DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET, NW
WASHINGTON, DC 20314-1000

REPLY TO
ATTENTION OF

JUN 25 2015

CECW-MVD

MEMORANDUM FOR Commander, Mississippi Valley Division (CEMVD-PD-SP)

SUBJECT: USACE Response to Independent External Peer Review (IEPR), Prairie du Pont and Fish Lake, Illinois, Flood Risk Reduction Project, Design Deficiency Study, Limited Reevaluations Report (LRR) and Environmental Assessment

1. References:

a. CEMVD-PD-SP memorandum, dated 13 March 2015, subject as above; and

b. CEMVD e-mail, dated 30 April 2015, subject: ESTL and Prairie du Pont Agency responses.

2. The final written responses to the IEPR are approved. The enclosed document contains the final written responses of the U.S. Army Corps of Engineers to the issues raised and recommendations contained in the IEPR report. Please ensure the final written responses are posted on the district's website along with the original IEPR report, as required by EC 1165-2-214.

3. Any questions on this matter should be directed to Mr. John Lucyshyn, Mississippi Valley Division Regional Integration Team, at 202-761-4515.

Encl

STEVEN L. STOCKTON, P.E.
Director of Civil Works

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Prairie du Pont and Fish Lake, Illinois, Flood Risk Reduction Project
Design Deficiency Study
Limited Reevaluation Report and Environmental Assessment

USACE Response to Independent External Peer Review
September 2014

Independent External Peer Review (IEPR) was conducted for the subject project in accordance with Section 2034 of the Water Resources Development Act (WRDA) of 2007, U.S. Army Corps of Engineer (USACE) guidance on *Civil Works Review*, EC 1165-2-214 (2012); and the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (2004).

This flood risk management design deficiency limited reevaluation study was carried out under the authority of Section 216 of the Flood Control Act of December 31, 1970 (Public Law 91-611) which says "The Secretary of the Army, acting through the Chief of Engineers, is authorized to review the operation of projects the construction of which has been completed and which were constructed by the Corps of Engineers in the interest of navigation, flood control, water supply, and related purposes, when found advisable due to significantly changed physical or economic conditions, and to report thereon to Congress with recommendations on the advisability of modifying the structures or their operations, and for improving the quality of the environment in the overall public interest." The study examined the need for modifications to the Prairie du Pont and Fish Lake levee system to correct a design deficiency which has led to uncontrolled underseepage. The study was cost-shared.

IEPR for the limited reevaluation study was initiated and the documents to be reviewed were provided to the IEPR panel in August 2012. The IEPR panel consisted of three individuals selected by Noblis with technical expertise in biology/National Environmental Policy Act compliance, and economics. The Final IEPR Report was completed in September 2012, and the USACE/IEPR panel comment and response process was completed in September 2012. The paragraphs below document the agency's responses and actions to be taken at that time. The Limited Reevaluation Report was approved in October 2012.

The study phase was completed and the project was waiting for funding to initiate the Pre-Construction, Engineering, and Design phase (PED) to continue to refine and develop plans and specifications for the project. During PED, the USACE team will be better able to answer specific questions regarding certain project elements at that time.

IEPR on Draft Limited Reevaluation Report

Noblis, a non-profit science and technology organization, issued the final report from the first IEPR on September 9, 2012. The final IEPR report contains a total of 35 comments categorized by level of significance: 10 comments are identified as having high significance, 14 are identified as having medium significance, and 11 are identified as having low significance. The comments are presented in the order of high, medium, and low significance.

'High': Describes a fundamental problem with the project that could affect the recommendation or

justification of the project.
'Medium': Affects the completeness or understanding of the reports/project
'Low': Affects the technical quality of the reports but will not affect the recommendation of the project."

The following discussions present the USACE Final Response to the 35 IEPR comments.

1. Comment – *High Significance*: The benefit-cost (B/C) analysis suggests that the B/C ratio (BCR) of the tentatively selected plan (TSP) is only 1.2 with little confidence that the B/C ratio even exceeds 1, but some important benefits are not included.

The Panel suggested the following action to resolve this comment:

Quantify benefits that have not been quantified, including operations and maintenance (O&M) cost savings, railroad delay benefits, and benefits of avoided damages within adjacent protected areas. At a minimum, include the O&M cost savings, update the traffic costs to May 2012 price levels, and expand the discussion in the LRR Page J-21 to J-22.

