

**DRAFT
ENVIRONMENTAL ASSESSMENT**

**PIGGOTT RELIEF WELLS – TEST REACH
CLAY COUNTY, ARKANSAS**

INTRODUCTION

The U.S. Army Corps of Engineers, Memphis District, has prepared this environmental assessment (EA) to evaluate potential impacts associated with the construction of an approximately 2-mile long test reach of relief wells and associated drainage landside of the St. Francis River Levee in Clay County, Arkansas.

The Memphis District has completed the final design for a test reach of seepage control measures in the Piggott sub-area of the St. Francis River that was included in the General Design Memorandum 104, Supplement No. 3, dated November 1987. As presented in the General Design Memorandum 104, Supplement No. 3, the initial plan was for the construction of a 15 mile long, 0.5 year frequency seepage interceptor channel designed to maintain a 5-foot water table within the Piggott sub-area (between levee miles 7.2 and 23.0) as a pilot project with implementation of future improvements to be dependent on operational success of the pilot unit.

After detailed design and consultation with local interests, the amount of agricultural land that would be taken out of production to accommodate the interceptor channel resulted in opposition to the project. Consequently, an updated seepage study was completed in April 2004 to provide recommendations for seepage control measures along the St. Francis River Levee between levee miles 7/74+00 to 18/0+00. As presented in the updated seepage study, it was recommended that a 2-mile long test reach of wells be constructed to evaluate the effectiveness of relief wells in the study area. Relief wells will be installed between levee miles 15/52+00 and 17/44+00 to control seepage pressures on the levee, and collector and outlet ditches will be cleaned out and enlarged to convey the excess seepage water to Mayo Ditch. The test wells will be observed and evaluated through a minimum of one flood event to determine how effectively the wells protect the levee from flood-induced seepage. The effectiveness of the wells to reduce seepage in the adjacent fields during flood and non-flood river stages will also be evaluated. The proposed work is located approximately 8 miles southeast of the city of Piggott in Clay County, Arkansas. A project map and aerial photograph are included in the appendix.

This EA is prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as interpreted by the U.S. Army Corps of Engineers Regulation ER-200-2-2, and employs a systematic, interdisciplinary approach. The following sections include a discussion of the need, authority, and impacts of alternative plans on natural and cultural resources.

PROJECT DESCRIPTION

Work consists of installing seventy-six 8 and 10-inch diameter relief wells placed landside of the St. Francis River Levee between St. Francis River Levee Miles 15/52+00 and 17/44+00 as shown on the project map in appendix. Additionally, an existing landside ditch located approximately 100 feet from the levee toe will be cleaned out and extended to act as a collector ditch for the relief well flows. The excavated material from the collector ditch cleanout and extension will be spread on the open field on the levee side of the ditch. Approximately, 12,065 feet of an existing drainage ditch will also be cleaned out and enlarged to convey the excess seepage water from the collector ditch to Mayo Ditch. The excavated material from the outlet ditch will be spread on existing spoil adjacent to the site.

NEED FOR ACTION

In recent years blockages have formed within the St. Francis River channel, which appear to have increased the normal flow line elevation of the St. Francis River. There is often water on the riverside toe of the levee, and this water may increase the amount of seepage occurring within the study area. Seepage and wet soils problems have increased significantly in the last several years; therefore, the relief wells and associated drainage are needed to control the seepage that occurs during flood conditions on the St. Francis River and to assure that the levee system is safe from a project flood event. Seepage could undermine the levee if unabated.

PROJECT AUTHORITY

The Flood Control Act of 1936 (Public Law 678-74), as amended, authorizes this project.

ALTERNATIVES

There were six alternatives considered for this project.

Alternative 1: No Action: The no-action alternative is defined as termination of the project. Continued seepage during flood conditions would keep carrying sands and silts under the levee. This could eventually lead to levee failure during a major flood event. Failure of the levee would result in property damage and could cause human injuries and/or loss of life.

