme
Subject:	Re: Cultural Resources Update - Bangert Island
Attachments:	Bangert Island Mag Survey.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged

CAUTION: This email originated from outside of the City of Saint Charles. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dan,
Attached is a map showing the approximate boundaries of the completed and uncompleted magnetometer survey. The northern end of the project area has been completed and no anomalies that can't be explained by recent surface debris were found. Our background research at the Herman T. Pott National Inland Waterways Library, old COE maps and aerials that Gina found, and other sources, revealed that the entire island was created after 1937. Before this time it was in the main channel of the Missouri River. Due to the ever changing path of the river during this time, there is a high likelihood that if there had been any shipwrecks in this area they were eroded away when the river reclaimed this channel. The coring data should help to determine how deep the 1930s river channel was and if there is any chance of older deposits being disturbed by this project.

Thanks,
Dustin

--
Dustin Thompson
Project Supervisor
Center for Archaeological Research
Missouri State University
901 South National Ave.
Springfield, MO 65897
Office: (417) 836-6531

From: Daniel Mann <Daniel.Mann@stcharlescitymo.gov>
Date: Friday, May 15, 2020 at 11:27 AM
To: "'Powell, Gina S CIV USARMY CENWK (US)'" <Gina.S.Powell@usace.army.mil>, "Lopinot, Neal H" <NealLopinot@MissouriState.edu>, "Meade, Timothy M CIV (USA)" <Timothy.M.Meade@usace.army.mil>
Cc: "Thompson, Dustin A" <DustinThompson@MissouriState.edu>, "Totten, Laura A CIV USARMY CENWK (USA)" <Laura.A.Totten@usace.army.mil>, "'Denlinger, John'" <John.Denlinger@hdrinc.com>, Heather Lacey <hlacey@cmtengr.com>, Brad Temme <Brad.Temme@stcharlescitymo.gov>
Subject: RE: Cultural Resources Update - Bangert Island

CAUTION: External Sender

Daniel Mann

From: Powell, Gina S CIV USARMY CENWK (US) <Gina.S.Powell@usace.army.mil>
Sent: Friday, May 15, 2020 10:06 AM
To: Daniel Mann; 'Lopinot, Neal H'; Meade, Timothy M CIV (USA)
Cc: Thompson, Dustin A; Totten, Laura A CIV USARMY CENWK (USA); 'Denlinger, John'; Heather Lacey; Brad Temme
Subject: RE: Cultural Resources Update - Bangert Island

Follow Up Flag: Follow up
Flag Status: Flagged

All,
Below is my exchange with the SHPO in January. I asked if the geological testing monitoring could substitute for finishing the magnetometer survey and they did not have enough information to make that decision. We also did not come to any decision regarding construction monitoring.

Since so much has happened since January to stand in our way of progress on this project, I could re-start discussion on construction monitoring. It would seem prudent to only necessitate monitoring in construction areas that had not been surveyed using the magnetometer or geological coring (unless something had been found). We could collaborate on a map that shows both the construction and the survey boundaries.

Does that sound like a path we would like to pursue with the SHPO? It would take only one person to do the monitoring.

Sincerely,

Dr. Gina S. Powell, Archeologist
U.S. Army Corps of Engineers, Kansas City District
601 E. 12th Street
Kansas City, MO 64106
Phone: 816-389-2320

-----Original Message-----
From: Alvey, Jeffrey [mailto:Jeffrey.Alvey@dnr.mo.gov]
Sent: Wednesday, January 22, 2020 3:29 PM
To: Powell, Gina S CIV USARMY CENWK (US) <Gina.S.Powell@usace.army.mil>; Amy Rubingh <Amy.Rubingh@dnr.mo.gov>
Subject: [Non-DoD Source] RE: Bangert Island, St. Charles survey

Gina,
Just to make sure I'm clear on your proposal, you're asking if we think just monitoring the areas where the geological testing will take place would constitute a sufficient assessment of this area for the possibility of buried shipwrecks? And that you believe doing so would be preferable to finalizing the magnetic survey and monitoring during the entire construction phase of the project? Also, I seem to recall that there would be both coring and excavation of larger test pits? Is that correct?

If my assumption of what you're asking is correct, then I would say that what you propose is fine in general, but, as always, the important question is whether or not the sample represented by the geological cores/pits is sufficiently representative of the area in question. That, of course, has everything to do with how big the area is and how many cores/tests will be excavated. Those are details I don't have. However, if you feel an argument can be made that the proposed geological testing would provide sufficient coverage of the area in terms of the data it would provide on buried wrecks then I think that would be a perfectly fine strategy.

Jeffrey

-----Original Message-----
From: Powell, Gina S CIV USARMY CENWK (US) <Gina.S.Powell@usace.army.mil>
Sent: Wednesday, January 22, 2020 1:09 PM
To: Alvey, Jeffrey <Jeffrey.Alvey@dnr.mo.gov>; Rubingh, Amy <Amy.Rubingh@dnr.mo.gov>
Subject: Bangert Island, St. Charles survey

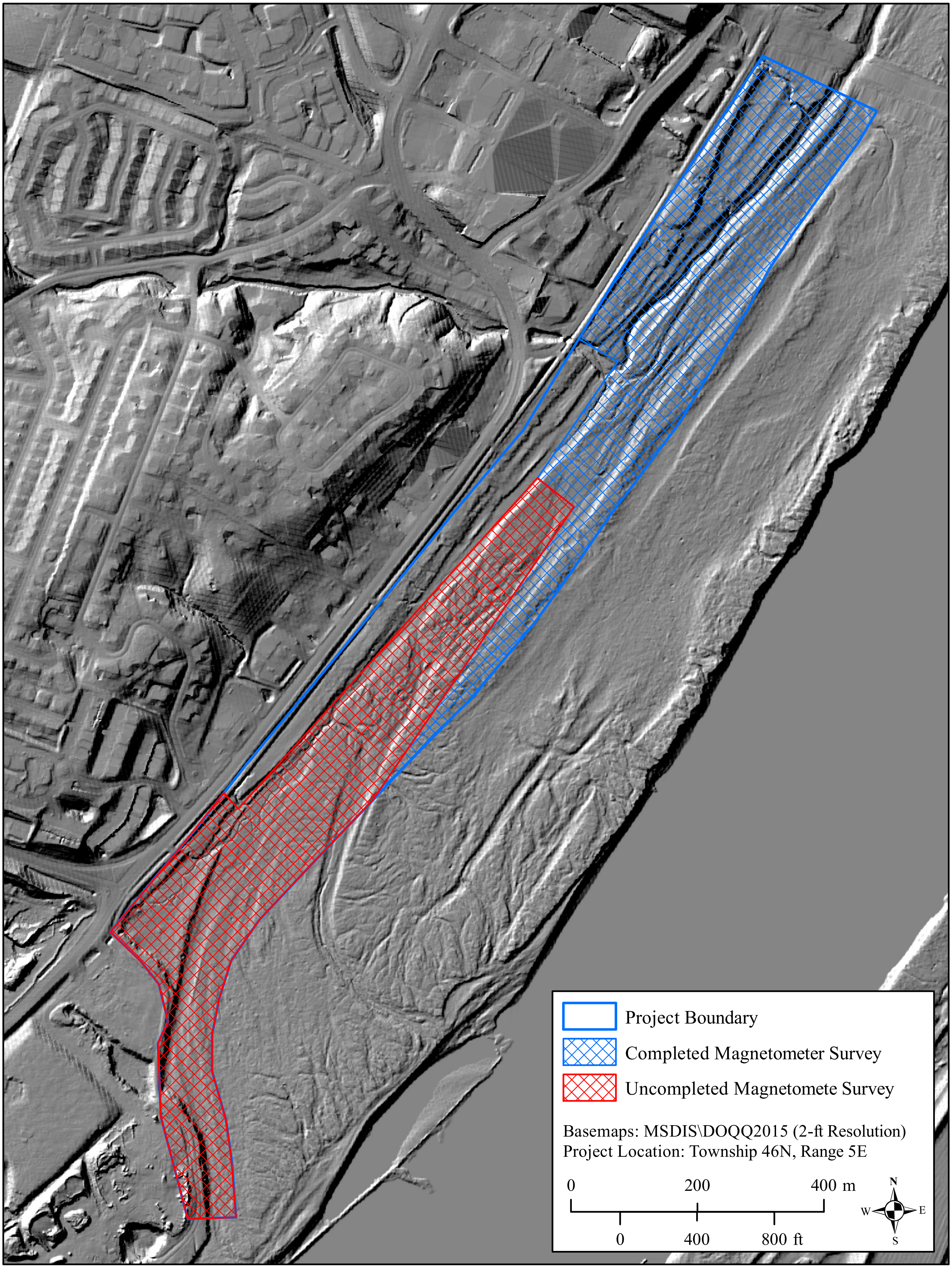
Jeff and Amy,
There have been a few communications between SHPO, CAR, the engineers, and the city of St. Charles about geological coring at Bangert Island to look at the deep deposits. I just recently found out about this activity.