USACE Response: Adopted

Action Taken: Appendix J, page J-17, was updated to add discussion of O&M cost savings, and traffic costs were updated to 2012 price levels. Railroad delay benefits were not able to be calculated for proprietary reasons but rough estimates of railroad delay benefits indicate the benefits would result in a benefit cost ratio change of less than 0.05. For this reason the LRR was not revised to include railroad delay benefits. In addition, the LRR did not calculate any benefits that may be related to damages avoided in adjacent protected areas.

2. Comment – *High Significance*: O&M cost savings associated with closure of the existing relief wells are not counted as a benefit.

The Panel suggested the following action to resolve this comment:

Calculate current annual O&M for the 162 existing wood stave relief wells. Consider if these without-project O&M costs are likely to increase in the future, and if so, include.

USACE Response: Adopted

Action Taken: O&M cost savings for the wood stave relief wells were added to Appendix J, page J-17.

3. Comment – *High Significance*: Railway transportation delay costs were not included, but a reasonable estimate could have been included.

The Panel suggested the following action to resolve this comment:

Try to obtain a simple estimate, and see if it is an important part of the expected annual damage (EAD). An estimate of cost per hour duration based on data from the 2006 Statistical

Abstract of the US Table 1103 is provided below. The depth-duration curve would be needed to calculate EAD.

Calculations to obtain an estimate of train delay cost per day of flood duration		
National averages from Statistical Abstract		
Train Operating Revenues	$36,639	Million $
Net Revenues	$5,199	Million $
Train miles	516	Million
Train miles per train hour	20	Miles
Calculations for Dupo		
Average Dupo trains/day	50	Avg from Page J-21
Average delay per train	30	Avg from Page J-21
Hours delay per day duration	1500	Hrs, 50 times 30
Net revenue per train-mile	$10.08	$5,199/516
Miles lost per day duration	30000	20 times 1500
Net rev. lost per day duration	$302,267	30000 times $10.08

USACE Response: Adopted

Action to be Taken: The panel provided a way to simply estimate the railway transportation delay costs. Utilizing this technique, USACE determined that the additional benefits would not significantly alter the BCR. Additional explanation was included in the economic appendix, but no additional calculations were included in the report.

4. Comment – *High Significance*: The probability of failure for the levee is not the same for all events, although the text assumes that this is the case. Therefore, the probability of unsatisfactory performance for the with-project condition may overstate the reliability of the improved levee system.

The Panel suggested the following action to resolve this comment:

Update the design chance of failure for the different water surface elevations/design events. Add a brief discussion of the methods used in the calculations of failure probability, and cite any design calculation standards and assumptions in the text.

USACE Response: Not Adopted

The design chance of failure was not updated. However, a discussion of the assumptions and methods used in the calculations of the probabilities of unsatisfactory performance was added to Section 7 of Appendix D - Geotechnical Engineering.

5. Comment – *High Significance*: The Environmental Assessment (EA) does not fully identify potential hazards and management actions for organic contaminants, including

contamination from proposed dredge material from the Mississippi River, impacts to surface water quality from dredge material effluent return, and downstream impacts to human and aquatic populations that might result from disturbing sediments at the dredge borrow sites.

The Panel suggested the following actions to resolve this comment:

a. Revise the LRR, EA, and relevant appendices to better reflect potential organic hazard contamination and specify that sediments from the dredge material would be analyzed prior to disturbance and placement according to the criteria in the Inland Testing Manual, and that appropriate protective measures (mitigation) will be taken to ensure compliance with Section 404 of the CWA.

USACE Response: Adopted

Action Taken: Revisions were made to the EA to include more information on potential organic hazard contamination and the process and criteria for dredge placement according to the Inland Testing Manual (Section 4.12).

b. Note potential impact to surface water from dredge material return (effluent) and whether NPDES limitations would apply in Section 4.7 of the EA and applicable sections of Appendix A, and demonstrate how the USACE proposes to meet those standards as they apply to the dredge effluent.

