

**PDT Draft Evaluator Responses
to
Final Panel Comments
on the
Independent External Peer Review of the
Upper Turkey Creek Flood Risk Management
Feasibility Study, the City of Merriam, Johnson and
Wyandotte Counties, Kansas, Draft Feasibility Study
Report and Environmental Assessment**

August 6, 2013

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Final Panel Comment 1

Rainfall values are based on an outdated publication; therefore, the hydrology and hydraulics (H&H) analysis underestimates the volume of runoff and flood elevations associated with the flood risk management project and could impact conclusions related to the National Economic Development (NED) alternative.

Basis for Comment

The rainfall values used in the hydrologic modeling presented in the Upper Turkey Creek Draft Feasibility Report/Environmental Assessment are from a 50+ year-old rainfall frequency study prepared for the U.S. Department of Commerce (DOC, 1961). A new design standard from the National Oceanic and Atmospheric Administration (NOAA) called Atlas 14 became available in April 2013. Kansas was part of the pooled fund effort to produce Volume 8 of this new atlas. Based on the Atlas 14 Precipitation Frequency Data Server, design rainfall values have increased from the values used in the Upper Turkey Creek report. For example, the 1-percent annual exceedance probability event rainfall amount used in the Upper Turkey Creek analysis was 7.8 inches (Appendix B, Chapter 3, Table 2-3, page B3-7), while the new value is closer to 8.8 inches, an increase of over 10 percent. Using values from the new publication will increase the discharge and the resulting flood elevations computed in the H&H analysis and could reduce the estimated assurance of the NED alternative. The increase in precipitation could also change the benefit-cost analysis. Under existing conditions higher precipitation might result in greater damages, and therefore, an increase in benefits with the project in place, and/or it might also require an increase in levee and flood wall height under project conditions that could increase cost. Without re-analysis it is not possible to predict how the benefit-cost ratio might change.

Significance – High

Higher flood elevations could increase required floodwalls and levee heights, impacting the benefit/cost analysis and the risk associated with the NED plan.

Recommendations for Resolution

1. Revise the H&H analysis for the NED alternative using the 2013 rainfall data.
2. Increase floodwall and levee heights as needed, and evaluate the change in the benefit/cost ratio and the resulting estimated assurance level.
3. Since the increase in precipitation would impact all alternatives in a similar manner, explain why it was not considered necessary to reanalyze all of the alternatives, and justify the results of the screening analysis and basic formulation of the NED plan.
4. Alternatively, to avoid possible concern with the results of the study and the recommended NED plan, consider revising all H&H analyses based on the new design rainfall data.

PDT Draft Evaluator Response (FPC#1):

1. Please indicate below whether the PDT 'concur' or 'non-concur' with the comment

statement in the first row above and provide a clear explanation for the 'concur' or 'non-concur' response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will 'adopt' or 'not adopt' the recommendation and provide an explanation. If 'adopt', please provide information on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: Adopt Not adopt

Explanation:

Recommendation #2: Adopt Not adopt

Explanation:

Recommendation #3: Adopt Not adopt

Explanation:

Recommendation #4: Adopt Not adopt

Explanation:

Literature Cited:

DOC (1961). Rainfall Frequency Atlas of the United States. Technical Paper No. 40. U.S Department of Commerce, Washington, D.C., May. Available at http://www.nws.noaa.gov/oh/hdsc/PF_documents/TechnicalPaper_No40.pdf.

NOAA (2013). National Weather Service Hydrometeorological Design Studies Center Precipitation Frequency Data Server Atlas 14. National Oceanic and Atmospheric Administration website. Available at <http://hdsc.nws.noaa.gov/hdsc/pfds/>.

Final Panel Comment 2

A plan to communicate to the public the residual risks concerning possible loss of life associated with the design of the levee and floodwall system has not been presented.