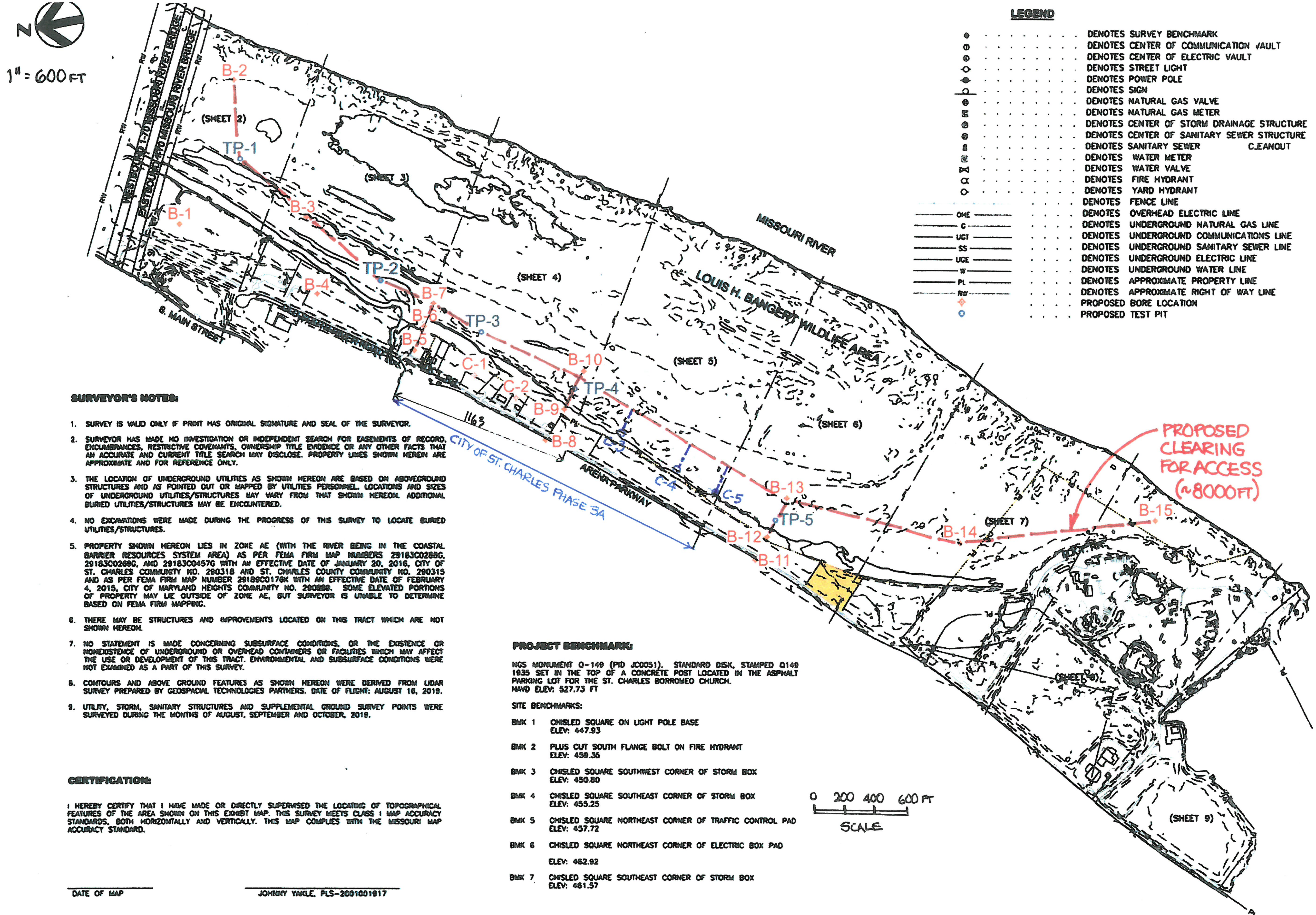
I wondered if we could arrange to have those monitored in lieu of finishing the magnetometer survey AND construction monitoring. I don't think that monitoring during the entire construction is an activity anyone is very excited about since it might take weeks or months to excavate that channel. We have already talked about how historic records show that the channel has probably been scoured out post-steamboat times and having a strong post-review discovery clause in the report.

I'd like to explore this possibility since the weather has not been very cooperative for survey lately.

Sincerely,

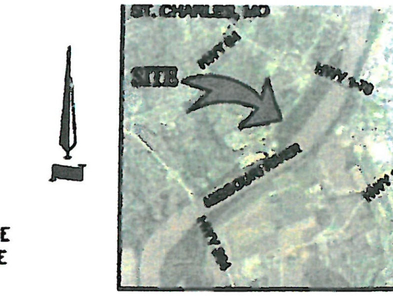
Gina S. Powell, Archeologist
U.S. Army Corps of Engineers, Kansas City District
601 E. 12th Street
Kansas City, MO 64106
Phone: 816-389-2320


Project Boundary
Completed Magnetometer Survey
Uncompleted Magnetomete Survey
Basemaps: MSDIS\DOQQ2015 (2-ft Resolution)
Project Location: Township 46N, Range 5E
0
200
400 m
0
400
800 ft
N
W
E
S



LEGEND

- DENOTES SURVEY BENCHMARK
- DENOTES CENTER OF COMMUNICATION VAULT
- DENOTES CENTER OF ELECTRIC VAULT
- DENOTES STREET LIGHT
- DENOTES POWER POLE
- DENOTES SIGN
- DENOTES NATURAL GAS VALVE
- DENOTES NATURAL GAS METER
- DENOTES CENTER OF STORM DRAINAGE STRUCTURE
- DENOTES CENTER OF SANITARY SEWER STRUCTURE
- DENOTES SANITARY SEWER CLEANOUT
- DENOTES WATER METER
- DENOTES WATER VALVE
- DENOTES FIRE HYDRANT
- DENOTES YARD HYDRANT
- DENOTES FENCE LINE
- OHE — DENOTES OVERHEAD ELECTRIC LINE
- G — DENOTES UNDERGROUND NATURAL GAS LINE
- UGT — DENOTES UNDERGROUND COMMUNICATIONS LINE
- SS — DENOTES UNDERGROUND SANITARY SEWER LINE
- UGE — DENOTES UNDERGROUND ELECTRIC LINE
- W — DENOTES UNDERGROUND WATER LINE
- PL — DENOTES APPROXIMATE PROPERTY LINE
- RW — DENOTES APPROXIMATE RIGHT OF WAY LINE
- PROPOSED BORE LOCATION
- PROPOSED TEST PIT



VICINITY MAP
NOT TO SCALE

SURVEYOR'S NOTES:

1. SURVEY IS VALID ONLY IF PRINT HAS ORIGINAL SIGNATURE AND SEAL OF THE SURVEYOR.
2. SURVEYOR HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR EASEMENTS OF RECORD, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP TITLE EVIDENCE OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE. PROPERTY LINES SHOWN HEREIN ARE APPROXIMATE AND FOR REFERENCE ONLY.
3. THE LOCATION OF UNDERGROUND UTILITIES AS SHOWN HEREON ARE BASED ON ABOVEGROUND STRUCTURES AND AS POINTED OUT OR MAPPED BY UTILITIES PERSONNEL. LOCATIONS AND SIZES OF UNDERGROUND UTILITIES/STRUCTURES MAY VARY FROM THAT SHOWN HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED.
4. NO EXCAVATIONS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITIES/STRUCTURES.
5. PROPERTY SHOWN HEREON LIES IN ZONE AE (WITH THE RIVER BEING IN THE COASTAL BARRIER RESOURCES SYSTEM AREA) AS PER FEMA FIRM MAP NUMBERS 29183C0288G, 29183C0269G, AND 29183C0457G WITH AN EFFECTIVE DATE OF JANUARY 20, 2016, CITY OF ST. CHARLES COMMUNITY NO. 290318 AND ST. CHARLES COUNTY COMMUNITY NO. 290315 AND AS PER FEMA FIRM MAP NUMBER 29189C0176K WITH AN EFFECTIVE DATE OF FEBRUARY 4, 2015, CITY OF MARYLAND HEIGHTS COMMUNITY NO. 290889. SOME ELEVATED PORTIONS OF PROPERTY MAY LIE OUTSIDE OF ZONE AE, BUT SURVEYOR IS UNABLE TO DETERMINE BASED ON FEMA FIRM MAPPING.
6. THERE MAY BE STRUCTURES AND IMPROVEMENTS LOCATED ON THIS TRACT WHICH ARE NOT SHOWN HEREON.
7. NO STATEMENT IS MADE CONCERNING SUBSURFACE CONDITIONS, OR THE EXISTENCE OR NONEXISTENCE OF UNDERGROUND OR OVERHEAD CONTAINERS OR FACILITIES WHICH MAY AFFECT THE USE OR DEVELOPMENT OF THIS TRACT. ENVIRONMENTAL AND SUBSURFACE CONDITIONS WERE NOT EXAMINED AS A PART OF THIS SURVEY.
8. CONTOURS AND ABOVE GROUND FEATURES AS SHOWN HEREON WERE DERIVED FROM LIDAR SURVEY PREPARED BY GEOSPACIAL TECHNOLOGIES PARTNERS. DATE OF FLIGHT: AUGUST 16, 2019.
9. UTILITY, STORM, SANITARY STRUCTURES AND SUPPLEMENTAL GROUND SURVEY POINTS WERE SURVEYED DURING THE MONTHS OF AUGUST, SEPTEMBER AND OCTOBER, 2019.

PROJECT BENCHMARK:

NGS MONUMENT Q-149 (PID JC0051). STANDARD DISK, STAMPED Q149 1935 SET IN THE TOP OF A CONCRETE POST LOCATED IN THE ASPHALT PARKING LOT FOR THE ST. CHARLES BORROMEO CHURCH.
NAVD ELEV: 527.73 FT

SITE BENCHMARKS:

BMK 1	CHISLED SQUARE ON LIGHT POLE BASE	ELEV: 447.93
BMK 2	PLUS CUT SOUTH FLANGE BOLT ON FIRE HYDRANT	ELEV: 459.35
BMK 3	CHISLED SQUARE SOUTHWEST CORNER OF STORM BOX	ELEV: 450.80
BMK 4	CHISLED SQUARE SOUTHEAST CORNER OF STORM BOX	ELEV: 455.25
BMK 5	CHISLED SQUARE NORTHEAST CORNER OF TRAFFIC CONTROL PAD	ELEV: 457.72
BMK 6	CHISLED SQUARE NORTHEAST CORNER OF ELECTRIC BOX PAD	ELEV: 462.92
BMK 7	CHISLED SQUARE SOUTHEAST CORNER OF STORM BOX	ELEV: 461.57

CERTIFICATION:

I HEREBY CERTIFY THAT I HAVE MADE OR DIRECTLY SUPERVISED THE LOCATING OF TOPOGRAPHICAL FEATURES OF THE AREA SHOWN ON THIS EXHIBIT MAP. THIS SURVEY MEETS CLASS I MAP ACCURACY STANDARDS, BOTH HORIZONTALLY AND VERTICALLY. THIS MAP COMPLIES WITH THE MISSOURI MAP ACCURACY STANDARD.

DATE OF MAP

JOHNNY YAKLE, PLS-2001001917

HDR
HDR
MISSOURI CERTIFICATE OF AUTHORITY #: 000000
10450 HOLMES ROAD, SUITE 600
KANSAS CITY, MO 64131

PROJECT MANAGER	J. DENLINGER
SURVEY MANAGER	J. YAKLE, RLS
PROJECT SURVEYOR	J. JASPER, RLS

2 1-24-20 BORE AND TEST PIT LOCATIONS

DRAFT

USACE KANSAS CITY DISTRICT
BANGERT ISLAND SECTION 22 PAS
Flood Risk and Riverfront Transformation
ST. CHARLES, MISSOURI

TOPOGRAPHIC SURVEY AND BORINGS LOCATION MAP

FILENAME TopoSurvey.dwg

SHEET

Draft Environmental / NEPA Requirements Report

Bangert Island Flood Risk and Riverfront Transformation Project

June 2019

Contents

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1 Introduction

The Bangert Island Flood Risk and Riverfront Transformation project will transform the City of Saint Charles (City) riverfront property between the Family Arena and Interstate 70 (I-70) adjacent to Bangert Island. While the island will not be developed as part of the Riverfront Transformation economic development, Bangert Island is vitally important to the City's growth economically, ecologically, and recreationally.

The objective of this Environmental / NEPA Requirements document is to provide a preliminary study of existing conditions (e.g., hydrology, soils, and other relevant resources related to the project area) of Bangert Island and describe the environmental, regulatory, and National Environmental Policy Act (NEPA) requirements for planning of a future water development project. Risks associated with the Riverfront Transformation economic development will also be identified in an effort to avoid potential conflicts between the separate types of development (i.e. water development vs. economic development).