USACE Response: Adopted

Action Taken: Section III.F.2 of the 404(b)(1) evaluation (Appendix A) was modified to address NPDES limitations and ensure that the standards are met and that the dredging permit will also regulate the effluent. More discussion of proposed dredging work and potential impacts was also added to EA Section 4.7.

c. Revise the referenced section in Appendix A to fully reflect potential effects from turbidity and toxic metals/organics associated with the proposed dredging work and propose mitigation for these impacts if necessary.

USACE Response: Adopted

Action Taken: Language was added to EA Section 4.12 indicating that the dredging would take place in the main channel where the sediment is composed of mostly sands and very little organics. The dredging permit will specify maximum turbidity limits as well as monitoring for toxic metals/organics.

6. Comment – *High Significance*: Noise and light impacts to endangered bat species are not included in the EA and Appendix A.

The Panel suggested the following action to resolve this comment:

Include potential noise and light impacts regarding bat populations, and develop appropriate strategies to reduce these impacts for construction activities adjacent to and during periods bats are likely to be present (i.e., sound attenuation, etc.).

USACE Response: Adopted

Action Taken: Construction activities would occur primarily on the landside of the levee in unforested agricultural fields, which are not adjacent to potential bat roosting sites. It is anticipated that construction activities would occur during daylight hours when bats are not actively foraging. Therefore, sound and/or light attenuation would be unwarranted. The project was reviewed by the U.S. Fish and Wildlife Service (USFWS) under the authority of and in accordance with the provisions of the Fish and Wildlife Coordination Act, the Endangered Species Act, and the National Environmental Policy Act. The USFWS concurred with USACE finding that the proposed project is not likely to adversely affect the Indiana bat (Myotis sodalis). Coordination with the USFWS will continue throughout the pre-construction engineering and design phase, as well as the construction phase.

7. Comment – *High Significance*: In EA Section 4.16.3, the EA does not include information or quantitative data (field data) to support the statement, "Since the project area does not contain least tern nesting or adjacent foraging habitat, the St. Louis District has determined that the project poses "no effect" to the least tern."

The Panel suggested the following action to resolve this comment:

Note in the EA that field survey(s) will be conducted prior to construction activities to verify that Interior Least Tern nesting and foraging activity is absent along the project area shoreline. Make note that if Interior Least Tern nesting or foraging activity is detected during proposed project actions, the USFWS would be contacted immediately.

USACE Response: Adopted

Action Taken: There is no suitable habitat for interior least tern within the project area. The known interior least tern nesting colonies within the entire St. Louis District are located over 100 river miles south of the project area. The only other interior least tern sightings over the past 25 years of data review are of post-breeding wanderers over large interior impoundments with no suitable habitat for nesting colonies. USACE believes field surveys are not necessary because of the absence of suitable nesting and foraging habitat within the project area. This information is documented in Section 4.16.3 of the Environmental Assessment. If at any time interior least tern nesting colonies are observed during proposed project actions, the USFWS would be contacted immediately.

8. Comment – *High Significance*: The Finding of No Significant Impact (FONSI) is premature based on the need to gather additional information and provision of additional documentation regarding Hazardous Toxic Radioactive Waste (HTRW) impacts associated

with dredge and fill operations, endangered species impacts, alternative analysis, and mitigation.

The Panel suggested the following action to resolve this comment:

Provide a strategy in the LRR and/or EA to address the noted issues as the project proceeds to better justify the FONSI, or remove the FONSI until the data is complete, or recommend an EIS.

USACE Response: Adopted

Action Taken: The FONSI is included as a draft, unsigned document for review purposes of the draft LRR and EA only. A FONSI would not be signed until after the public review, and would only be signed once it has been determined that no significant impacts would occur as a result of the project. Information about endangered species is contained in the EA and has been fully coordinated with the resource agencies and the alternatives analysis fully meets the USACE planning requirements. USACE added sentences to the EA which refer the reader to Appendix H for additional HTRW information (EA Section 4.12) and to Appendix A for the mitigation plan (EA Section 4.15)**.**

9. Comment – *High Significance*: In the Mitigation Plan (MP), Section 4- Conservation Servitude and Section 12- Financial Assurances, the conservation servitude (easement) does not include financial provisions *specific to the servitude instrument* to ensure that the terms of the instrument can be monitored and enforced in perpetuity.

The Panel suggested the following action to resolve this comment:

Revise the mitigation plan to reflect that the terms of the conservation servitude agreement will be monitored and enforced in perpetuity, preferably by a third-party land trust accredited by LTA. Specify in the mitigation plan that financial assurances will spell out monitoring and enforcement funding of the conservation servitude to ensure that monitoring and enforcement are funded in perpetuity.

USACE Response: Not Adopted

Prior to approval of the Limited Reevaluation Report, it was determined that the mitigation land should be acquired through fee acquisition and not a Conservation Servitude. An Errata Sheet was prepared to update the Mitigation Plan to reflect this change.

10. Comment – *High Significance*: In the MP, Appendix EA, Section 8- Performance Standards the invasive species land cover component is much too high to ensure success in what is described as a long-disturbed environment.

The Panel suggested the following action to resolve this comment:

Revise the invasive species performance standards to reflect a lower overall coverage (10% or less is recommended), or a standard that is clearly detailed and demonstrated to meet the ecologic

goals of the site based on quantitative data or recommendations from relevant literature.

USACE Response: Adopted

Action to be Taken: This recommendation would be implemented when the Mitigation Plan is revised during the pre-construction engineering and design phase, in coordination with federal and state natural resource agencies.

11. Comment – *Medium Significance*: The estimated operation, maintenance, repair, rehabilitation, and replacement (OMRR&R) annual cost in LRR Table 6-3 appears to be calculated incorrectly.

The Panel suggested the following action to resolve this comment:

Recalculate OMRR&R costs and BCR, and change text in the economics appendix and LRR.

USACE Response: Adopted

Action Taken: The OMRR&R costs and BCR were recalculated to include 14 wells that were unaccounted for and the text of the economics appendix and the LRR (including Table 6-3) was changed accordingly.

12. Comment – *Medium Significance*: In the LRR, OMRR&R costs, Inspection & Minor Repair and Mech./Elec. Major Rehabilitation costs for year-50 were not counted.

The Panel suggested the following action to resolve this comment:

Include year-50 costs in the OMRR&R, or better justify why year-50 costs are not included.

USACE Response: Adopted

Action Taken: The 50-year period of analysis does not necessarily include rehabilitation of anything in year 50. However, year 50 inspection costs were added to the OMRR&R estimate and are included in the annual OMRR&R costs displayed on page J-19 in the Economics Appendix.

13. Comment – *Medium Significance*: The agricultural benefit estimate is likely overstated because it does not include agricultural production costs that would be avoided because of a flood. On the other hand, the agricultural benefit is understated because clean-up costs have not been included.

The Panel suggested the following action to resolve this comment:

a. At a minimum, crop revenues should be reduced for harvest costs. Harvest costs will clearly not be incurred if cropland ready for harvest is flooded.

b. Include agricultural land clean-up costs as damages in addition to lost crop net revenue. At a minimum, discuss agricultural land clean-up and restoration costs.

USACE Response: Adopted

Action Taken: Crop damages were already taken into account in the harvest and production costs and this is discussed in the Economics Appendix, page J-6. Additionally, an explanation of the clean-up costs was added to the report (Main Report Section 6.5).

14. Comment – *Medium Significance*: Other O&M cost savings may have not been counted as a benefit.

The Panel suggested the following action to resolve this comment:

Consider if any other with-project O&M costs would reduce or replace existing costs. Consider monitoring costs that may not be required with-project. Include these cost savings as a benefit.

USACE Response: Adopted

Action Taken: Changes to the existing O&M caused by the new improvements were reviewed and appropriate adjustments were made to the benefits. This is reflected in the Economic Appendix on page J-18.

15. Comment – *Medium Significance*: Erosion loss on the landward side of the levee because of water ponded or flowing along the landward side of the levee has the potential to exacerbate or increase the impact of piping, sand boils and other potential failure mechanisms. The method of mitigating landward levee erosion is not clear.

The Panel suggested the following action to resolve this comment:

Address in the text what methods to mitigate landward levee erosion from ponded or flowing water (on the landward side of the levee).

USACE Response: Adopted

Action Taken: A description of how the proposed project should not produce landside levee erosion and how the drainage system will handle flow was added to the report (Main Report Section 6.1.4). The area is currently not experiencing any landward-side erosion problems. All flow, including relief well flow, enters designed ditches that convey the flow with low velocities to the project pump stations. The ditches will be seeded with a mix of rye and fescue grasses, which provide ample erosion protection against this low velocity. In addition, the ditch and pipe collector system will be designed to be at least 50 feet from the nearest levee feature (levee toe or berm toe) at all locations, which will minimize the impact on the actual levee.