Basis for Comment

The impacts of exceeding the design event are briefly discussed in the Draft Feasibility Report/Environmental Assessment (Section 7.4.2) and in Appendix F of the report (Section 7.3). These sections discuss how overtopping the levees or floodwalls could result in “significant” or “catastrophic” damages within the project area; however, there is little emphasis on public safety, including the potential loss of life, and the importance of an emergency action plan given that risk. As used, these terms are ambiguous because they could be construed to mean only great physical loss of property and damage to structures, without loss of life.

The project area does not include much residential use but is an important commercial area that includes the Merriam Farmers’ Market, described in the report (Section 2.3.1) as a community event pavilion that houses many special events and programs. Because the project area is susceptible to flash flooding, the advance warning time and the time for citizens to evacuate the Farmers’ Market area during a flash flood will be extremely short, creating serious potential for loss of life. With the new levee and floodwall system on one side, and I-35 along the other, the protected area in the future essentially will become a reservoir with limited overflow routes. An emergency action plan would be an effective way to communicate public safety risk, including potential loss of life.

Significance – Medium

The residual risks must be communicated to the public to prevent, as much as possible, the potential loss of life if an overtopping event occurred.

Recommendations for Resolution

1. Describe the concern for potential loss of life in the discussions of residual risk.
2. Include a clear statement about the need for, and importance of, an emergency action plan prepared and implemented by the local sponsor that communicates the nature of the risk involved and the appropriate actions to take. Emphasize that the local sponsor is responsible for ensuring that effective emergency measures (early warning systems, sirens, reverse 911 calls, evacuation routes, etc.) are in place should an overtopping event occur.

PDT Draft Evaluator Response (FPC#2):

1. Please indicate below whether the PDT ‘concur’ or ‘non-concur’ with the comment statement in the first row above and provide a clear explanation for the ‘concur’ or ‘non-concur’ response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will 'adopt' or 'not adopt' the recommendation and provide an explanation. If 'adopt', please provide information on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: __Adopt __Not adopt

Explanation:

Recommendation #2: __Adopt __Not adopt

Explanation:

Final Panel Comment 3

Tree planting and maintenance, which are key components of the mitigation, have not been described in sufficient detail to ensure that the mitigation plan will be successful.

Basis for Comment

The success of the mitigation plan hinges on guaranteeing that the trees are planted in suitable locations and that they survive over the long term. In addition, the safe application of approved chemicals where needed for long-term brush and tree control on riprap areas is fundamental for protecting water quality.

Tree Planting: The mitigation plan centers around tree planting, which appears to be a reasonable approach. However, no specific, approved locations for the planting are confirmed. This omission could have serious implications if mitigation activities are required to take place before or during construction activities. Also, there is no discussion of monitoring to ensure the long-term survival of the trees after they are planted.

Brush Spraying: Another long-term maintenance issue arises with regard to “Spraying and removing woody brush and trees in riprap areas,” listed in Section 7.6 as a “typical maintenance requirement.” The report does not specify what chemicals and procedures will be used and does not state whether the chemicals will be approved and determined to be safe for near-water application.

Significance – Medium

The mitigation plan is incomplete without specific details regarding tree planting and maintenance.

Recommendations for Resolution

1. Identify the specific location(s) where trees would be planted to mitigate project impacts. If locations are not yet confirmed, describe how a suitable location will be selected.
2. Identify when the mitigation will occur (before, during, or after project construction activities).
3. Describe how the planted trees will be monitored to promote their long-term survival.
4. Describe how trees that do not survive will be replaced. State the agency or organization responsible for tree replacement and the source of funding.
5. Specify what chemicals and procedures will be used to control brush and trees in riprap areas, and describe how the chemicals will be approved and deemed safe for near-water application.

PDT Draft Evaluator Response (FPC#3):

1. Please indicate below whether the PDT ‘concur’ or ‘non-concur’ with the comment

statement in the first row above and provide a clear explanation for the 'concur' or 'non-concur' response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will 'adopt' or 'not adopt' the recommendation and provide an explanation. If 'adopt', please provide information on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: Adopt Not adopt

Explanation:

Recommendation #2: Adopt Not adopt

Explanation:

Recommendation #3: Adopt Not adopt

Explanation:

Recommendation #4: Adopt Not adopt

Explanation:

Recommendation #5: Adopt Not adopt

Explanation:

Final Panel Comment 4

Significant pressure flow conditions may occur as a result of the proposed headwalls at roadway crossings increasing scour conditions and leading to potential failure of these crossings or adjacent levees and floodwalls.