Alternative 2: Install riverside blankets to control seepage: This alternative would involve depositing earthen material riverside of the levee to control seepage. Riverside blankets were not considered practical because of the adverse environmental effects on the existing wetlands riverside of the levee and the close proximity of the St. Francis River channel in some reaches.

Alternative 3: Install an impervious cutoff wall to control seepage: This alternative would involve constructing an impervious cutoff wall (slurry trench) riverside of the Mississippi River mainline levee to control seepage under the levee. Impervious cutoff walls would have to penetrate the entire aquifer to be effective and would adversely impact groundwater recharge. Therefore, this alternative was not considered feasible.

Alternative 4: Construct a berm to control seepage: This alternative would involve constructing a berm along the landside toe of the St. Francis River Levee to control seepage under the levee. Ditches currently located adjacent to the levee would need to be filled and relocated at an appropriate distance from the levee. Suitable soils would need to be obtained from on-site or off-site borrow areas, and a small number of hardwood trees would be removed.

Alternative 5: Install interceptor channel: This alternative would involve a 0.5 year frequency, 5-foot water table, seepage interceptor channel located approximately 400 feet landside of the levee toe. The interceptor channel would be placed in existing agricultural land landside of the levee. Intercepted seepage would be conveyed to existing streams.

Alternative 6: Install relief wells to reduce seepage pressures: This alternative would involve installing a test reach of relief wells to control seepage. Relief wells would be installed between St. Francis River Levee Miles 15/52+00 and 17/44+00. A collector ditch would be constructed, and approximately 12,065 feet of an existing drainage ditch would be cleaned out and enlarged to convey the excess seepage water from the collector ditch to Mayo ditch.

After careful consideration of all alternatives, it was determined that Alternative 1 (no action) was unacceptable. Alternative 2 (riverside blankets) was not feasible due to the adverse environmental effects and the close proximity of the St. Francis River in some reaches. Due to the depth of the aquifer, Alternative 3 (cutoff wall) was too costly and would adversely impact groundwater recharge. Alternative 4 (landside berm) was too costly and had greater impacts due to the relocation of existing landside ditches, the removal of hardwood trees, and the need for borrow areas. Alternative 5 (interceptor channel) was not considered feasible due to the amount of agricultural land that would be taken out of production and the opposition from local interests. Consequently, Alternative 6 (relief wells) was recommended as the preferred plan.

FLOODPLAIN MANAGEMENT

The proposed project area is landside of the St. Francis River Mainline levee; however, it remains within the St. Francis River floodplain. Installing relief wells to control seepage pressures must be done at this site to maintain the integrity of the levee. Drainage work must be completed to convey the excess seepage. Since this work must occur within the floodplain, there is no practical alternative to constructing this project within the floodplain.

HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

A record search was conducted by Corps personnel through the EPA EnviroMapper Web Page (<http://maps.epa.gov>). The EPA search engine did not indicate any superfund sites, toxic releases, or hazardous waste sites within, or directly adjacent to the project site. A site inspection was conducted on July 14, 2004, and no evidence of potential or present HTRW problems was found.

Based upon a check of the EPA Web Page and the site inspection, it is reasonable to assume that no hazardous, toxic or radioactive waste will be encountered within the project area. No additional HTRW investigations are recommended. No other analysis is required unless new information is revealed or HTRW is discovered during construction.

ENVIRONMENTAL SETTING

Location

The proposed seepage control project is located in Clay County in northeast Arkansas, approximately eight miles southeast of Piggott. The relief wells will be installed along the landside toe of the St. Francis River Levee. Wells will be placed between Miles 15/52+00 and 17/44+00. Additionally, an existing landside ditch located approximately 100 feet from the levee toe will be cleaned out and extended to act as a collector ditch for the relief well flows. Approximately, 12,065 feet of an existing outlet ditch will also be cleaned out and enlarged to convey the excess seepage water from the collector ditch to Mayo Ditch as indicated on the project map in appendix.

Climate

Clay County has a humid, warm-temperate climate. The average annual maximum temperature is 71 degrees Fahrenheit; whereas, the average annual minimum temperature is 48.1 degrees Fahrenheit. Precipitation is fairly heavy throughout the year, with a slight peak in the winter. The total annual rainfall is about 46 inches.