16. Comment – *Medium Significance*: Comprehensive hydraulic design of the relief wells are absent from the present study.

The Panel suggested the following action to resolve this comment:

Update the text to include information related to the design of project relief wells.

USACE Response: Adopted

Action to be Taken: Detailed design of project relief wells will not occur until the plans and specifications phase of the project. At that time, a "pilot hole" would be completed at every proposed relief well location to obtain detailed geotechnical exploration, sampling, and testing to support the final design of the well. Subsequent soils testing on these samples would support the final well design. The Geotechnical Appendix (Appendix D Section 6.1) was revised to reflect this.

17. Comment – *Medium Significance*: The documentation lacks key graphics that are needed to support the text in several cases.

The Panel suggested the following action to resolve this comment:

a. Update the text to include historical failure and proposed improvement graphics in the same figure.

USACE Response: Not Adopted

Maps depicting historical failures were being developed for other purposes but would not be available for timely inclusion in the report.

b. Include a map depicting the impact locations and include missing data (or rationale for excluding it).

USACE Response: Adopted

Action Taken: Plates in the design appendix (Appendix E) depict impact areas along with the proposed project features. Specific impact locations (by station) were not specified for some impacts because similar land cover types are aggregated for calculations in the Wildlife Habitat Appraisal Guide (WHAG) instead of being calculated at each specific location. Text was added to Appendix A on page EA-404-7 to refer the reader to appropriate plates in the appendices.

c. Include graphics (i.e., maps or diagrams) detailing relative locations of cultural resources and impact sites.

USACE Response: Not Adopted

The specific location of cultural resources is privileged information and is not included in public documents. Site location is specifically exempt from disclosure and from FOIA requests.

18. Comment – *Medium Significance*: The heterogeneity of the soils underlying the project site is not adequately discussed.

The Panel suggested the following action to resolve this comment:

Update the text to more fully address the variability of the soils, particularly related to the design of the relief wells, how the design of the wells of the will be determined by the local stratigraphy, and how design considerations will be addressed according to the specific design and technical manuals.

USACE Response: Adopted

Action Taken: A paragraph was added to the Geotechnical Report (Appendix D, Section 6, page 13) stating that SSI (Site Specific Investigation) exploration included landside and riverside exploratory borings at an average rate of 16 per mile, all completed to support the analyses of the underseepage failure mode. Three of every four landside borings completely penetrated the surficial blanket and extended 20-feet into the aquifer. One of every four landside borings was carried to refusal on the top of rock forming the valley floor. All riverside cone penetrometer borings completely penetrated the surficial blanket and extended 20-feet into the aquifer. The detailed analyses of the exploration and testing results included transforming the layered fine-grained blankets (landside and riverside) into equivalent layers of clay (per USACE underseepage guidance) to support the underseepage analyses. Detailed analyses of the deep borings and associated laboratory testing described the aquifer materials and their permeability, also to support the underseepage analyses.

19. Comment – *Medium Significance*: Cumulative and secondary effects are not fully considered in the EA.

The Panel suggested the following action to resolve this comment:

Note in the EA and Appendix A whether any non-federal, commercial projects were scoped or identified. This may require expanding the geographic boundary to recognize effects from upstream and across the river from the project area, and other adjacent locations.

USACE Response: Not Adopted

USACE did not identify any non-Federal, commercial projects to include in the report and therefore no changes were made as a result of this comment.

20. Comment – *Medium Significance*: The performance standards in Section 8 of the MP appear arbitrary, and there is no discussion in the text to support how the standards were determined.

The Panel suggested the following action to resolve this comment:

Include a discussion of how the performance standards for the project are developed and set, including reference to the relevant science and regulatory protocols.

USACE Response: Adopted

Action to be Taken: When the mitigation plan is revised during the pre-construction engineering and design phase, in coordination with federal and state natural resource agencies, special conditions would be drafted for the Section 404 permit that would include specifics on the compensatory wetland mitigation plan as well as maintenance, monitoring and compliance guidelines.

21. Comment – *Medium Significance*: In the EA-MP Section 10- Long-term Management Plan, it is not clear if the entity responsible for long-term monitoring and the entity conducting any corrective action in the event of a violation of the conservation servitude are two distinct entities to avoid a conflict of interest should a violation of the servitude agreement occur.

The Panel suggested the following action to resolve this comment:

Revise Section 10 to reflect that enforcement of the servitude and any required correction to meet the terms of the agreement will be by different parties.

USACE Response: Adopted

Action to be Taken: When the mitigation plan is revised during the pre-construction engineering and design phase, in coordination with federal and state natural resource agencies, the plan would be revised to reflect that enforcement of the servitude and any required correction to meet the terms of the agreement will be by different parties.

22. Comment – *Medium Significance*: In the EA-MP Section 13- Cost, and Table EA-MP-6, the costs shown appear to be arbitrary. There is no discussion included regarding how these monitoring costs were established.

The Panel suggested the following action to resolve this comment:

Revise costs to reflect real estimates.

USACE Response: Adopted

Action to be Taken: Monitoring costs will be updated/revised when the mitigation plan is revised during the pre-construction engineering and design phase, in coordination with federal and state natural resource agencies.

23. Comment – *Medium Significance*: The level of information in the evaluation of alternatives involving slurry cutoff walls is not consistent with other alternatives analysis.

The Panel suggested the following action to resolve this comment:

Include some additional information regarding the slurry wall alternative under Section 2 of the EA- Alternatives Considered by Decision Segment, and in appropriate appendices.

USACE Response: Adopted

Action Taken: Cutoff walls were screened out early in the study because of life-cycle cost analysis and therefore were not evaluated at the same level of detail as the other alternatives. EA Section 2 - Alternatives Considered By Decision Segment, was revised to include more information about the slurry wall alternative.

24. Comment – *Medium Significance*: The potential effects of climate change do not appear to be considered in the LRR or supporting documents.

The Panel suggested the following action to resolve this comment:

Include some discussion of climate change within the LRR and/or supporting documents.

USACE Response: Adopted

Action Taken: Section 6.5 Global Climate Change was added to the EA to include discussion regarding climate change. Climate change is not critical to the proposed design because the underseepage corrections are based on a stage elevation (52 feet) on the St. Louis gage, not a frequency event. For mitigation, any changes due to climate change would be covered by the monitoring and adaptive management requirements of the mitigation.

25. IEPR Comment – *Low Significance:* The subject levee provides indirect protection from flooding of other areas. The benefit of this indirect protection is not discussed or quantified as a benefit.

The Panel suggested the following action to resolve this comment:

At a minimum, include a discussion of this potential benefit within the economics appendix. If the probability of a breach in the north part of the system can be quantified, and potential damages in the other areas have been quantified, then a benefit estimate should be provided.

USACE Response: Adopted

Action Taken: A discussion of this type of event was included Section 5.2.1 of the main report. However, damages and benefits are very difficult to quantify and would likely only occur at very low frequency events.

26. Comment – *Low Significance:* Vehicle and mobile home damages do not consider probable notification time.

The Panel suggested the following action to resolve this comment:

Discuss the notification system in place and how vehicle and mobile home costs might be affected.

USACE Response: Adopted

Action Taken: There currently is no formal notification system and the local levee district does not have an emergency action plan on file. While most of the mobile homes in the levee are permanent in nature, a discussion of the possible effects was added to the economic appendix (Appendix J, page J-2)

27. Comment – *Low Significance:* The new Mississippi River bridge project is not considered within the traffic delay analysis.

The Panel suggested the following action to resolve this comment:

If practical, include the Mississippi River bridge project in the traffic analysis. Describe how the bridge affects the traffic cost analysis. If it has no effect, explain why.

USACE Response: Adopted

Action Taken: The new bridge will not impact delay times. The traffic analysis included in the report was based on the distance required to travel to the Poplar Street Bridge, which would remain the closest available option to cross the Mississippi River if access to the Jefferson Barracks Bridge is blocked by a flood event in the Prairie du Pont Levee. Discussion to this effect was added to the economic appendix (Appendix J, page J-22).

28. Comment – *Low Significance:* The economics appendix is not consistent regarding whether or not specific costs are included in the economics analysis.