Basis for Comment

Adding headwalls at roadway crossings (a 4-foot headwall at Merriam Drive and a 2-foot headwall at Shawnee Mission Parkway) to prevent overtopping will allow more water to pond upstream of the bridge or culvert structure, creating significant pressure flow conditions. Scour under pressure flow is more severe (FHWA [2012], Section 6.10) and could quickly lead to catastrophic failure of the foundations of these roadway crossings during the design event. This could allow flood water into the project area, and/or cause failure of adjacent levees and floodwalls. Countermeasures for scour are available (FHWA 2009) and should be considered, as necessary, during final design.

Significance – Medium

The potential for scour at roadway crossings should be acknowledged and the plan to address it in the final design should be stated.

Recommendations for Resolution

1. In Section 7.1.3, Bridge Modifications, describe the concerns related to pressure flow conditions created by the proposed headwalls at Merriam Drive and Shawnee Mission Parkway.
2. Add a statement recommending a detailed evaluation of the pressure flow conditions according to FHWA (2012) and the inclusion of appropriate bridge scour countermeasures in the final design based on FHWA (2009).

PDT Draft Evaluator Response (FPC#4):

1. Please indicate below whether the PDT 'concur' or 'non-concur' with the comment statement in the first row above and provide a clear explanation for the 'concur' or 'non-concur' response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will 'adopt' or 'not adopt' the recommendation and provide an explanation. If 'adopt', please provide information on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: Adopt Not adopt

Explanation:

Recommendation #2: __Adopt __Not adopt
Explanation:

Literature Cited:

FHWA (2009). Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance, Federal Highway Administration, Washington, D.C. Hydraulic Engineering Circular No. 23, Publication FHWA-NHI-09-112. September.

FHWA (2012). Evaluating Scour at Bridges. U.S. Department of Transportation, Federal Highway Administration, Washington D.C. Hydraulic Engineering Circular No. 18, Publication No. FHWA-HIF-12-003. April.

Final Panel Comment 5

The magnitude of the increase in the contingency from the alternative analysis to the National Economic Development (NED) plan Cost and Schedule Risk Analysis (CSRA) is not supported, and the connection between this increase and the lack of detailed site investigation or geotechnical investigation is not addressed.

Basis for Comment

Page B4-5 of APPENDICES – AFB DOCUMENT in Chapter 4 (Cost Estimation), Section 9 separates cost contingency for the alternative analysis into two separate components: a general contingency and a varying contingency for risk. The total of these two components for any of the alternatives is at most 24 percent. The subsequent CSRA produced a contingency of 33 percent for Work Breakdown Structure item number 11 – Levees and Floodwalls for the NED plan. Assuming item 11 includes generally the same components of construction considered in the alternative analysis process, a 9- to 10-percent increase in magnitude from alternative analysis to the NED plan CSRA seems inordinate given that contingencies generally diminish as a project progresses. Section 9, page B4-5, states that the general contingency is for “undetermined items not yet accounted for” during the feasibility study phase.

Likewise, in APPENDIX L – Cost Estimate and CSRA items CC-2, CC-4, and CC-5 on page 3 of the CSRA are listed as concerns for lack of detailed site investigation or geotechnical investigation. These concerns are rated by the Project Delivery Team as “Likely” with an impact of “Significant,” leading to a risk level of 4. These are the highest risk levels produced within the CSRA and most likely have the largest impact on the 33 percent contingency. It follows that the general contingency for the alternative analysis and items CC-2, CC-4, and CC-5 of the CSRA have a connection and should be commensurate. The current increase in contingency from the alternative analysis to the CSRA, combined with the relative magnitude of the increase, casts doubt on the contingencies applied to the alternative analysis and/or the risk level applied to items CC-2, CC-4, and CC-5 in the CSRA.