Soils

The project area is located on braided – relict alluvial fan deposits. The surface material within the braided relic deposits generally consist of approximately 5 to 10 feet of clay with occasional layers of fine sand and silt. In some areas fine-grained soils were not observed at the surface within the study area. The surface deposits are underlain by poorly graded sand. The major soil associations of the project area are the Commerce Association consisting of somewhat poorly drained, level, loamy soils on floodplains and the Beulah-Patterson Association consisting of somewhat excessively drained and somewhat poorly drained, gently undulating and level, loamy soils on natural levees. The substrate within the outlet ditch was primarily soft silt (the consistency of pudding) with some underlain sand and some spotty clay.

SIGNIFICANT RESOURCES AND IMPACTS

Agricultural Lands

Most of the land within the vicinity of the project area is in row crop production. Some agricultural land may be eliminated due to the extension of the collector ditch and the enlargement of the outlet ditch. However, this impact will be outweighed by the relief from high groundwater levels in the agricultural fields due to the installation of the wells. The Natural Resources Conservation Service (NRCS) was contacted regarding the presence of any farmed wetlands, prime farmland, and/or unique farmland within the project area. The NRCS reported that there was no evidence of farmed wetlands, prime or unique farmland within the project area. Thus, there will be no impacts to these farmland types.

Vegetation

Most of the project area is farmed to top bank; however, some riparian habitat is found along the channel and banks of the ditches. The existing collector ditch parallel to the levee is dry during drier parts of the year, and riparian vegetation is predominantly small black willows *Salix nigra* with some small red maples *Acer rubrum* present. The proposed outlet channel is choked with smartweed *Polygonum hydropiperoides* during drier parts of the year. Vegetation on the existing spoil adjacent to the outlet ditch consists mostly of Johnsongrass *Sorghum halepense*, greenbrier *Smilax* spp., and poison ivy *Toxicodendron radicans*. All growth, stumps, brush, partially buried logs, abandoned pilings and other projections shall be removed from the collector and outlet ditch channels as outlined on the project map in appendix. Excavation will be limited to the extent practical, placed on existing spoil adjacent to the site, and seeded with a grass cover. The initial loss along the outlet and collector ditches will be temporary, as the same types of plant species are expected to return after a few years.

Wildlife Resources

Wildlife resources that could be expected to inhabit the project area include deer, rabbits, mice, rats, shrews, songbirds, turtles, snakes, amphibians, an occasional coyote, raccoons, opossums, and other small animals typically found along brushy ditch banks.

Project-induced impacts to wildlife are expected to be minimal due to the limited construction area, nature of the proposed construction, and the types of habitat within the project area. Overall, there should be no significant adverse impact to wildlife.

Aquatic Resources

Most of the drainage that will be affected by the project consisted of poor aquatic habitat due to inadequate flows and depth. The existing collector ditch parallel to the levee does not hold water during drier parts of the year. Debris is abundant in the channel, and riparian vegetation is predominantly black willows *Salix nigra* with some

small red maples *Acer rubrum* present. This ditch is to be cleaned out and extended to be used as a collector ditch for the relief wells. The proposed outlet channel is choked with smartweed *Polygonum hydropiperoides* and has no current during drier parts of the year. Substrate ranges from pudding to silt over sand with some spotty clay. This ditch is to be cleaned out and enlarged to convey the excess seepage water to Mayo Ditch.

A mussel survey was conducted by corps personnel in the outlet ditch on 14 July 2004. One live *Ligumia subrostrata*, three live and one relic *Pyganadon grandis*, one live juvenile and three relic *Utterbackia imbecillis*, one relic *Lasmigona complanata*, and many relic *Corbicula fluminea* were found. The survey report was sent to the Conway, Arkansas office of the U.S. Fish and Wildlife Service. A copy of this report may be found in the appendix. Overall, no significant losses to aquatic resources are expected as a result of the proposed project.