The findings of this report are not meant to meet the requirements of NEPA or other relevant federal, state, and local laws and policy that would be needed for implementation of a project (i.e. water development or economic development) on Bangert Island.

1.1 Background

Bangert Island was once an island separated from the bluff at Saint Charles by a side channel. However, river channel structures were built on the Missouri River in the 1930s and 1940s to provide a more navigable channel. As a result, the channel separating Bangert Island from the shoreline gradually silted in. The deposition choked the original side channel entrance at the Missouri River to the point of closure by 1980 and effectively reattached Bangert Island to the bluff. The area currently functioning only as an island during periods of high water.

The side channel previously provided flow diversity not available in the main river channel. This flow diversity and shallow water aquatic habitat allowed for off river habitat for various aquatic species. Prior to closure of the side channel the island had considerably more sandbar areas that were attractive to various species that have since been taken over by vegetation.

Bangert Island is located in the Crystal Springs watershed that includes several large commercial developments in the upper reaches, extensive residential development, and I-70. The watershed is afflicted with extensive non-point source pollution. The sediment that reaches the Missouri River has impacts ranging from reducing fish habitat, creating taste and odor problems in drinking water, and impairing recreational opportunities. The side channel historically provided water quality benefits by slowing water before it discharged into the Missouri River.

Crystal Springs Creek at one time flowed into the side channel of the Missouri River. As the side channel filled in from the 1930s and 1940s, until closure in the 1980s, the tailwater of Crystal Springs Creek was negatively impacted, creating less vertical drop to covey water over a much longer and flatter distance to the Missouri River. Significant storm events in 2011, 2013, and 2017 caused flooding damage that impacted residents and businesses in and adjacent to Bangert Island. The proposed excavation of the side channel and the creation of a basin will aid in the restoration of conditions on Crystal Springs Creek prior to the 1930s and 1940s.

The proposed excavation of the side channel would provide material needed to make stormwater improvements to the embankment ground of the proposed Bangert Island Riverfront Development economic project. This would raise approximately 100 acres of land removing them to an elevation above the 500 year flood elevation, in addition to 182 acres of land adjacent to the study area that would experience a reduction in flood risk through the raised elevations between the Missouri River and these areas.

1.2 Location and Description

The project is located adjacent to the Missouri River, in Saint Charles, Missouri, in St. Charles County Missouri, near the confluence of the Mississippi and Missouri Rivers. The project site is in the west half of Section 7 and the east half of Section 8, Township 46 North, Range 5 East at River Mile (RM) 31.1 to RM 29.0 on the left descending bank of the Missouri River.

Located north of the study area is the City's historic Main Street and Ameristar Casino and Hotel Complex, just west lies the Streets of Saint Charles Development, and on the southern end the study area is bounded by the Family Arena.

1.3 Previous Studies and/or Reports

Technical Report M56 – September 2011. Bangert Island HSR Model Missouri River Miles 34.3 to 28.1: Hydraulic Sediment Response Model. USACE St. Louis District – The Corps of Engineers, St. Louis District, conducted a side channel viability study for Bangert Island on the Missouri River between RM 31.1 and 29.0 at Saint Charles. The main objective of the study was to determine what conditions maximize the chance for a reopened Bangert Island side channel to avoid closure due to deposition. These conditions were also evaluated as to their effect on the navigation channel, I-70 (Blanchette) Bridge, and Ameristar Casino. The study was conducted in 2010-2011 using a Hydraulic Sediment Response (HSR) model and was intended to serve as a tool to guide the assessment of general trends that could be expected to occur in the Missouri River and Bangert Island side channel from a variety of imposed design alternatives.

1.4 Assumptions

- This report includes planning level of detail related to the potential environmental, regulatory, and NEPA requirements and are not determined based on detailed design.
- During future phases (e.g., detailed design, NEPA development, construction) the information included in this document would require review and updates to reflect current information.
- The Environmental Requirements document does not provide compliance with NEPA or other relevant federal, state, and local laws and policy that would be needed for implementation of a project (i.e. water development or economic development) on Bangert Island.

2 Existing Conditions

The section below describe the current setting or baseline conditions from which preliminary measures and conceptual plans will be developed.

2.1 Geology and Soils

The geology of the Bangert Island river floodplain area is comprised of Quaternary silt-capped alluvium which transitions to Quaternary loess in the upland areas. Both areas are underplayed by Paleozoic bedrock.

The majority of the soils on Bangert Island are comprised of alluvium of the Hanie-Treloar-Blake Complex, 0 to 2 percent slopes, frequently flooded. This is characterized by having a surface horizon that is approximately 0 to 7 inches deep made of a silty, fine sand or silty clay loam. From 7 to 60 inches soils are generally a mixture of fine sand or silt loam. These soils are typically hydric soils. There are no designated prime or unique farmlands within the study area; thus, there would be no impact to this resource from a proposed project.

A geotechnical analysis will be conducted in summer 2019 and will provide a more detailed geologic data set.

2.2 Wetlands and Other Waters of the U.S.

Bangert Island is listed as all wetland according to the National Wetland Inventory (NWI) mapping published by the USFWS (USFWS 2019). NWI wetlands are primarily freshwater forested/shrub wetland temporarily flooded. The remainder of the island is freshwater forested/shrub wetland seasonally flooded. Descriptions of these wetland types are available online at http://www.fws.gov/wetlands/Data/Mapper.html. The NWI features on Bangert Island are depicted in Figure 1.

Corps of Engineers resource specialist performed a cursory survey on Bangert Island in 2016 to determine if wetlands could occur. Preliminary findings indicated the presence of wetlands that exhibited hydric soils, wetland hydrology indicators, and hydrophytic vegetation. The wetlands observed in 2016 consisted of forested / emergent wetlands comprised primarily of black willow (*Salix nigra*), plains cottonwood (*Populus deltoides*), sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), boxelder (*Acer negundo*), smartweed (*Polygonum* spp.), and various sedge species (*Carex* spp.).

Corps of Engineers District Commanders shall ensure that adverse functional impacts to wetland resources are fully mitigated. Feasibility reports and accompanying environmental documents shall, as applicable, describe specific consideration given to protect, avoid, minimize, reserve, conserve, mitigate adverse impacts, and restore wetland resources associated with the recommended plan. This information shall be in sufficient detail to quantify (acres and appropriate quality indicator) to what extent the recommended plan will contribute to the National goal of no net loss of wetland resources.

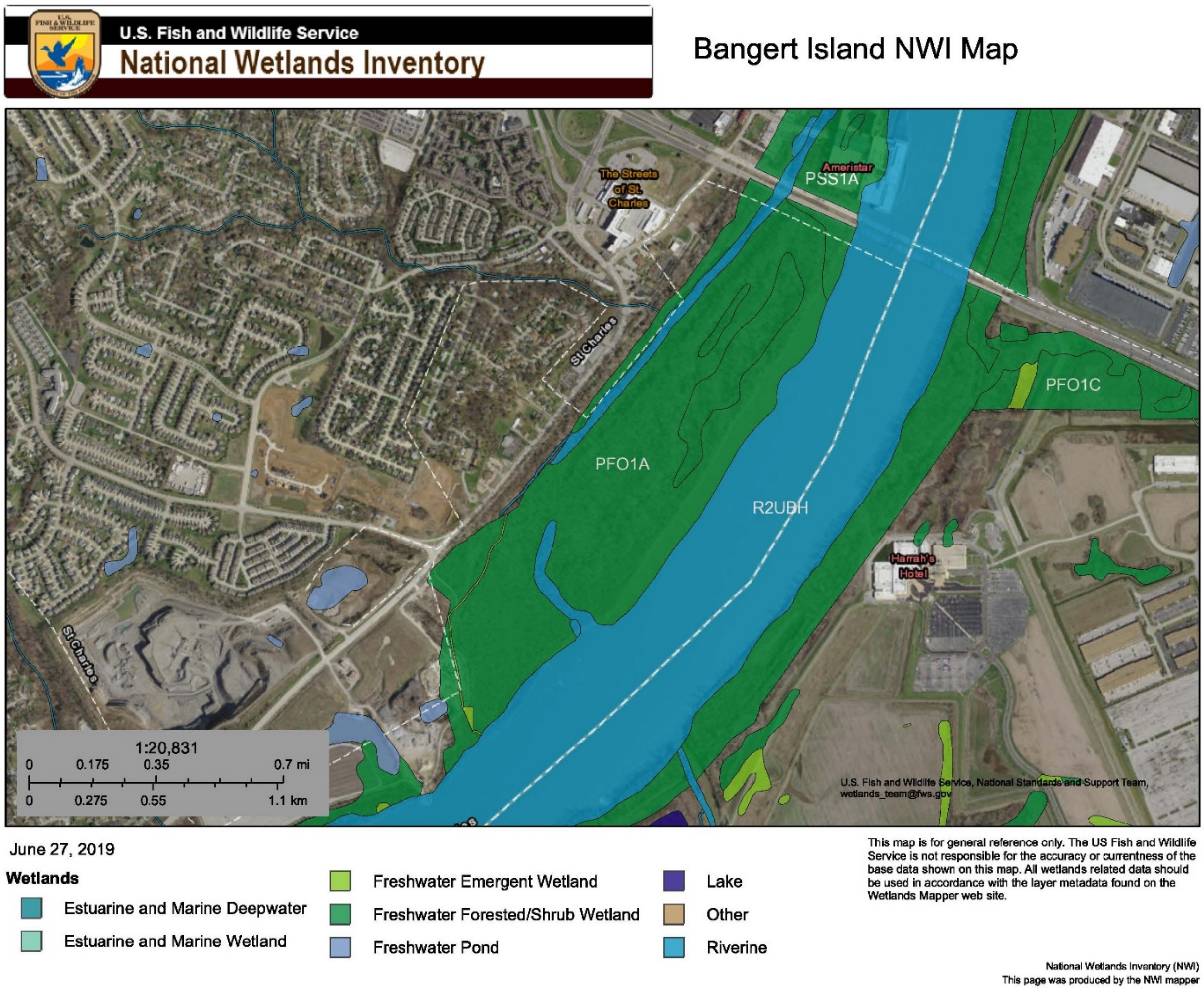


Figure 1. Bangert Island National Wetlands Inventory

2.3 Aquatic Resources

2.3.1 Surface Water Hydrology and Hydraulics

Bangert Island is located in the Cowmire Creek-Missouri River watershed that includes several large commercial developments in the upper reaches, extensive residential development, and I-70. The watershed covers approximately 23,000 acres of land.

The historic side channel separated Bangert Island from the bluff. It has been silted in during the 1940s through the 1980s when it stopped flowing completely through the length of it except during high water events. Crystal Springs Creek at one time flowed into the side channel of the Missouri River near the upper portion of Bangert Island from the west-northwest.