Significance – Medium

Without an explanation for the increase, there is not a logical transition from the alternative analysis contingency to the CSRA contingency.

Recommendations for Resolution

Provide one of the following items along with additional narrative.

1. Increase the general contingency applied to the alternative analysis cost estimates.
2. Reduce, through reconsideration/customization, the risk level of CSRA items CC-2, CC-4, and CC-5.
3. Provide additional detail to the narrative for the alternative analysis general

contingency and a narrative for the CSRA Report that clarifies the difference in contingencies.

PDT Draft Evaluator Response (FPC#5):

1. Please indicate below whether the PDT 'concur' or 'non-concur' with the comment statement in the first row above and provide a clear explanation for the 'concur' or 'non-concur' response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will 'adopt' or 'not adopt' the recommendation and provide an explanation. If 'adopt', please provide information on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: Adopt Not adopt

Explanation:

Recommendation #2: Adopt Not adopt

Explanation:

Recommendation #3: Adopt Not adopt

Explanation:

Final Panel Comment 6

Some of the planning objectives do not satisfy the requirements of Engineer Regulation (ER) 1105-2-100, and the use of the objectives for guiding the planning process is not clearly documented.

Basis for Comment

U.S. Army Corps of Engineers (USACE) ER 1105-2-100 (USACE, 2000) (Section 2-3a(4), page 2-3) states the following:

“Planning objectives are statements that describe the desired results of the planning process by solving the problems and taking advantage of the opportunities identified. The **planning objectives must be directly related to the problems and opportunities identified for the study** and will be used for the formulation and evaluation of plans. Objectives must be clearly defined and provide information on the effect desired (quantified, if possible), the subject of the objective (what will be changed by accomplishing the objective), the location where the expected result will occur, the timing of the effect (when would the effect occur) and the duration of the effect.” (Bold inserted for emphasis)

In the Draft FS/EA, planning objective 2 (regarding assisting the public and stakeholders) and planning objective 3 (regarding partnering with other entities/agencies) (page 2-9, Section 2.4.1 - Planning Objectives) do not comply with the ER guidance in that they do not relate to the problems and opportunities identified for the study. Further, in Section 2.4.2 regarding the systems approach, the report states that:

“The planners have integrated these updates into analysis tools as one of the project’s objectives.”

Likewise, this objective does not comply with the ER guidance. The report refers several times (page 4-9, first paragraph; page 4-13, Section 4.6; page 5-25, last paragraph; page 5-34, second complete paragraph) to consideration of meeting the planning objectives as a basis for some decision; however, the degree or manner in which planning objectives are to be met is not documented.

Significance – Medium

A clear statement of planning objectives and how they were used in the planning process is important for understanding what the study is intended to achieve and how the tentatively selected plan was selected.

Recommendations for Resolution

1. Add to or revise the report to identify planning objectives that comply with the guidance of ER 1105-2-100.
2. Add to or revise the report to clarify how the planning objectives guided the planning process.

PDT Draft Evaluator Response (FPC#6):

1. Please indicate below whether the PDT 'concur' or 'non-concur' with the comment statement in the first row above and provide a clear explanation for the 'concur' or 'non-concur' response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will 'adopt' or 'not adopt' the recommendation and provide an explanation. If 'adopt', please provide information on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: Adopt Not adopt

Explanation:

Recommendation #2: Adopt Not adopt

Explanation:

Literature Cited:

USACE (2000). Planning Guidance Notebook. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. Engineer Regulation (ER) No.1105-2-100. April 22.

Final Panel Comment 7

The Draft Feasibility Study Report/Environmental Assessment (Draft FS/EA) does not present information demonstrating how the planning criteria described in Section 4.2 were used in the plan formulation process to screen potential alternatives.