The Panel suggested the following action to resolve this comment:

Correct all text to show that:

- railway delay costs were not counted
- railway facility damages were counted
- vehicle damage costs were not counted
- all content damages were included, and how

USACE Response: Adopted

Action Taken: The economic appendix (Appendix J) was revised to show that railway delay costs were not counted, railway facility damages were counted, vehicle damage costs were not counted, and all content damages were included.

29. Comment – *Low Significance:* There is no information for the Regional Economic Development (RED) account included.

The Panel suggested the following action to resolve this comment:

Include a small RED section. Include discussion of potential costs of not maintaining accreditation for the 100-year flood event.

Action to be Taken: This suggestion will be addressed during preconstruction engineering and design since it does not affect the decision process for this study.

30. Comment – *Low Significance:* The source of EAD for agriculture is not completely documented.

The Panel suggested the following action to resolve this comment:

Mention that only about 50% of the cost of crops can be counted under NED, and explain why, and state that this is the main reason why full agricultural revenues are not claimed as potential benefits.

USACE Response: Adopted

Action Taken: A more complete description of the agricultural damage estimation was added to the economic appendix (Appendix J), including rationale for why only about 50% of the cost of crops can be counted under NED.

31. Comment – *Low Significance:* It is not clear in the EA how wetland resource determinations were conducted to calculate impacts.

The Panel suggested the following action to resolve this comment:

Identify the method for wetland resource determination in the EA and Appendix A.

USACE Response: Adopted

Action Taken: Information was added to EA Section 3.15.1 indicating that the wetlands were determined by using National Wetlands Inventory maps and our local GIS database. Biologists from our Environmental and Regulatory Offices field verified the wetlands and made the necessary adjustments to the maps based on the data gathered in the field.

32. Comment – *Low Significance:* The sentence on Page EA-404-8 under "Description of Proposed Discharge Sites": "Although exact locations have yet to be identified, wetland sites will be avoided," is unclear and potentially misleading.

The Panel suggested the following action to resolve this comment:

Revise the sentence.

USACE Response: Adopted

Action Taken: The sentence was revised to state: "Although the exact sand stockpile locations have not been identified, stockpiling the material in wetland sites will be avoided."

33. Comment – *Low Significance:* There are no recommendations or qualifications related to the inspections of the project improvements for future maintenance and operation.

The Panel suggested the following action to resolve this comment:

Add project improvements inspection requirements or a reference to inspection requirements such that improvements can be maintained at design operating levels.

USACE Response: Adopted

Action Taken: Section 5.1.4 of the main report was modified to indicate that the local levee districts are responsible for the operation and maintenance of all project features, including features that would be constructed with this plan. To ensure proper O&M is performed, levee districts are provided O&M manuals and levee handbooks that describe the proper methods and intervals related to O&M to ensure that project features will maintain performance levels. In addition, USACE performs routine inspections every year as well as periodic inspections, typically every five years. Routine inspections are intended to verify proper maintenance, owner preparedness, and component operation. Periodic inspections are more detailed and are intended to verify proper maintenance and component operation and to evaluate operational adequacy, structural stability, and safety of the system.

34. Comment – *Low Significance:* The understanding that the present design standard for water surface elevation (WSE) exceeds the Federal Emergency Management Agency (FEMA) standard, and the extent of this exceedance, is not discussed in the LRR.

The Panel suggested the following action to resolve this comment:

Add a comparison between the current design and FEMA WSE.

USACE Response: Adopted

Action Taken: A comparison between the FEMA 1% and 52-foot water surface elevation at the St. Louis gage was added to Section 3 of Appendix C – Hydrology and Hydraulics.

35. Comment – *Low Significance:* Various tables within the documentation are lacking important details that make specific information unclear.

The Panel suggested the following action to resolve this comment:

a. Review and update the tables within the study to include units, column headings and other information to increase legibility, and hence value, of the tables.

USACE Response: Adopted

Action Taken: The tables within the study (to include units, column headings and other information) were reviewed and updated to increase legibility.

b. Include a map showing the decision segments and/or incorporate layers within each figure in the EA depicting the decision segments.

USACE Response: Adopted

Action to be Taken: Future preconstruction, engineering and design studies will include maps showing the decision segments and/or incorporating layers.