The Missouri River was once a wide braided channel with many side channels and chutes. When the BSNP was installed in the 1940s and 1950s the channel narrowed and deepened and was confined to a single channel with very few chutes and side channels. Currently the river flows along the southern edge of Bangert Island. The flow of the mainstem Missouri River is influenced by rainfall and seasonal snowmelt throughout the basin. Flow is partially regulated by a series of dams on the mainstem as well as the tributaries. Unregulated tributaries also provide a portion of the flow. Total annual runoff from the Missouri River varies considerably from year to year because of large variations in precipitation.

Channelization has altered the river cross section and increased the depth and flow velocity within the Missouri River channel on average compared to the pre-channelization river. The stabilized channel, levees, and riverbed degradation (lowering) have reduced both the connection of the river with the floodplain and the amount of groundwater recharge in the remaining floodplain.

2.3.2 Channel Geomorphology

Missouri River

Hydrographic surveys of the Missouri River were taken between 1998 and 2009 and referenced to the Construction Reference Plane (CRP). For the area of interest near the side channel, 0 ft. CRP roughly corresponds to a Mean Sea Level (MSL) elevation of 425.5 ft. The following bathymetric trends were observed in each study reach.

Table 1. Bathymetric Trends of Missouri River

River Miles	Description
34.3 – 32.3	There was a 90° bend in the river. After the initial bend, the flow was oriented toward the northeast. Depths along the thalweg reached 33ft. below CRP. A corresponding point bar formed along the RDB. The point bar reached a height of 3 ft. above CRP. Through the bend, a point bar constricted the navigation channel to approximately 400 ft.
32.8 – 31.1	A crossing occurred between RM 32.3 – 31.1 with depths reaching approximately 34 ft. below CRP. A divided flow transition began at approximately RM 32.3 and continued until the flow re-established itself along the RBD bank at RM 31.3. The length and complex geometry of this transition posed a potential modelling difficulty. A point bar developed at RM 313.2 due to a left bend in the river. The elevation of this bar acted as an impediment to channeling additional energy to the proposed side channel
31.1 – 28.9	The thalweg was located along the RDB. Depths along the thalweg reached -33.3 ft. CRP. A corresponding point bar formed along the LDB. The point bar reached a height of 2ft above CRP. The entrance of the proposed side channel would be built at RM 31.0 on the LDB. The exit of the channel would be built at RM 29.7
28.9 – 28.1	A crossing occurred between RM 28.9 and 28.1, with depths reaching approximately 34 ft. below CRP.

Side Channel

River control structures were built on the Missouri River in the 1930's – 1940's to provide a more navigable channel. As a result, the channel separating Bangert Island from the shoreline gradually silted in, and in the 1980's finally ceased to function as an island except in periods of high water. As a result of the current condition of the channel, the shallow water habitat has been reduced and flooding is common on properties along the shoreline.

A hydrology and hydraulics analysis is planned for the side channel in late 2019 to early 2020. Additional details will be added once this analysis is complete.

2.3.3 Aquatic Species

The Missouri River flows along the eastern side of the island. A wide variety of big river fish reside in the Missouri River. The USFWS (1999) developed a list of 91 fish species that are currently found in the lower Missouri River. Sport fish include channel catfish (*Ictalurus punctatus*), crappie (*Pomoxis* spp.), sauger (*Sander canadensis*), flathead catfish (*Pylodictis olivaris*), white bass (*Morone chrysops*), largemouth bass (*Micropterus salmoides),* bluegill (*Lepomis macrochirus*), walleye (*Sander vitreus*), northern pike (*Esox lucius*), and paddlefish (*Polyodon spathula*). Other common species in the lower Missouri River include shiners (*Notropis* spp.), river carpsuckers (*Carpiodes carpio*), shad (*Dorosoma* spp.), shorthead redhorse (*Moxostoma macrolepidotum*), buffalo (*Ictiobus* spp.), gar (*Atractosteus* spp. and *Lepisosteus* spp.), drum (*Aplodinotus* spp.), carp (*Cyprinus* spp. *Ctenopharyngodon* spp., and *Hypophthalmichthys* spp.), and goldeneye (*Hiodon alosoides*). Pallid (*Scaphirhynchus albus)* and shovelnose sturgeon (*Scaphirhynchus platorynchus*) are also found in the Lower Missouri River (USACE, 2001). Many reptile, amphibians, birds, and mammals utilize aquatic habitats for at least a portion of their lives. The old channel section provides wetland habitat for those species that don't require big rivers.

2.4 Water Quality

The Missouri River in St. Charles County is listed on the Section 303(d) list of impaired water bodies for E. coli. Municipal point source discharges, as well as nonpoint sources are believed to be the main sources of the pollutant.

Due to the proximity of the area to urban areas uphill from the Bangert Island study area. Runoff of herbicides, pesticides, and urban runoff would expected to be high. In addition, fertilizer runoff would likely boost nutrient levels within the project area, especially those areas with no outflow.

The sediment that reaches the Missouri River has impacts ranging from reducing fish habitat, creating taste and odor problems in drinking water, and impairing recreational opportunities. The side channel historically provided water quality benefits by slowing water before it discharged into the Missouri River.

2.5 Terrestrial Resources

2.5.1 Riparian Habitat

A typical wooded Missouri River island, the land features cottonwood (*Populus* spp.), sycamore (*Platanus occidentalis*), box elder (*Acer negundo*), silver maple (*Acer saccharinum*), and black willow (*Salix nigra*) trees. There is mix of relatively old trees and snags along with younger trees/shrubs creating a variety of habitats.

2.5.2 Wildlife

Wildlife typical of riparian hardwoods can be found on the site; white-tailed deer (*Odocoileus virginianus*), eastern wild turkey (*Meleagris gallopavo silvestris*), raccoons (*Procyon lotor*), mink (*Neovison vison*), opossums (*Didelphis virginiana*), as well as a variety of reptile, amphibian, as well as resident and migratory bird species.

2.6 Threatened and Endangered (T&E) Species

A request through USFWS's Information, Planning, and Conservation (IPaC) system revealed the following federally-listed threatened or endangered species could be present on or near the site:

Gray Bat (*Myotis grisescens*), Endangered - Gray bats roost in caves or mines year-round and use water features and forested riparian corridors for foraging and travel. Activities that adversely affect caves, mines, associated riparian areas, or will involve tree removal around these features particularly within stream corridors, riparian areas, or associated upland woodlots may adversely affect gray bats.

Indiana Bat (*Myotis sodalis*), Endangered, & Northern Long-eared Bat (*Myotis septentrionalis),* Threatened - These bat species hibernate in caves or mines only during the winter. In Missouri the hibernation season is considered to be November 1 to March 31. During the active season in Missouri (April 1 to October 31) they roost in forest and woodland habitats.

Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags 5 inches diameter at breast height (dbh) for Indiana bat, and 3 inches dbh for northern long-eared bat, that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Tree species often include, but are not limited to, shellbark or shagbark hickory (*Carya laciniosa* or *Carya ovata*), white oak (*Quercus alba*), cottonwood, and maple (*Acer* spp.). Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat.

Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. Activities that could impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, may adversely affect Indiana bats or northern long-eared bats.

Pallid Sturgeon (*Scaphorhynchus albus*), Endangered – Pallid sturgeon evolved in the diverse environments of the Missouri and Mississippi river systems. Floodplains, backwaters, chutes, sloughs, islands, sandbars, and main channel waters formed the large-river ecosystem that met the habitat and life history requirements of pallid sturgeon and other native large-river fishes. Pallid sturgeon have been documented over a variety of available substrates, but are often associated with sandy and fine bottom materials (Bramblett and White 2001; Elliott et al. 2004; Gerrity 2005; Snook et al. 2002; Swigle 2003; Peters and Parham 2008; Spindler 2008). Across their range, pallid sturgeon have been documented in waters of varying depths and velocities.

Spawning appears to occur between March and July, with lower latitude fish spawning earlier than those in the northern portion of the range. Adult pallid sturgeon can move long distances upstream prior to spawning, and females likely are spawning at or near the apex of these movements (Bramblett and White, 2001; DeLonay et al., 2009). This behavior can be associated with spawning migrations (U.S. Geological Survey (USGS), 2007; DeLonay et al., 2009). Spawning appears to occur over firm substrates, in deeper water, with relatively fast, turbulent flows, and is driven by several environmental stimuli including flow, water temperature, and day length (USGS 2007; DeLonay et al., 2009). Incubation rates are governed by and depend upon water temperature. Alteration in water depth, flow rate or pattern, or substrate, could adversely affect the pallid sturgeon.

Decurrent False Aster (*Boltonia decurrens*), Threatened - The decurrent false aster is threatened species. It is a perennial plant found in moist, sandy floodplains and prairie wetlands along the Illinois River. Although not very tolerant to prolonged flooding, this plant relies on periodic flooding to scour away other plants that compete for the same habitat. The species historical range included Illinois and Missouri.

2.7 Cultural Resources

This report summarizes previous cultural resources work, the hypothesized potential for the presence of cultural resources, and a short list of management recommendations for the project area. Cultural resources information and archaeological background review of the project area was conducted using information obtained from the NRHP database (online) and Missouri Department of Natural Resources (MDNR) Archaeological Viewer (online). In addition, the Corps of Engineers, Kansas City District has developed Geographic Information System (GIS) resources regarding the routes of the former channels of the Missouri River. The former channel data were derived from river survey projects conducted in the 19th to the early 20th century, including the Government Land Office (GLO) surveys in 1816 to 1819, the Corps 1879 Survey of the Missouri River, the Missouri River Commission 1894 Survey of the Missouri River, and the 1928 Missouri River channel alignment based on aerial photography on file at the Corps of Engineers, Kansas City District. Review of the former channel documentation indicates that the majority of the MRRP project areas have been crossed by the Missouri River in the historic past, often multiple times. In the former channels, the soils are likely composed of recently accreted alluvium, which would have little likelihood to contain prehistoric deposits, but could still contain historic archaeological sites or shipwrecks.

The Lewis and Clark campsite locations are based on the expedition reports and were mapped by the National Park Service. No physical evidence of their campsites has been recovered and the information has only been included as a reference.

GIS resources on historic shipwrecks on the Missouri River were developed by Corps of Engineers, Kansas City District based on information from two researchers, Captain H.M. Chittenden (1897) and E.B. Trail (n.d.). The locations of shipwrecks in the project areas are, in most cases, approximate (see Figure 2). There are discrepancies in the locations of shipwrecks between the Chittenden's report and Trail's maps. Chittenden's report was compiled mostly through interviews with steamship captains and eyewitness accounts while the maps compiled by E.B. Trail were developed primarily through review of local newspaper accounts and other record searches conducted over many years. As an additional note, these wrecks were often salvaged, looted, intentionally destroyed shortly after they occurred, or destroyed by natural process, and so it is possible that little or no physical evidence of the wrecks exists. Maps of the historic channel migrations for each project area are included to inform the selection of survey methods for future undertakings.