Basis for Comment

The Draft FS/EA (page 4-2, Section 4.2 – Planning Criteria) states that the planning criteria were used to “assess the overall characteristics of each alternative measure to identify those most likely to meet the project purpose and objectives.” There are statements elsewhere in the report indicating that the planning criteria guided the screening of alternatives to focus on the most important alternatives (e.g., page 4-14, Section 4.6.3, first sentence; page 5-16, Section 5.2, second paragraph). The report does not, however, demonstrate or document the application of these criteria in the screening process.

Significance – Medium

Documenting the use of the planning criteria in the screening of alternatives would improve the report by explaining the rationale for eliminating certain alternatives from further consideration.

Recommendations for Resolution

1. Add to or revise the report to demonstrate the use of the planning criteria to screen alternatives.

PDT Draft Evaluator Response (FPC#7):

1. Please indicate below whether the PDT ‘concur’ or ‘non-concur’ with the comment statement in the first row above and provide a clear explanation for the ‘concur’ or ‘non-concur’ response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will ‘adopt’ or ‘not adopt’ the recommendation and provide an explanation. If ‘adopt’, please provide information on how this recommendation will be adopted. If ‘not adopt’, please explain why.

Recommendation #1: Adopt Not adopt

Explanation:

Final Panel Comment 8

It is not clear if the potential sources of uncertainty and the implications of the risk and uncertainty statistics provided with regard to Hydrologic Engineering Center-Flood Damage Reduction Analysis (HEC-FDA) modeling were considered.

Basis for Comment

The Draft Feasibility Study Report/Environmental Assessment (Draft FS/EA) (page 4-18) discusses the use of the HEC-FDA software to evaluate risk. As described, HEC-FDA uses discharge-exceedance probability, stage-discharge, and damage-stage functions and applies Monte Carlo simulation to compute expected damage and to account for uncertainty. The report does not explain whether the HEC-FDA model accounts for other sources of hydraulic and geotechnical uncertainties such as overtopping. Overtopping will undermine the resilience of the structure by scouring, ultimately leading to failure in stability. It is common practice to account for such uncertainty by increasing the design height of the levee or floodwall to include freeboard and overbuild due to anticipated settlement.

Significance – Medium

The final heights of the levees and floodwalls, taking into account all uncertainties, will impact geotechnical analyses (slope stability and settlement) and should be described.

Recommendations for Resolution

1. Include in HEC-FDA modeling a more detailed discussion on how the software takes into account the full range of hydraulic and geotechnical uncertainties.

PDT Draft Evaluator Response (FPC#8):

1. Please indicate below whether the PDT 'concur' or 'non-concur' with the comment statement in the first row above and provide a clear explanation for the 'concur' or 'non-concur' response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will 'adopt' or 'not adopt' the recommendation and provide an explanation. If 'adopt', please provide information on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: Adopt Not adopt

Explanation:

Final Panel Comment 9

It appears that the undrained shear strength of 2,000 pounds per square foot (psf) assigned to Stratum 2 is relatively high, especially if it is based solely on the descriptions given on the boring logs.

Basis for Comment

The undrained shear strength will affect the slope stability results significantly. The source and method used to derive soil parameters defines the level of risk and uncertainty. In Appendix B (Engineering Design and Modeling), Chapter 5 (Geotechnical), pages B5-2 through B5-4 discuss site-specific subsurface conditions. The hand-written field logs present the standard penetration test blow counts for Stratum 2 to be between 4 and 11. The laboratory tests performed are for soil index properties, not strength test. Soil strength parameters for conceptual preliminary design (given in Table 5-2) are reasonable with the exception of the value for Stratum 2. A value of 2,000 psf for undrained shear strength is too high for Stratum 2 given that there are no undrained shear strength data (pocket penetrometer or torvane) on the field logs and/or laboratory test results to support it.

Significance – Low

The value of undrained shear strength will impact the slope stability of the levee and/or floodwall.

Recommendations for Resolution

1. Explain how the undrained shear strength of 2,000 psf for Stratum 2 was derived.
2. Add a recommendation that future geotechnical exploration should determine strength parameters.