Endangered Species

Corps of Engineers biologists conducted an endangered species survey of the project area on July 14, 2004. No endangered or threatened species, or critical habitats, were observed or known to occur within the project area. Correspondence with the U.S. Fish and Wildlife Service revealed that no impacts to threatened or endangered species should occur due to the proposed relief well installation and ditch work. Requirements of Section 7 of the Endangered Species Act have been fulfilled.

Cultural Resources

The Memphis District Archaeologist has coordinated with the State Historic Preservation Officer (SHPO) and Federally recognized tribes. An intensive cultural resources survey has been completed for the proposed project area, and the results of the survey were sent to the SHPO and Federally recognized tribes. The SHPO determined that no known historic properties would be affected by the project.

Wetlands

There is a 0.4-acre tract of wooded wetlands in the project area located at the confluence of the proposed outlet ditch and an agricultural ditch just east of County Road 553. These wooded wetlands will not be cleared during construction nor will there be any deposition of excavated material in this area. The Natural Resources Conservation Service (NRCS) was contacted regarding the presence of any farmed wetlands within the project area. The NRCS reported that there was no evidence of farmed wetlands within the project area. Thus, there will be no direct wetland impacts with project construction.

Air Quality

The area is in attainment for all air quality standards. Since the equipment to be used is a mobile source, the project is exempt from air quality permitting requirements.

Although air emissions will not require a permit, best management practices shall be used throughout the construction to minimize air pollution.

Water Quality

There will be a slight increase in turbidity in the immediate vicinity of the project area due to the nature of the work. There will be no deposition of material into any wetlands or other waters of the U.S. Thus, a section 404 (b) 1 permit and water quality certification are not required.

CUMULATIVE EFFECTS

The project is to act as a test reach for future work in the St. Francis Drainage Basin. The test wells will be observed and evaluated through a minimum of one flood event to determine how effectively the wells protect the levee from flood-induced seepage. The effectiveness of the wells to reduce seepage in the adjacent fields during flood and non-flood river stages will also be evaluated. If the wells prove to be an effective and feasible means of reducing seepage within this test reach, additional relief wells will be designed for other reaches along the St. Francis River Levee. Most of the land in the vicinity of the St. Francis River Levee is in row crop production, thus impacts from additional relief wells and associated drainage would be similar to this project. However, if the wells are found to be an ineffective means of controlling seepage, other seepage control measures would be investigated.

MITIGATION

No compensatory mitigation is required because the project will not have any significant adverse impacts.

COMPLIANCE WITH REGULATIONS

Project compliance with applicable federal and state regulations is shown on Table 1. Review of the draft EA by appropriate agencies and individuals and a finding of no significant impact (FONSI) will bring the project into full compliance with the listed laws and regulations.

COORDINATION

Arkansas Department of Environmental Quality, Water Division, Little Rock, AR
U.S. Department of the Interior, U.S. Fish and Wildlife Service, Conway, AR
U.S. Department of Agriculture, Natural Resources Conservation Service, Clay County, Piggott, AR
Arkansas State Historic Preservation Officer, Arkansas Historic Preservation Program, Little Rock, AR

Table 1. Relationship of Plan to Environmental Laws and Regulations

The relationships of the recommended plan to the requirements of environmental laws, executive orders, and other policies are presented below:

<u>Federal Policies and Acts</u>	<u>Compliance Status</u>
Archaeological Resources Protection Act of 1979	1
Bald Eagle Act	1
Clean Air Act Amendments of 1977	1
Clean Water Act of 1977, as amended	2
Endangered Species Act of 1973, as amended	1
Farmland Protection Policy Act of 1984	1
Fish and Wildlife Coordination Act of 1958	1
Flood Control Act of 1946, as amended	1
Food Security Act of 1985	1
Land and Water Conservation Fund Act	1
National Environmental Policy Act of 1969	2 *
National Historic Preservation Act of 1966, as amended	1
River and Harbor and Flood Control Act of 1970	1
Water Resources Development Act of 1986	1
Water Resources Planning Act of 1965	1
 <u>Executive Orders</u>	
Floodplain Management (E.O. 11988)	1
Protection, Enhancement of the Cultural Environment (E.O. 11593)	1
Protection of Wetlands (E.O. 11990)	1
 <u>Other Federal Policies</u>	
Prime and Unique Farmlands (CEQ Memo, 1976)	1
Water Resources Council, Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies	1

- 1/ Full compliance with the policy and related regulations has been accomplished.
 2/ Partial compliance with the policy and related regulations has been accomplished.
 3/ Not applicable.