The available information has been provided to and early-stage planning. Any undertakings will require additional background review, consultation, and perhaps field survey.

The project area is located on accreted land on the western bank of the Missouri River south of the I-70 bridge between river miles 29.6 and 31.2. The area has been crossed by the 1928 Missouri River alignment and partly by the 1816 and 1894 river alignments. Because there are four steamship wrecks mapped in the project area the river must have hugged this bank in the middle-late nineteenth century when steamboats were common. Background historic research should be performed for additional location and historic context. There is little potential for prehistoric or early historic sites in the project area although there may be historic sites that post-date 1928.

Almost none of the project area has been professionally surveyed but a few have been on adjacent lands. A proposed interceptor survey parallels the Katy Trail, which is adjacent to the western edge of the project area. A small cell tower survey occurred in

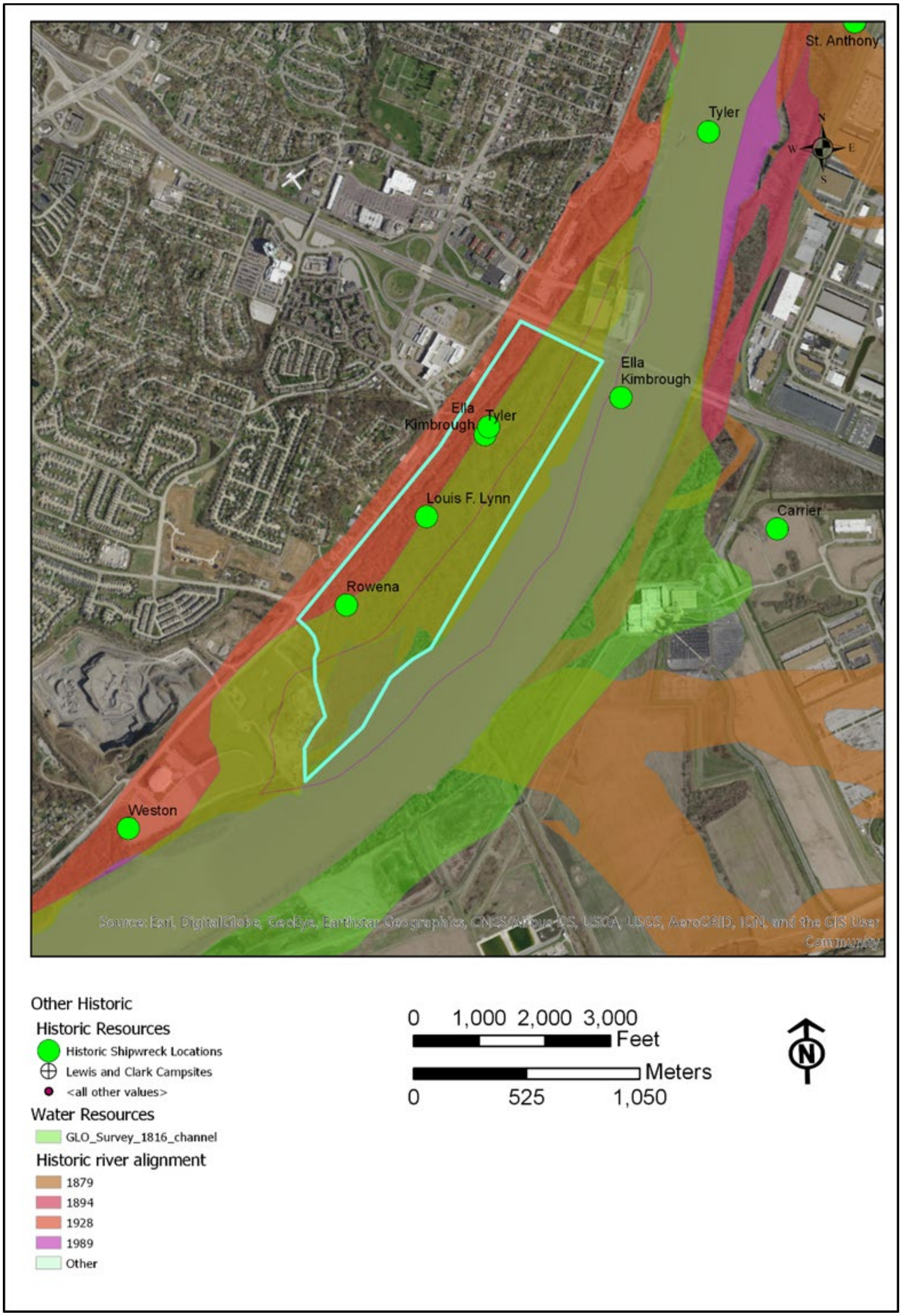


Figure 2. Historic Shipwreck Locations and Missouri River Historic and Current Alignments in the Bangert Island Study Area

the northwest corner and a large survey for a quarry occurred along the southwest edge. One site (not described in the online database), is recorded in that quarry area but has been destroyed. Across the river, an entertainment district survey located several historic farmsteads.

The potential for cultural resources in the Bangert Island study area, other than possibly steamboats, is low because the land has accreted in the past 80 years or so. The possibility for steamboat wrecks in the area should be considered and historic research performed to explore the possibility.

2.8 Land Use

Bangert Island is currently being used by St. Charles County as a park area with approximately four miles of natural surfaced trails utilized for hiking, biking, bird watching, etc. The remainder of the land is maintained as a natural area comprised of habitats that primarily consist of bottomland hardwood forest. The Katy Trail is located adjacent to the northwest boundary of the project. Immediately southwest of Bangert Island is an active quarry site owned by LaFarge Aggregates, and southwest of that is the Family Arena. Along the western edge of the project is a mixture of residential, Industrial, and commercial properties. To the north of Bangert Island is I-70 and the Ameristar Casino.

2.9 Hazardous, Toxic, and Radioactive Waste

There are five hazardous waste generators registered with RCRA near the north and west side of the proposed project. They are the Kmart, Noahs Ark, United Refrigeration Inc., Quick Trip, and Whittaker Construction Hidden Oaks. In addition there are a number of water dischargers with NPDES permits along the western edge of the project. Only one site has had a toxic release, which is located near the south edge of Bangert Island. It is Pace Construction Company St. Charles Plant.

2.10 Recreation

Bangert Island is on the Missouri River just south of the Blanchette Bridge. Guests may enter the 160-acre park from the Katy Trail entrance along Old South River Road in St. Charles and then cross a slough that connects Bangert Island to the mainland. While using the park's 4 miles of natural surface trail for hiking or mountain biking, guests may encounter white-tailed deer, turkey, raccoons, opossums, and a variety of songbirds. In addition to bird-watching, hiking, bicycling, and photography, park guests may also fish along the banks of the Missouri River that flows below the park - although state fishing regulations apply and hunting is prohibited.

2.11 Socioeconomics and Environmental Justice

Louis H. Bangert Memorial Wildlife Area is owned by Saint Charles County and leased and managed by St. Charles County Parks and Recreation and the Missouri Department of Conservation (MDC).

Executive Order 12898, issued in 1994, directs federal agencies to incorporate environmental justice as part of their mission by identifying and addressing the effects of programs, policies, and activities on minority and low-income populations.

2.12 Navigation

A 9-foot deep by 300-foot wide navigation channel is maintained on the Missouri River by USACE through the Bank Stabilization and Navigation Program (BSNP). The system uses a series of revetments, dikes, and other structures to create a self-scouring navigation channel from its mouth near St. Louis, Missouri, up to Sioux City, Iowa. Commercial navigators operate tow boats pushing barges to transport various commodities along the river. Although not all are active, there are approximately 113 privately owned and operated docks used to load and unload barges along the Missouri River. The portion of the Missouri River adjacent to Bangert Island occurs within the navigation channel.

2.13 Aesthetics and Visual Resources

The area is currently grown into a forested area with relatively large trees covering much of the island. During low flow periods sandbars adjacent the Missouri River exist and are a popular spot with boaters and fishermen. To the west of the island is an urban area with commercial and industrial buildings.

3 Environmental Compliance

Statutory and environmental compliance with the applicable laws and regulations would need to be completed prior to initiating and during construction of a proposed project and the environmental compliance for a proposed plan would be need to be achieved upon coordination of a NEPA document with appropriate agencies, organizations, and individuals for their review and comments.

The summaries of each law and regulation discussed include a preliminary assessment of the potential for applicability to any of the laws and regulations of a proposed project on Bangert Island. During future phases (e.g., detailed design, NEPA development, construction) the information included in this document would require review and updates to reflect current information.

3.1 Laws and Regulations

3.1.1 Archeological Resources Protection Act, 16 USC 470, et seq. Protects Archaeological Sites On Federal And Indian Lands

Conditions of the Archeological Resources Protection Act (ARPA) are: No Excavation Or Removal From Federal Or Indian Land Without A Permit From The Federal Land Manager; Prohibits trafficking in archaeological resources; Land Manager Must Notify Any Affected Tribe; ARPA Permit Not Subject To NHPA; Violations Of ARPA Can Be A Federal Crime.

Any land disturbance activities on Federal or Indian lands would trigger the ARPA process and require a permit from the land managing agency.

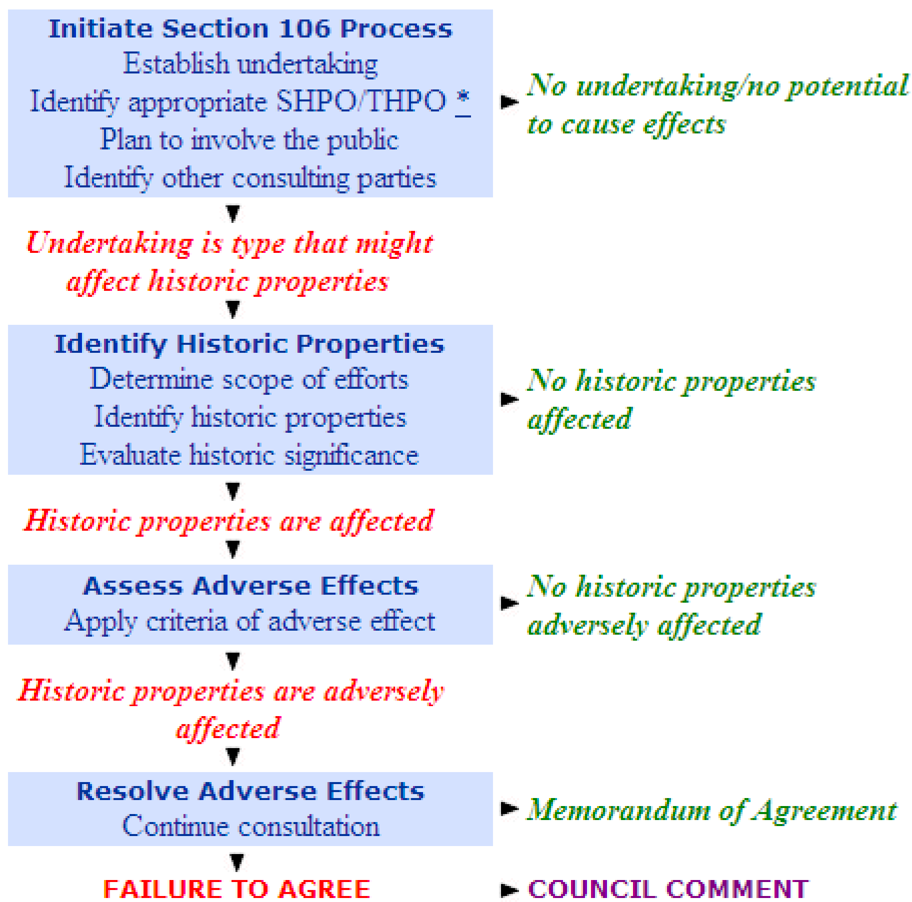
As no Federal or Indian lands exist within the Bangert Island study area it is unlikely ARPA coordination will be required for implementation of a proposed construction project.