PDT Draft Evaluator Response (FPC#9):

1. Please indicate below whether the PDT ‘concur’ or ‘non-concur’ with the comment statement in the first row above and provide a clear explanation for the ‘concur’ or ‘non-concur’ response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will ‘adopt’ or ‘not adopt’ the recommendation and provide an explanation. If ‘adopt’, please provide information on how this recommendation will be adopted. If ‘not adopt’, please explain why.

Recommendation #1: Adopt Not adopt

Explanation:

Recommendation #2: Adopt Not adopt

Explanation:

Final Panel Comment 10

The assumption of no increased runoff is unclear because of conflicting statements regarding the potential for the hydrology of the basin upstream of the study area to change.

Basis for Comment

Various sections of the Draft FS/EA indicate that the hydrology of the basin upstream of the study area is not likely to change under either the without-project or with-project conditions. For example, the report states (Chapter 3, page 3-1) that the watershed is fully developed and urbanized. Based on statements made about land use in the basin (pages 3-5 and 3-6, Section 3.2.3), it appears unlikely that changes in hydrology will occur. Section 3.2.3 states:

“Because of a recent period of rapid urban expansion, Turkey Creek stormwater flows have increased.”

On page 2-6, the report states:

“Within the Upper Turkey Creek watershed, communities must work to preserve routing characteristics so that the USACE flow assumption for runoff (not to increase) remains true.”

These statements indicate that there is a possibility that runoff from the Upper Turkey Creek watershed could increase. Because of these inconsistencies, the Panel is uncertain what the future hydrologic conditions in the watershed will be.

Significance – Low

Definitive statements to support the contention that hydrology in the project area is not expected to change in the future would improve the report by eliminating any uncertainty.

Recommendations for Resolution

1. Add to or revise the report to clarify that no changes that would affect hydrology are expected to occur upstream of the proposed project.
2. Add a brief discussion to the report clarifying that the proposed project will not increase flood levels on the recently constructed Lower Turkey Creek Project.

PDT Draft Evaluator Response (FPC#10):

1. Please indicate below whether the PDT ‘concur’ or ‘non-concur’ with the comment statement in the first row above and provide a clear explanation for the ‘concur’ or ‘non-concur’ response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will 'adopt' or 'not adopt' the recommendation and provide an explanation. If 'adopt', please provide information on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: __Adopt __Not adopt

Explanation:

Recommendation #2: __Adopt __Not adopt

Explanation:

Final Panel Comment 11

An alternative utilizing only floodwalls, which could be less expensive, was not considered.

Basis for Comment

The report considers a broad array of flood risk management measures and adequately evaluates the measures chosen for consideration. However, the report does not consider an alternative that utilizes only floodwalls (without levees) to provide the equivalent level of protection. Admittedly, a simple comparison of costs per foot for floodwalls compared to levees indicates that levees are less expensive. Such a simple comparison, however, may not consider all relevant costs and may overlook efficiencies that may be gained because multiple types of construction equipment would not need to be used under a “floodwalls only” alternative.

Significance – Low

Adding this alternative to the report will make it more complete by documenting that the alternative analysis considered all possible alternatives in selecting the recommended plan.

Recommendations for Resolution

1. Add a discussion in the report describing and documenting the costs of a “flood-wall only” alternative.

PDT Draft Evaluator Response (FPC#11):

1. Please indicate below whether the PDT ‘concur’ or ‘non-concur’ with the comment statement in the first row above and provide a clear explanation for the ‘concur’ or ‘non-concur’ response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will ‘adopt’ or ‘not adopt’ the recommendation and provide an explanation. If ‘adopt’, please provide information on how this recommendation will be adopted. If ‘not adopt’, please explain why.

Recommendation #1: Adopt Not adopt

Explanation:

Final Panel Comment 12

The sources of depth-damage functions have not been adequately documented, leading to concerns regarding the validity of these functions.