*Full compliance will be met following the Finding of No Significant Impact.

RELATED ENVIRONMENTAL DOCUMENTATION/REFERENCES

U.S. Soil Conservation Service in Cooperation with Arkansas Agricultural Experiment Station. 1978. "Soil Survey of Clay County, Arkansas".

U.S. Army Corps of Engineers, Environmental Desk Reference (IWR) Report 96-PS-3), Institute for Water Resources Policy and Special Studies Division, July 1996.

USDA, Food Security Act.

CONCLUSION

This office has assessed the environmental impacts of the proposed action and has determined that the proposed work will have no significant impacts upon vegetation, fish, wildlife, cultural resources, or the human environment.

PREPARER

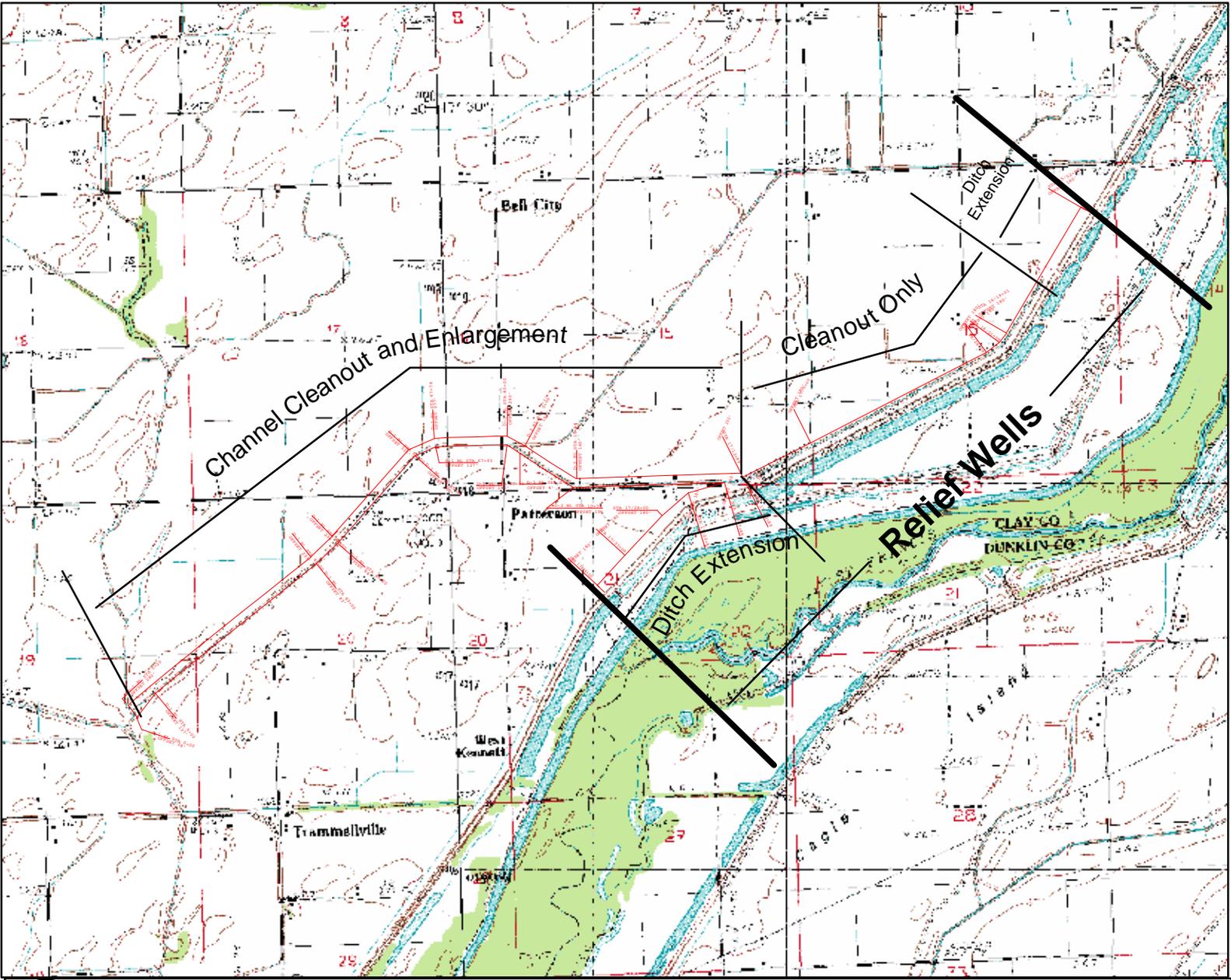
For additional information contact Mike Thron at (901) 544-0708.

APPENDIX

Figure 1. Project Map

Figure 2. Aerial photograph

Document 1. Site Visit Report



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Project Map

source USGS quads:
Kennett North AR-MO
Greenway AR

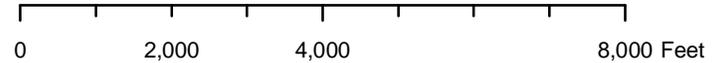
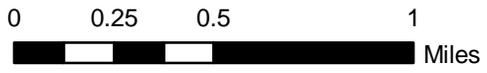


Figure 1.
Piggott Relief Wells
St. Francis River Basin
USACE Memphis District

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Figure 2.



Site Visit
Piggott Relief Wells – Test Reach
Clay County, Arkansas

Date: 14 July 2004

Participants: M. Thron (PM-E)
 J. Hockmuth (PM-E)
 L. Gipson (PM-E)

On 14 July 2004 members of the Memphis District's Environmental Branch performed a site visit on the proposed installation of relief wells and associated drainage in Clay County, Arkansas (Figure 1). The purpose of the visit was to determine whether endangered species were within the work limits.

Most of the drainage that will be affected by the project consisted of poor mussel habitat due to inadequate flows and depth. The existing collector ditch parallel to the levee was completely dry. Debris was abundant in the channel, and riparian vegetation was predominantly black willows *Salix nigra* with some small red maples *Acer rubrum* present. The proposed outlet channel was choked with smartweed *Polygonum hydropiperoides*, and there was no current (Photographs 1-3). Most of the project area was farmed to top bank. There was some vegetation on the existing spoil adjacent to Ditch 1 consisting mostly of Johnsongrass *Sorghum halepense*, greenbrier *Smilax* spp., and poison ivy *Toxicodendron radicans*. Two locations were surveyed for mussels. Qualitative surveys were conducted by wading in ditch areas where a hand search method was used to locate mussels. Survey Location 1 was located at the bridge at County Road 553 just downstream of the confluence of Ditch 1 and Ditch 2 (Photographs 1-3). The survey was conducted at the confluence of Ditch 1 and Ditch 2 to approximately 40 meters downstream. Substrate was the consistency of pudding with some spotty sand and clay underneath. One live *Ligumia subrostrata*, three live *Pyganadon grandis*, and one live juvenile and three relic *Utterbackia imbecillis* were found. No endangered species were encountered at the site. Survey Location 2 was located at the most downstream end of the project area at the confluence of Ditch 1 and Mayo Ditch (Photograph 4). The survey was conducted from the confluence of Ditch 1 and Mayo Ditch to approximately 100 meters downstream of the project limits (Photograph 4). The channel of Ditch 1 was choked with smartweed *Polygonum hydropiperoides*, and there was no flow. Mayo Ditch had moderate flow, and substrate varied from mostly sand to silt over sand with detritus abundant. Many relic *Corbicula fluminea*, one relic *Lasmigona complanata*, and one relic *Pyganadon grandis* were found. No endangered species were encountered at the site.

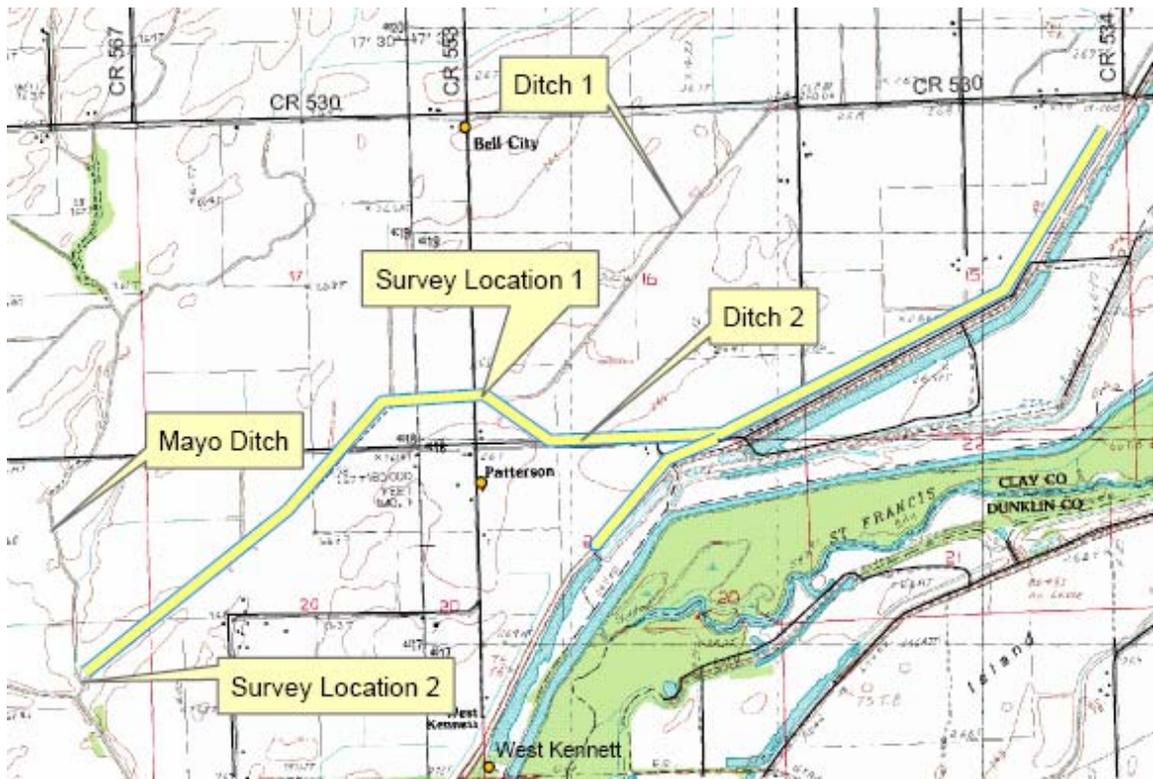


Figure 1. Survey Locations – The project limits are highlighted.

Survey Location 1



Photograph 1. Confluence of Ditch 1 and Ditch 2, facing upstream.



Photograph 2. Ditch 2, facing upstream – just upstream of confluence with Ditch 1.



Photograph 3. Ditch 1, facing downstream from County Road 553 (just downstream of Ditch 1 and Ditch 2 confluence).

The following species of freshwater mussels were observed at Survey Location 1:

<u>Scientific Name</u>	<u>Common Name</u>
<i>Ligumia subrostrata</i>	Pondmussel
<i>Pyganadon grandis</i>	Giant floater
<i>Utterbackia imbecillis</i>	Paper pondshell

Survey Location 2



Photograph 4. Survey Location 2, facing upstream

The following species of freshwater mussels were observed at Survey Location 2:

<u>Scientific Name</u>	<u>Common Name</u>
<i>Corbicula fluminea</i>	Asian clam
<i>Lasmigona complanata</i>	White heelsplitter
<i>Pyganadon grandis</i>	Giant floater