3.1.2 National Historic Preservation Act of 1966, as amended, 54 USC 300101 et seq.

Section 106 –Requires agencies to consider the effect of a federal undertaking on historic resources; includes a consultation process.

The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, *prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register*. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking.

Any ground disturbing or other undertaking that includes potential for removal or alteration of any district, site, building, structure, or object that is included in or eligible for inclusion in the Nation Register of Historic Places (NHRP) would trigger the Section 106 process. The Section 106 process flow chart for determining affect can be found below. This should be done in consultation with the State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation officer (THPO).



Section 110 –Requires agencies to preserve historic resources under the agency's jurisdiction.

Applies to historic and pre-historic resources owned or controlled by Federal agencies. Agencies must establish a preservation program of identification, evaluation and nomination of properties to NHRP.

Review Process of effects to National Historic Landmarks. Anticipatory Demolition –an agency may not grant a permit if historic resources have been destroyed in order to avoid Section 106. This section of the law only applies if the lead agency is a Federal agency.

3.1.3 Protection & Enhancement of the Cultural Environment (Executive Order 11593)

Federal agencies are required to preserve, restore and maintain federally owned sites and objects of historical, architectural or archaeological significance.

Federal agencies are required to locate, inventory, and nominate to the NRHP all properties under their control/jurisdiction that appear to quality for listing. This Executive Order only applies if the lead agency is a Federal agency.

As no Federal Lands are involved with this proposed action, EO 11993 would not be applicable.

3.1.4 American Indian Religious Freedom Act of 1978 (AIRFA), 42 USC 1996

On and after August 11, 1978, it shall be the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to *access to sites*, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

The President shall direct the various Federal departments, agencies, and other instrumentalities responsible for administering relevant laws to evaluate their policies and procedures in consultation with native traditional religious leaders in order to determine appropriate changes necessary to protect and preserve Native American religious cultural rights and practices.

The lead agency would consult with all Native American Tribes that may have an affiliation with the site due to past or present activities to determine if there are religious cultural rights and practices tied to that land.

3.1.5 1990 - Native American Graves Protection and Repatriation Act (Public Law 101-601; 25 USC § 3001-13; 104 Stat. 3042)

The Native American Graves Protection and Repatriation Act establishes rights of Native American and other indigenous people with respect to cultural items. Cultural items include human remains, funerary objects, sacred objects and objects of cultural patrimony. A claiming group must be able to establish “cultural affiliation”

The Native American Graves Protection and Repatriation Act places controls on the excavation and removal of cultural items from federal and tribal lands. Institutions that receive federal funding must inventory their collections and repatriate human remains and cultural items. Criminalizes trafficking in cultural items.

If during ground disturbing activities any remains or cultural items are found, then construction would halt and the lead agency notified and the site would be examined by a qualified archaeologist. If there are items identified above consultation with the SHPO and affiliated tribes would take place.

3.1.6 Clean Air Act, as amended, 42 U.S. C. 7401-7671g, et seq.

The Clean Air Act (CAA) is the comprehensive federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes the U.S. Environmental Protection Agency (USEPA) to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants.

Federally supported activities will not: Cause or contribute to any new violations, or Interfere with provisions in the SIP for maintenance of any standard, or; Increase the frequency of any existing violations, or; Delay timely attainment of any standards, interim emission reductions, or milestones. Since Saint Charles County is designated as nonattainment for 8-hour ozone with a classification as marginal (NRCS, 2019). Based on discussions with the MDNR, no coordination related air quality would likely be needed, except for construction of best management practices (BMPs), such as spraying water on exposed soil to keep the dust down.

A proposed project would need to be evaluated for the potential to cause impacts to air quality (e.g., fugitive dust and internal combustion engine emissions) and whether the impacts would be to a measurable degree.

3.1.7 Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403)

Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) prohibits unauthorized obstruction/alteration of navigable waters of the U.S. It regulates construction of structures, excavation/deposit of materials, and other work affecting course, location, condition, or capacity.

Depending upon the design of a proposed project, Section 10 may be triggered. Any project that affects the above mentioned feature of navigable waters would need to consult with the Corps of Engineers-Regulatory Branch. If a project implemented on or near Bangert Island affects the Missouri River a Section 10 permit would be needed.

3.1.8 Clean Water Act (Federal Water Pollution Control Act), 33 U.S.C. 1251, et seq.

Section 404

Section 404(a) reads: “The Secretary [of the Army] may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill material into navigable waters at specified disposal sites.”

Due to the nature of the potential project on Bangert Island, that would likely require excavation, and the likely presence of wetlands, a Section 404 permit will be needed to comply with the Clean Water Act (CWA). The applicant would need to consult with the Corps of Engineers, St. Louis District-Regulatory Branch to obtain the permit.

There are several types of permits depending on the size and severity of the impact to waters of the US. Nationwide permits (NWPs) typically cover a wide range of smaller projects and have specific permit conditions that must be followed in order to use one of these permits. Regional general permits (RGPs) are similar but have a smaller area of applicability than the NWPs. For project impacting waters of the US that don't meet the conditions of a NWP or RGP then an individual permit must be issued. It is a more involved process that requires a public comment period.

Section 402

Section 402 of the Clean Water Act requires that all construction sites on an acre or greater of land, as well as municipal, industrial and commercial facilities discharging wastewater or stormwater directly from a point source (a pipe, ditch or channel) into a surface water of the United States (a lake, river, and/or ocean) must obtain permission under the National Pollutant Discharge Elimination System (NPDES) permit. All NPDES permits are written to ensure the Nation's receiving waters will achieve specified Water Quality Standards (WQS).

If a proposed project has ground disturbing activity over an acre then a NPDES permit will be required under section 402 of the CWA.

In the State of Missouri, the issuance of NPDES Permits is delegated to the MDNR. A stormwater pollution prevention plan (SWPPP) that shows that BMPs are being used to reduce water pollution and Stormwater runoff is a requirement of Issuance of a Section 402 NPDES permit.

Section 401

Under Section 401 of the Clean Water Act (CWA), a federal agency may not issue a permit or license to conduct any activity that may result in any discharge into waters of the United States unless a state or authorized tribe where the discharge would originate issues a Section 401 water quality certification verifying compliance with existing water quality requirements or waives the certification requirement.

The issuance of a Section 404 or Section 402 permit is required for a project then a Section 401 water quality certification would need to be acquired. Most NWPs have a preapproved water quality certification as long as a set of conditions are followed.

If an individual Section 404 permit is required a separate Section 401 water quality certification process would be required. In Missouri the issuance of Section 401 Water Quality Certification is designated to MDNR. To receive certification, a copy of all comments received during the public comment period must be sent along with the Section 401 application. Certification must be received before construction activities can commence.

3.1.9 Floodplain Management (Executive Order 11988)

- Authority is solely by Executive Order- Executive Order 11988, Floodplain Management (President Carter)

- Amended by Executive Order 12148, Federal Emergency Management (President Carter)
- Amended by Executive Order 13690, Establishing a Federal Flood Risk Management Standard (President Obama)

Executive Order (EO) 11988, Floodplain Management, requires Federal agencies to determine whether a proposed action would occur within a floodplain. EO 11988 directs Federal agencies to avoid floodplains unless the agency determines that there is no practicable alternative. In accordance with EO 11988, construction of new facilities within the 100-year floodplain is avoided, where practicable.

Implementation of a proposed project in the Bangert Island study area would occur in a floodplain and the parameters of this EO would apply. In accordance with EO11988, a Finding of No Practicable Alternative (FONPA) would need to be prepared and approved by designated officials for all projects impacting floodplain areas.

3.1.10 Protection of Wetlands (Executive Order 11990)

Under this EO each Federal agency must provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds: there is no practical alternative to such construction; the proposed action includes all practical measures to minimize harm to wetlands that may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors (Section 2(a)). Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands (Section 2(b)).

This project is likely to occur in wetlands and a wetland delineation in accordance with the *1987 Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Version 2.0) (USACE 2010) would be needed to determine impacts to wetlands.

If there are unavoidable adverse impacts to wetlands then mitigation may be required on a value to value basis based on a habitat assessment.

3.1.11 Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, et seq.

The Watershed Protection and Flood Prevention Act of 1954 (WPFPA) is a law that protects watersheds from erosion, sedimentation, and flooding. Under WPFPA, federal agencies work with local organizations to develop and implement flood control and watershed runoff plans. Flooding and poor watershed runoff management both damage the environment by carrying sediment and pollutants into streams and rivers. Sedimentation and pollution in water systems harms ecosystems and makes rivers and lakes unsuitable for fishing, swimming, or drinking. Federal and local agencies have also implemented numerous flood control plans to prevent property damage and loss of life that can occur from flooding.

3.1.12 Endangered Species Act, 16 U.S.C. 1531, et seq.

When Congress passed the Endangered Species Act of 1973, it recognized that many of our nation's native plants and animals were in danger of becoming extinct. Congress further expressed that our rich natural heritage was of "esthetic, ecological, educational, recreational, and scientific value to our Nation and its people."

The purposes of the 1973 Act are to protect these endangered and threatened species and to conserve "the ecosystems upon which endangered and threatened species depend" and to conserve and recover listed species.

Section 7

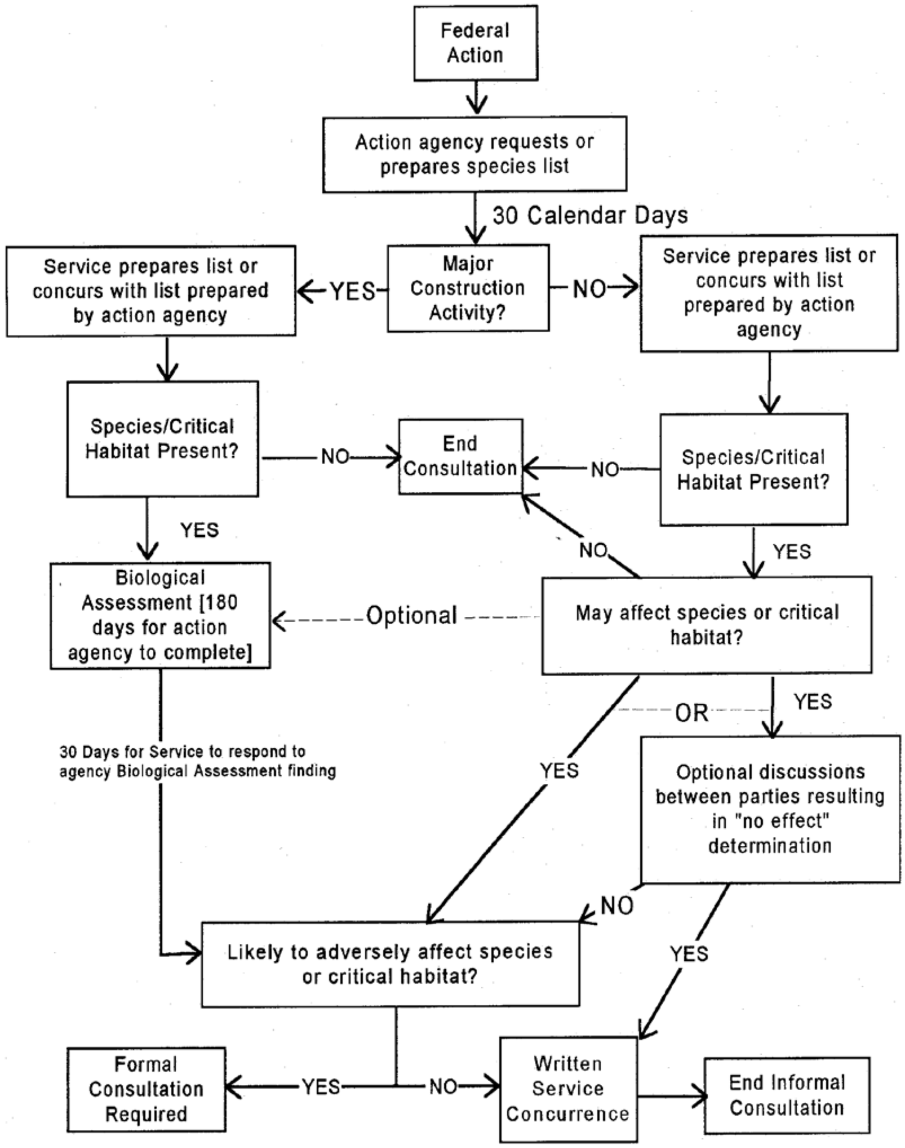
Section 7 of the Act, called "Interagency Cooperation," is the mechanism by which Federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the existence of any listed species.

Under Section 7, Federal agencies must consult with the U.S. Fish and Wildlife Service (USFWS) when any action the agency carries out, funds, or authorizes (such as through a permit) may affect a listed endangered or threatened species.

<u>Informal Consultation</u>

This process usually begins as informal consultation. A Federal agency, in the early stages of project planning, approaches the USFWS and requests informal consultation. Discussions between the two agencies may include what types of listed species may occur in the proposed action area, and what effect the proposed action may have on those species.

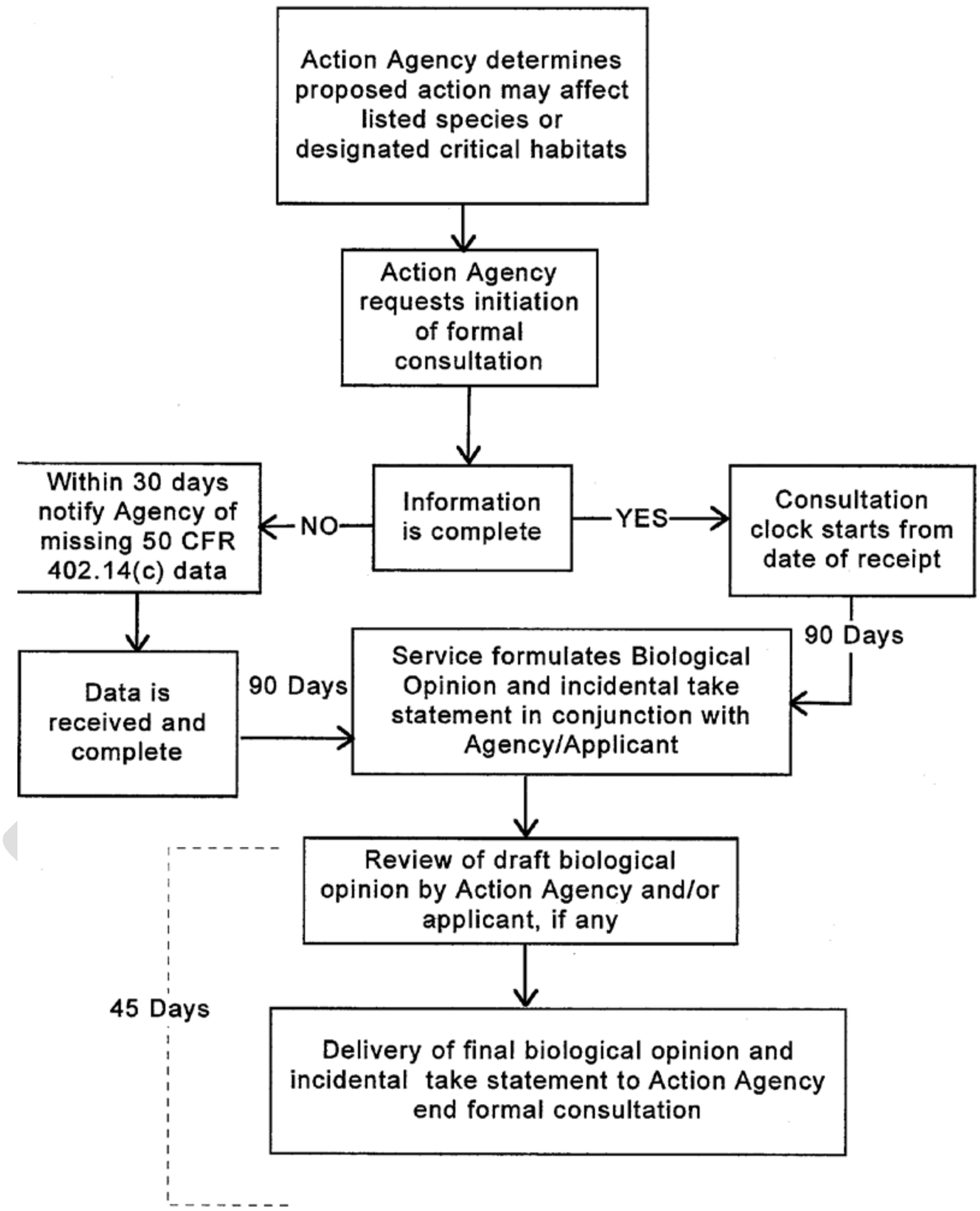
If the Federal agency, after discussions with the USFWS, determines that the proposed action is not likely to affect any listed species in the project area, and if the USFWS concurs, the informal consultation is complete and the proposed project moves ahead. If it appears that the agency's action may affect a listed species, that agency may then prepare a biological assessment to assist in its determination of the project's effect on a species. A flow chart of the informal consultation process can be found below.



Formal Consultation

When a Federal agency determines, through a biological assessment or other review, that its action is likely to adversely affect a listed species, the agency submits to the USFWS a request for formal consultation. During formal consultation, the USFWS and the agency share information about the proposed project and the species likely to be affected. Formal consultation may last up to 90 days, after which the USFWS will prepare a biological opinion on whether the proposed activity will jeopardize the continued existence of a listed species. The USFWS has 45 days after completion of formal consultation to write the opinion.

In making a determination on whether an action will result in jeopardy, the USFWS begins by looking at the current status of the species, or "baseline." Added to the baseline are the various effects – direct, indirect, interrelated, and interdependent – of the proposed Federal action. The USFWS also examines the cumulative effects of other non-Federal actions that may occur in the action area, including state, tribal, local, or private activities that are reasonably certain to occur in the project area. A flow chart of the formal consultation process can be found below.



The Bangert Island study area has potential habitat for threatened and endangered species (e.g. bat species) and implementation of a proposed project would likely require formal consultation with the USFWS to determine what impacts may occur and any steps needed to reduce adverse impacts on those species.

3.1.13 Fish and Wildlife Coordination Act, 16 U.S.C. 661, et seq.

The purpose of the Fish and Wildlife Coordination Act (FWCA) is to assure consideration of wildlife impacts of federal water development projects.

To ensure fish and wildlife resources receive equal consideration to other features of water resource development projects, the FWCA requires Federal agencies involved with such projects to first consult with the USFWS and the respective state fish and wildlife agencies regarding the potential impacts of the project on fish and wildlife resources. The results of the consultation are not binding, but the Federal agency must strongly consider input received during consultation to prevent loss or damage to wildlife resources and provide for any measures taken to mitigate such impacts.

Whenever the waters or channel of a body of water are modified by a Federal agency, or by any other entity where a Federal permit is required, adequate consideration must be made for the conservation, maintenance and management of wildlife resources and habitat. The use of the waters, land or interests for wildlife conservation must be in accordance with plans approved jointly by: the head of the department or agency exercising primary administration; the Secretary; the head of the state agency exercising administration of the wildlife resources.

The Federal agency usually has to develop a Memorandum of Agreement and pay the USFWS for their time to complete planning aid letters and a Coordination Act Report (CAR). The draft and final CARs typically are completed concurrently and are attached to the draft and final NEPA documents, respectively.

3.1.14 Bald and Golden Eagle Protection Act 16 U.S.C. 668-668d

The Bald and Golden Eagle Protection Act enacted in 1940, and amended several times since then, prohibits anyone, from "taking" bald and golden eagles, including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The U.S. Department of Interior can issue intentional take permits.

Any project that could potentially commit a “taking” as defined above needs to consult with USFWS and Missouri Department of Conservation (MDC) to determine if there are any nest or roost sites within or near a project area. A project is typically required to be outside a perimeter around a nest unless no other alternative exists.

No known eagle nest site are located within the project area therefore a “taking” would not be likely. A survey of the area prior to construction would likely be required to ensure that no new nests are present as the Bangert Island study area harbors potentially suitable habitat for bald and golden eagles. Additionally, at a minimum coordination with the USFWS and MDC regarding a proposed project should be completed to document compliance with the Bald and Golden Eagle Protection Act.

3.1.15 Migratory Bird Treaty Act 16 U.S.C. 703-712

The MBTA was initially passed in 1918 and was designed for the protection of game birds, but includes all other migratory birds.

MBTA Prohibitions

> ". . . it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, or any part, nest, or eggs of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or in part, of any such bird or any part, nest, or egg thereof, included in the terms of the conventions between the United States (and Great Britain, Mexico, Japan and the Soviet Union.)"

Each project should be designed to minimize its impact on migratory birds and their habitat. This can be done by various means such as timing clearing activities outside of nesting season, avoiding snags, and surveying the area for bird nests by a qualified biologist prior to clearing activity.

The Bangert Island study area has potential habitat for migratory birds. Appropriate seasonal construction restrictions would need to be integrated into project plans prior to implementation of a project to minimize effect to migratory birds as a result of construction. If seasonal restrictions cannot be implemented, surveys should be conducted, following appropriate survey protocol, to avoid impacts to migratory birds.

3.1.16 Farmland Protection Policy Act, 7 U.S.C. 4201, et. seq.

The Farmland Protection Policy Act (FFPA) is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that to the extent possible federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. Federal agencies are required to develop and review their policies and procedures to implement the FPPA every two years.

The FPPA does not authorize the Federal Government to regulate the use of private or nonfederal land or, in any way, affect the property rights of owners.

For the purpose of FPPA, farmland includes prime farmland, unique farmland, and lands of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land

No qualifying land exists within the Bangert Island study area, therefore evaluation of impacts to prime farmland, unique farmland, and lands of statewide or local importance would be need and no consultation with the U.S. Department of Agriculture Natural Resources Conservation Service would be required.

3.1.17 Land and Water Conservation Fund Act, 16 U.S.C. 4601-4, et seq.

The Land and Water Conservation Fund was established by Congress in 1964 to fulfill a bipartisan commitment to safeguard our natural areas, water resources and cultural heritage, and to provide recreation opportunities to all Americans. Using zero taxpayer dollars, the fund invests earnings from offshore oil and gas leasing to help strengthen communities, preserve our history and protect our national endowment of lands and waters.

3.1.18 Invasive Species (EO 13112)

Each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law,

1. identify such actions;
2. subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded; (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and (vi) promote public education on invasive species and the means to address them; and
3. not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

Federal agencies shall pursue the duties set forth in this section in consultation with the Invasive Species Council, consistent with the Invasive Species Management Plan and in cooperation with stakeholders, as appropriate.

It is currently unknown if any invasive species occur in the Bangert Island study area. A survey would be required to document the presence of invasive species and appropriate measures to comply with EO 13112 would need to be integrated into project plans prior to construction.

3.1.19 National Environmental Policy Act, 42 U.S.C. 4321, et seq.

The NEPA was one of the first laws ever written that establishes the broad national framework for protecting our environment. NEPA's basic policy is to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment.

NEPA requirements are invoked when airports, buildings, military complexes, highways, parkland purchases, and other federal activities are proposed. Environmental Assessments (EAs) and Environmental Impact Statements (EISs), which are assessments of the likelihood of impacts from alternative courses of action, are required from all Federal agencies and are the most visible NEPA requirements.

Each Federal agency has their own regulations for implementing NEPA. When more than one Federal agency is involved, then the designated lead Federal agency's implementation regulations would be used. The Corps of Engineers NEPA implementation regulations can be found in ER 200-2-2.

3.1.20 Environmental Justice (Executive Order 12898)

Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations - was issued by President William J. Clinton in 1994. Its purpose is to focus federal attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities.

The EO directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law. The order also directs each agency to develop a strategy for implementing environmental justice. The order is also intended to promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation.

Prior to implementation of a project on Bangert Island an evaluation would be required to determine if any actions would disproportionally adversely impact minority or low income communities.

3.1.21 Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)

In response to a growing concern over health and environmental risks posed by hazardous waste sites, Congress established the Superfund Program in 1980 to clean up these sites. The Superfund Program is administered by the USEPA.

3.2 National Environmental Policy Act

3.2.1 Overview

NEPA establishes a national environmental policy, sets goals for the protection, maintenance and enhancement of the environment, and establishes a process for implementing these goals within federal agencies. All federal agencies must incorporate environmental considerations in planning and decision-making. NEPA also established the President's Council on Environmental Quality (CEQ), empowered to develop regulations by which federal agencies would comply with NEPA. These regulations are published at 40 CFR 1500-1508.

The Corps of Engineers has promulgated Engineer Regulation 200-2-2 Procedures for Implementing NEPA to provide Corps of Engineers internal guidance for adhering to the procedural provisions of NEPA. ER 200-2-2 supplements, and is used in conjunction with, the CEQ regulations. Within the CEQ NEPA regulations and ER 200-2-2, a process is set forth wherein the Corps must assess the environmental impact of proposed federal actions and consider reasonable alternatives to Corps proposed actions.

Within the regulations, a process is set forth where the Corps of Engineers must assess the environmental effects of proposed Federal actions. For those actions with the greatest potential to create significant environmental effects, the consideration of the proposed action and alternatives is presented in an Environmental Impact Statement (EIS). Where the potential effects of the proposed action are unknown or believed to not be significant, the agencies prepare an EA.

The CEQ's NEPA Regulations do not contain a detailed discussion regarding the format and content of an EA, but an EA must briefly discuss the:

For Federal actions that need to comply with NEPA there are three pathways depending on the size and impacts of the action. They are Categorical Exclusions, Environmental Assessments, and Environmental Impact Statements.

3.2.2 Categorical Exclusion

A Categorical Exclusion (CatEx) is a class of actions that a Federal agency has determined, after review by CEQ, do not individually or cumulatively have a significant effect on the human environment and for which, therefore, neither an environmental assessment nor an environmental impact statement is normally required.

Each Federal agency has a set of Cat Ex's that are approved specific to that agencies actions. They include such things as purchasing equipment, building a building on already disturbed land, and rehabilitation of a project back to its original design, just to name a few.

3.2.3 Environmental Assessment

An Environmental Assessment (EA) is a planning and decision-making tool. The objectives of an EA are to: minimize or avoid adverse environmental effects before they occur; and. incorporate environmental factors into decision making. The end result of the EA process is either a Finding of No Significant Impact (FONSI) or if there are significant adverse impacts a Notice of Intent (NOI) to prepare an EIS is developed.

The typical process required for preparation of an EIS are:

Scoping: Meeting or public notice to stakeholders and public to determine any issues that need analyzed in the course of the EA.

EA and Draft FONSI: Based on both agency expertise and issues raised by the public, the agency prepares a Draft EA and FONSI with a description of the affected environment, a reasonable range of alternatives, and an analysis of the impacts of each alternative.

Notice of Availability and Comment: A public notice is posted and affected individuals then have the opportunity to provide comments on the documents.

Final EA and FONSI: Based on the comments on the Draft EA and FONSI, the agency prepares a final EA and the FONSI is signed by the Decision Maker.

3.2.4 Environmental Impact Statement

An Environmental Impact Statement (EIS) is a document required by the NEPA for certain actions "significantly affecting the quality of the human environment". An EIS is a tool for decision making. It describes the positive and negative environmental effects of a proposed action, and it usually also lists one or more alternative actions that may be chosen instead of the action described in the EIS.

In particular, an EIS acts as an enforcement mechanism to ensure that the federal government adheres to the goals and policies outlined in the NEPA. An EIS should be created in a timely manner as soon as the agency is planning development or is presented with a proposal for development. The statement should use an interdisciplinary approach so that it accurately assesses both the physical and social impacts of the proposed development. In many instances an action may be deemed subject to NEPA's EIS requirement even though the action is not specifically sponsored by a federal agency. These factors may include actions that receive federal funding, federal licensing or authorization, or that are subject to federal control.

Every EIS is required to analyze a No Action Alternative, in addition to the range of alternatives presented for study. The No Action Alternative identifies the expected environmental impacts in the future if existing conditions were left as is with no action taken by the lead agency. Analysis of the No Action Alternative is used to establish a baseline upon which to compare the proposed "Action" alternatives. Contrary to popular belief, the "No Action Alternative" doesn't necessarily mean that nothing will occur if that option is selected in the Record of Decision.

NEPA requires assessment of cumulative impacts in the decision-making process. A cumulative impact is defined as “the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR§1508.7). Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. These actions include on-site and off-site projects conducted by government agencies, businesses, or individuals that are affecting or would affect the same environmental resources as would be affected by the proposed action. The cumulative action identification and analysis methods are based on the policy guidance and methodology originally developed by CEQ (1997) and an analysis of current case law. Cumulative impacts are determined by adding the impacts of the alternatives being considered with other past, present, and reasonably foreseeable future actions.

The typical process required for preparation of an EIS are:

Scoping: The first meetings are held to discuss existing laws, the available information, and the research needed. The tasks are divided up and a lead group is selected. Decision makers and all those involved with the project can attend the meetings.

Notice: The public is notified that the agency is preparing an EIS. The agency also provides the public with information regarding how they can become involved in the process. The agency announces its project proposal with a notice in the Federal Register, notices in local media, and letters to citizens and groups that it knows are likely to be interested. Citizens and groups are welcome to send in comments helping the agency identify the issues it must address in the EIS (or EA).

Draft EIS (DEIS): Based on both agency expertise and issues raised by the public, the agency prepares a Draft EIS with a full description of the affected environment, a reasonable range of alternatives, and an analysis of the impacts of each alternative.

Comment: Affected individuals then have the opportunity to provide feedback through written and public hearing statements.

Final EIS (FEIS) and Proposed Action: Based on the comments on the Draft EIS, the agency writes a Final EIS, and announces its Proposed Action. The public is not invited to comment on this, but if they are still unhappy, or feel that the agency has missed a major issue, they may protest the EIS to the Director of the agency. The Director may either ask the agency to revise the EIS, or explain to the protester why their complaints are not actually taken care of.

Re-evaluation: Prepared following an approved FEIS or ROD when unforeseen changes to the proposed action or its impacts occurs, or when a substantial period of time has passed between approval of an action and the planned start of said action. Based on the significance of the changes, three outcomes may result from a re-evaluation report: (1) the action may proceed with no substantive changes to the FEIS, (2) significant impacts are expected with the change that can be adequately addressed in a Supplemental EIS (SEIS), or (3) the circumstances force a complete change in the nature and scope of the proposed action, thereby voiding the pre-existing FEIS (and ROD, if applicable), requiring the lead agency to restart the NEPA process and prepare a new EIS to encompass the changes.

Supplemental EIS (SEIS): Typically prepared after either a Final EIS or Record of Decision has been issued and new environmental impacts that were not considered in the original EIS are discovered, requiring the lead agency to re-evaluate its initial decision and consider new alternatives to avoid or mitigate the new impacts. Supplemental EISs are also prepared when the size and scope of a federal action changes, when a significant period of time has lapsed since the FEIS was completed to account for changes in the surrounding environment during that time, or when all of the proposed alternatives in an EIS are deemed to have unacceptable environmental impacts and new alternatives are proposed.

Record of Decision (ROD): Once all the protests are resolved the agency issues a Record of Decision which is its final action prior to implementation. If members of the public are still dissatisfied with the outcome, they may sue the agency in Federal court.

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