Basis for Comment

The report states (page F-10 of Appendix F, Socioeconomics) that depth-damage functions were obtained from the following three sources:

- businesses and property owners in the study area;
- depth-damage relationships contained in recently approved studies in the U.S. Army Corps of Engineers , Kansas City District; and
- Institute for Water Resources (IWR) Report 96-R-12, *Analysis of Non-Residential Content Value and Depth-Damage Data for Flood Damage Reduction Studies*, (IWR 1996).

Appendix F further states:

“When survey data were not available, the USACE, New Orleans District, depth-damage functions were typically applied.” (Appendix F, page F-10)

The report does not display these functions, does not explain how they were derived by Kansas City District, New Orleans District or IWR, and does not support why it is appropriate to use these functions for the Turkey Creek analysis. Without this information, the Panel cannot determine the validity of these functions.

Significance – Low

A better description of the sources of the depth-damage functions used in the report would demonstrate the validity and reliability of the functions.

Recommendations for Resolution

1. Provide better descriptions of the sources of the depth-damage functions used in the report.

PDT Draft Evaluator Response (FPC#12):

1. Please indicate below whether the PDT ‘concur’ or ‘non-concur’ with the comment statement in the first row above and provide a clear explanation for the ‘concur’ or ‘non-concur’ response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will ‘adopt’ or ‘not adopt’ the recommendation and provide an explanation. If ‘adopt’, please provide information on how this recommendation will be adopted. If ‘not adopt’, please explain why.

Recommendation #1: Adopt Not adopt
Explanation:

Literature Cited:

IWR (1996). Analysis of Non-Residential Content Value and Depth-Damage Data for Flood Damage Reduction Studies. Institute for Water Resources Report 96-R-12. May.

Final Panel Comment 13

The significance of project impacts on the wildlife currently using the area, including birds, and the level of displacement of wildlife habitat cannot be determined based on the description provided.

Basis for Comment

While many of the likely environmental impacts appear to have been adequately described, more detail on wildlife (albeit urban) using the project area would be helpful to more fully understand whether impacts to those species are likely. Fox squirrel was used appropriately for modeling. However, it seems probable that at least some birds nest in the trees and brushy habitats that currently exist in the project area. Listing them, or stating they were considered but found to be absent, would make it easier to understand the significance of likely impacts and their analyses.

Significance – Low

A more thorough listing of wildlife species observed using the project area would confirm the adequacy of the proposed mitigation.

Recommendations for Resolution

1. Add a more detailed listing of the wildlife species that have been observed using the project area, particularly the nesting birds.

PDT Draft Evaluator Response (FPC#13):

1. Please indicate below whether the PDT 'concur' or 'non-concur' with the comment statement in the first row above and provide a clear explanation for the 'concur' or 'non-concur' response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will 'adopt' or 'not adopt' the recommendation and provide an explanation. If 'adopt', please provide information on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: Adopt Not adopt

Explanation:

Final Panel Comment 14

Information regarding the quantities, materials, and equipment used to calculate the cost estimates for the selected alternative is not included in Appendix L, Cost Estimate and Cost and Schedule Risk Analysis (CSRA).

Basis for Comment

Appendix L, Cost Estimate and CSRA, does not indicate what information has been carried over from the alternatives analysis and what has been refined in the Micro Computer Aided Cost Estimate System (MCACES) estimate. There is cost information in Appendix L – Cost Estimate and Cost and Schedule Risk Analysis; APPENDICES – AFB DOCUMENT, Chapter 4 (Cost Estimation); and Chapter 7 (The Recommended Plan) of the main report. This information should be summarized within the MCACES estimate “notes” page as per U.S. Army Corps of Engineers (USACE) (2008a), Engineer Regulation (ER) 1110-2-1302, paragraph 8, and USACE (2008b), Engineer Technical Letter 1110-2-573, paragraph 2.4.7.

Consolidating pertinent cost information into Appendix L will improve the discussion of quantities, materials, and equipment used to calculate the cost estimates for the chosen alternative.

Significance – Low

Summarizing the assumptions used during the beginning stages of the Baseline Cost Estimate and including the narrative within the MCACES estimate “notes” page will benefit the Cost Engineer.

Recommendations for Resolution

1. Consolidate the pertinent cost information provided in Tab 2 - Appendix B – Engineering and Modeling, Chapter 4, of the document titled APPENDICES – AFB DOCUMENT, with the updated information provided in Chapter 7 of the main report. Insert and summarize the consolidated information in Appendix L – Cost Estimate and CSRA.

PDT Draft Evaluator Response (FPC#14):

1. Please indicate below whether the PDT ‘concur’ or ‘non-concur’ with the comment statement in the first row above and provide a clear explanation for the ‘concur’ or ‘non-concur’ response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will ‘adopt’ or ‘not adopt’ the recommendation and provide an explanation. If ‘adopt’, please provide information

on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: __Adopt __Not adopt

Explanation:

Literature Cited:

USACE (2008a). Civil Works Cost Engineering. Department of the Army, U.S Army Corps of Engineers, Washington, D.C. Engineer Regulation (ER) No. 1110-2-1302. September 15.

USACE (2008b). Construction Cost Estimating Guide for Civil Works. Department of the Army, U.S Army Corps of Engineers, Washington, D.C. Engineer Technical Letter No. 1110-2-573. September 30.

Final Panel Comment 15

The Draft Feasibility Study Report/Environmental Assessment (Draft FS/EA) does not describe how the operations and maintenance (O&M) cost estimate was derived and how the average annual O&M costs were developed.

Basis for Comment

The tasks included in the O&M of the proposed project are well described in Section 7.6, but the descriptions are limited to percentages with no additional backup information on how the percentages were developed. Derivation of the O&M costs for each alternative is not described in detail.

Significance – Low

Additional description of the effort, frequency, and costs associated with O&M of the proposed project would establish the validity of the O&M costs.

Recommendations for Resolution

1. Describe the level of effort involved in various O&M activities, substantiate the associated costs, and explain how the average annual O&M costs were derived.

PDT Draft Evaluator Response (FPC#15):

1. Please indicate below whether the PDT 'concur' or 'non-concur' with the comment statement in the first row above and provide a clear explanation for the 'concur' or 'non-concur' response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will 'adopt' or 'not adopt' the recommendation and provide an explanation. If 'adopt', please provide information on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: Adopt Not adopt

Explanation:

Final Panel Comment 16

The performance goal for the project is not well defined; therefore, it is not possible to fully understand how well the recommended National Economic Development (NED) plan performs and how it compares with other alternatives.

Basis for Comment

There is no clear statement within the report on the performance goal that the project must meet. The only information on this topic was found in Appendix B, page B3-21, where the U.S. Army Corps of Engineers (USACE) requested that an alternative be modified "...to achieve a reliable factor of at least 90 percent." In a risk-based analysis, the level of assurance or reliability factor is a statement of the probability of non-exceedance. Based on the limited discussion in Appendix B, it appears that the project was designed for a minimum probability of non-exceedance of 90 percent, or conversely, a maximum probability of exceedance of 10 percent. The NED alternative resulted in a probability of non-exceedance of 95.7 percent (Chapter 7, page 7.1), meaning a probability of exceedance of only 4.3 percent. If the goal was 90 percent non-exceedance, the NED plan would seem to perform quite well.

Significance – Low

A clear statement describing the desired performance goal, and an explanation of why it was selected (including whether it is a USACE standard or a standard related to an NED plan) will increase the understanding of the NED plan's performance.

Recommendations for Resolution

1. Describe the performance goal for the project in the main report and explain why it was selected.

PDT Draft Evaluator Response (FPC#16):

1. Please indicate below whether the PDT 'concur' or 'non-concur' with the comment statement in the first row above and provide a clear explanation for the 'concur' or 'non-concur' response.

Concur Non-Concur

Explanation:

2. For each recommendation, please indicate whether the PDT will 'adopt' or 'not adopt' the recommendation and provide an explanation. If 'adopt', please provide information on how this recommendation will be adopted. If 'not adopt', please explain why.

Recommendation #1: Adopt Not adopt

Explanation: