

**DOCUMENTATION OF REVIEW FINDINGS**

**DES MOINES AND RACCOON RIVERS  
PROJECT  
DES MOINES, IOWA**

**FINAL FEASIBILITY REPORT  
and  
ENVIRONMENTAL ASSESSMENT**

**DECEMBER 2005**

# DOCUMENTATION OF REVIEW FINDINGS

## DES MOINES AND RACCOON RIVERS PROJECT DES MOINES, IOWA FEASIBILITY REPORT and ENVIRONMENTAL ASSESSMENT (Report dated DECEMBER 2005)

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## DOCUMENTATION OF REVIEW FINDINGS

### DES MOINES AND RACCOON RIVERS PROJECT DES MOINES, IOWA FEASIBILITY REPORT and ENVIRONMENTAL ASSESSMENT (Report dated DECEMBER 2005)

#### I. BACKGROUND

The project is located in the incorporated city limits of Des Moines, Iowa. The city of Des Moines surrounds the confluence of the Des Moines and Raccoon River in Polk County, in central Iowa. The primary purpose of the report is to evaluate and determine the feasibility of implementing flood damage reduction improvements for the city of Des Moines. Section 216 of the Flood Control Act of 1970 is cited as the study authority which allows the Secretary of the Army to review the operation of projects completed by the Corps of Engineers when found advisable due to significantly changed conditions, and to report to Congress with recommendations for modifying structures or their operation for improving the quality of the environment or in the overall public interest. The project under review, Des Moines, Iowa (also known as the Des Moines Local Flood Protection Project) was authorized for construction by Section 10 of the Flood Control Act of 1944.

**A. Existing Project:** The Des Moines Local Flood Protection Project is located along both banks of the Des Moines River and mouth of the Raccoon River in downtown Des Moines and is designed to protect the city from a flood that has a 1-percent chance of occurring in any year. It includes a system of levees, floodwalls, bridge raises, and gatewells and was completed in 1971. Other Federal and local flood protection projects within the project area have been completed and are also contributing to flood damage reduction in and adjacent to the city of Des Moines.

**B. Problem Summary:** The city of Des Moines surrounds the confluence of the Des Moines and Raccoon River. These rivers drain almost 10,000 square miles in northern and central Iowa and in southwestern Minnesota. Des Moines has experienced severe flooding since floods were first recorded in 1851. The Great Flood of 1993 established the flood of record on most streams in the Des Moines metropolitan area. The metropolitan area suffered more than \$152,000,000 in flood damages as more than 3,000 structures were inundated. Des Moines, located in the center of the flood region, became the largest U.S. city to lose its water supply when its water treatment plant flooded. More than 250,000 people lost drinking water for 19 days in the summer. The city was without water and sewer service for more than a week, causing the closure of businesses and industries throughout the county. Water pipes, contaminated by floodwaters carrying sewage and agricultural chemicals, had to be flushed out before the municipal water supply was reconnected. Economic losses in Des Moines totaled approximately \$716,000,000. The city of Des Moines relies on a system of both Federally-constructed and locally-constructed levees to provide flood protection. Of eleven reaches, two non-Federal levees do not provide reliable flood protection. Three Federal levees have a large number of closure structures that reduce the level of protection. Three reaches have no levee

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protection. Improvements are subject to flooding along three tributary creeks. There is an opportunity to improve levee related recreation trails.

**C. Plan Formulation:** The plan formulation considered both structural and non-structural solutions. Systemic flood damage reduction alternatives from previous studies were reviewed and reevaluated to determine if any of these alternatives were effective and economically justified. No systemic alternatives such as storage reservoirs or channels modifications were found that appeared economically justified. Initially, it was believed that a uniform level of protection throughout the city would be most desirable. However, the plan formulation strategy evolved to one of developing optimum flood damage reduction alternatives for each reach that could be combined together into a coordinated flood damage reduction project.

**D. Report Recommendations:** The report recommends a plan to reduce urban flood damages and provide recreation. The recommended plan includes the following: (1) constructing 7,700 feet of levee, 400 feet of retaining wall, and a closure structure to increase the existing flood protection in Reach 1 (non-Federal levee) from a 0.02 to 0.002 probability of exceedance (50-year to 500-year level of protection); (2) reconstructing 5,900 feet of levee and modifying three pump stations to increase the existing flood protection in Reach 2 (non-Federal levee) from a 0.02 to 0.002 probability of exceedance (50-year to 500-year level of protection); (3) increasing the reliability of the existing Reach 3 (Federal) levee system by permanently eliminating 4 closures, reducing the width of 4 closures, and adding a new closure; (4) increasing the reliability of the existing Reach 4 (Federal) levee system by permanently eliminating 1 closure and reducing the width of 5 closures; and (5) increasing the reliability of the existing Reach 5 (Federal) levee system by permanently eliminating 2 closures. The proposed plan also includes 16.2 acres of mitigation to compensate for unavoidable environmental impacts. Proposed recreation features include re-constructing 2,900 feet of recreation trail and constructing 2,200 feet of new recreation trail in Reach 1. The city of Des Moines would be the non-Federal sponsor. The estimated first cost of the recommended plan is \$10,491,000 with a \$6,782,000 Federal cost share and a \$3,709,000 non-Federal cost share. Annual OMRR&R is estimated at \$30,000. Equivalent annual costs for flood damage reduction are \$642,000 and for recreation are \$16,000, including OMRR&R, for a total of \$658,000. Equivalent annual benefits for flood damage reduction are \$1,667,000 and for recreation are \$127,000, for a total of \$1,794,000. This results in equivalent annual net benefits of \$1,025,000 for flood damage reduction and \$111,000 for recreation for total equivalent annual net benefits of \$1,136,000 and the benefit-cost ratio is 2.7 to 1. The estimates were based on an October 2005 price level, a 5 1/8 percent discount rate, and a 50-year period of analysis.

## **II. CIVIL WORKS REVIEW BOARD OF THE FINAL FEASIBILITY REPORT**

A Civil Works Review Board briefing was held 18 October 2005 to review the Final Feasibility report for the Des Moines and Raccoon Rivers, Iowa. The Rock Island District and Mississippi

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Valley Division presented the recommended project and requested the report be approved. The Office of Water Project Review recommended approval of the report for State and Agency review. The CWRB members unanimously approved the final feasibility report under conditions that the following issues were raised during the CWRB Briefing were resolved:

**A. Coordination with FEMA.** The appropriate FEMA Regional office will be notified of proposed flood damage reduction works or of changes to established flood damage reduction works. The district will confirm coordination with FEMA. Documentation should be included in the report.

**District Response:** Section 8.A.3. now states “The Federal Emergency Management Agency was made aware of all the hydrology and hydraulic studies throughout the study’s process. Currently FEMA is digitizing existing Flood Insurance Flood Rate Maps in the Des Moines area.”

**HQUSACE Final Analysis: This concern is resolved.**

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**B. Preparation of Emergency Response Plan.** The district will develop a Emergency Response Plan, to be included in the OMRR&R Manual, that will detail the procedures to follow during an emergency situation.

**District Response:** In the Project Management Plan under the scope of work/tasks a work description exists ensuring a detailed Emergency Response Plan is included in the OMRR&R manual.

**HQUSACE Final Analysis: This concern is resolved.**

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### III. HQUSACE POLICY COMPLIANCE REVIEW OF THE FINAL FEASIBILITY REPORT

**A. Flood Damage Reduction Costs and Cost Sharing.** Table 36 should include separate subtotals for the flood damage reduction measures.

**District Response:** Table 36 is now Table 38 due to the addition of two tables. The top line of Table 38 shows separate subtotals for the flood damage reduction measures.

**HQUSACE Analysis: This concern is not resolved.** Table 38 should include a separate column that totals the estimates for all flood damage reduction features and all recreation features. The information is needed to allow higher levels of review to confirm the appropriate application of cost sharing in a simple, straight forward manner, and to support the table in the Executive Summary and Table 5 in the Project Summary.

**District Response:** Tables 38 show a separate column that totals the estimates for flood damage reduction and recreation features.

**HQUSACE Final Analysis: This concern is fully resolved.**

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**B. Final Benefits and Costs.** Section 5B should state and reference the current cost estimate of \$10,059,000 presented in Table 26 and the related fully funded cost estimate, rather than the superseded estimates based on May 2004 price levels. Displaying the outdated estimates will only confuse readers. It would be preferable to update Tables 24 and 25 with estimates based on the October 2004 price levels. Similar to the previous comment on Table 38, Tables 24-26 should include a summary line for the combined flood damage reduction features.

**District Response:** Tables 24 and 25 are updated to the October 2005 price levels and Table 26 eliminated because it had become a summary of the previous Table 25 when updated to October 2005 price levels. The updated cost estimate for the project in October 2004 price levels is now \$10,491,000. Tables 24 and 25 include a summary line for the combined flood damage reduction and recreation features.

**HQUSACE Final Analysis:** The changes are adequate. Ordinarily a final report would not state that a table has been deleted as shown on page 69. However, this is not a significant issue.

**This concern is fully resolved.**

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**C. Residual Damages.** In order to establish the effectiveness of the proposed project in accordance with P&G and to communicate the residual risk in accordance with paragraph E-18c(2), either Section 5B or 5D should state the residual damages for the modified project in average annual dollars and as a percentage of the without-project average annual flood damages.

**District Response:** Section 5.D.shows a chart of residual damages for the modified project in average annual dollars and as a percentage of the without-project average annual flood damages.

**HQUSACE Final Analysis:** **This concern is fully resolved.**

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#### **IV. HQUSACE POLICY COMPLIANCE REVIEW OF THE DRAFT FEASIBILITY REPORT**

**A. Cost Estimate Displays.** Cost estimates for the recommended plan in Sections 5, 7B and 9 in the final report should be based on the most recent October price level, currently October 2004.

**District Response:** Concur, in Section 5, Table 26 shows a summary of total costs and benefits at the October 2004 price levels. Section 7, Table 38 “Project Cost Distribution” and the amounts in Section 9 have been revised to reflect October 2004 price levels. Price indexing was performed in accordance with ER 1110-2-1302, Civil Works Cost Engineering and EM 1110-2-1304, Civil Works Construction Cost Index System (CWCCIS).

**HQUSACE Final Analysis:** **This concern is resolved.** The response and report changes are adequate.

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**B. Discount Rate and Period of Analysis.** The final main report should identify the Discount rate and period of analysis used in determining the average annual equivalent costs and benefits.

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**District Response:** Concur, the 5 5/8 % discount rate and the 50-year period of analysis were identified on Tables, 7, 13, 14, 15, 17, 19, 21, 23, 24, 25, 26, and 38.

**HQUSACE Final Analysis: This concern is resolved.** The response and report changes are adequate. We note that the current 2005 discount rate of 5-3/8% was not used, which is inconsistent with using the October 2004 price level and probably understates net benefits somewhat. The District will need to provide cost and benefit estimates based on the 2006 interest rate (probably 5-1/8%) and October 2005 price level for the final Report of the Chief of Engineers and the Project Summary, since they will not be completed until after the start of new fiscal year.

**District Response:** The Executive Summary, Tables 24, 25 and 38 are updated to October 2005 price levels at a discount rate of 5-1/8%.

**HQUSACE Final Analysis: This concern is fully resolved.**

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**C. MCACES.** The MCACES estimate stated a price level date of May 24, 2004 with a Total Project Cost of \$10,923,752 whereas the report (page ES-2) stated a price level of October 2004 with a Total Project Cost of \$10,059,000. The District should confirm that the price indexing was performed in accordance with ER-1110-2-1302, Civil Works Cost Engineering, paragraph 13. Price Level Update/Forecast.

**District Response:** The \$10,059,000 cost estimate in the Executive Summary (page ES-2) and in Table 26 is based on an October 2004 price level without inflation (cost escalation). The MCACES estimates include cost escalation during the construction period, resulting in a fully-funded cost estimate of \$10,923,752 (rounded to \$10,924,000 in Table 24). When the cost escalation amounts are subtracted from the MCACES cost estimate, the amount matches the project cost estimate based on the May 2004 price level. We will add notes to cost estimate tables to identify the price levels the costs are based on and will revise Table 38 and the amounts in Section 9 to reflect the October 2004 price level. Price indexing was performed in accordance with ER 1110-2-1302, Civil Works Cost Engineering and EM 1110-2-1304, Civil Works Construction Cost Index System (CWCCIS).

**HQUSACE Final Analysis: This concern is fully resolved.**

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**D. Flood Damage Reduction Costs and Cost Sharing.** Table 36 should include separate subtotals for the flood damage reduction measures.

**District Response:** Table 36 is now Table 38 due to the addition of two tables. The top line of Table 38 shows separate subtotals for the flood damage reduction measures.

**HQUSACE Analysis: This concern is not resolved (also included in Part III).** Table 38 should include a separate column that totals the estimates for all flood damage reduction features and all recreation features. The information is needed to allow higher levels of review to confirm the appropriate application of cost sharing in a simple, straight forward manner, and to support the table in the Executive Summary and Table 5 in the Project Summary.

**District Response:** Tables 38 show a separate column that totals the estimates for flood damage reduction and recreation features.

**HQUSACE Final Analysis: This concern is fully resolved.**

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**E. LERRDs.** Table 36 (now Table 38) indicates that there are no LERRDs for the Birdland Recreation Trail which is not in accordance with the REP. A value for the fee, whether it is the difference between easement and fee if easement is otherwise required for the project, or fee if only being acquired for recreation, should be reflected as a LERRD cost for recreation.

**District Response:** Concur; the wording “Fee (recreational) 0.50 acres” in Section 1.A.2. of the Real Estate Plan was mislabeled. It has been revised to read “Fee (Levee Right-of-Way) 7.06 acres”. Also changed in Section 1.A.4.e, is “Fee for Recreational” to “Fee for Levee Right-of-Way”.

**HQUSACE Final Analysis: This concern is fully resolved.**

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**F. Milestones.** The milestones in Section 9, Recommendations, should be moved to Section 7, Plan Implementation in the final report. The milestones, particularly the first two, should be updated to reflect expectations at the time the report is signed by the District Engineer.

**District Response:** Concur, the Milestones chart was moved from Section 9 to Section 7, “Plan Implementation in the final report”.

**HQUSACE Final Analysis: This concern is resolved.** The response and report changes are adequate. The milestones that were already overdue in the draft report have been updated.

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**G. Threatened and Endangered Species.** Page 90 and other sections of the draft feasibility report state that the project has the potential to affect Federal Threatened and Endangered (T & E) species, but that no determination has been made, although coordination is continuing with the United States Fish and Wildlife Service (USFWS). While the ongoing coordination with the USFWS appears to be appropriate at this stage of the study, please be advised that the issue of endangered species must be resolved before the report may be finalized, and the Finding of No Significant Impact may be signed. In addition, the unresolved status of the T & E species could have cost and schedule implications for the project through the need for additional endangered species “mitigation” efforts and the preparation of a biological assessment (Corps) and biological opinion (USFWS).

**District Response:** The USFWS letter’s Conclusions and Recommendations, shown on page H-28-29 of Public Involvement, states: “...Environmental impacts associated with this level of protection have been quantified to the extent possible and mitigated in a proposed off-site mitigation area as well as on-site where feasible. Factors such as temporal lag before tree plantings mature were considered and compensated for by the use of higher quality mast trees and increasing the acreage of the mitigation plantings. Therefore we have no objection to selection of the preferred alternative.....” Several sections of the report; 4.C.1.d), 4.E.6.a), 4.F.6., 6.C.6., and 6.C.10.d) were modified to clarify that through informal consultation between the District and the USFWS it was decided that there was no need for a biological assessment and that any action under the project was not likely to adversely affect T & E species. This was

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confirmed by phone conversation dated 29 August 2005 with Region 3 USFWS biologist Joe Slater (recorded in the Statement of Findings). Verbiage stating that there is a “potential threat” associated with a bald eagle roosting tree was removed from the report because the issue was resolved by USFWS and reconfirmed during the above phone conversation. It was further agreed that no unknown or lack of information that might have adverse effects on T&E species was apparent.

**HQUSACE Final Analysis: This concern is resolved.**

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**H. CE/ICA for Mitigation Plan.** The report has examined a number of mitigation sites for the project, and the selection of the lowest-cost alternatives (Chichaqua and Central Place) as the recommended mitigation sites appears to be appropriate, and in compliance with Corps requirements to evaluate the cost-effectiveness of mitigation measures. However, the report does not present a standard incremental cost analysis for the proposed mitigation measures to be undertaken at the respective mitigation areas (i.e., an analysis of the costs of various methods of producing the desired environmental outputs). For example, the incremental cost analysis for the creation of a forested upland habitat might evaluate the relative costs of using bare root saplings, small containerized trees, or balled and burlaped trees, taking into account factors such as plant materials costs, planting density, maintenance requirements, and performance/time needed to achieve the desired habitat outputs. Similar analysis of mitigation methods could be performed for the bottomland forest and herbaceous wetland mitigation needs. Guidance on incremental analysis is found in paragraph C-3 (e) 8, page C-17 of ER 1105-2-100 and in the publications of the Institute for Water Resources.

**District Response:** Concur, an incremental cost analysis of different measures to incorporate all habitat outputs on the mitigation site was added to Mitigation Plan located in Appendix G, on page G-4, first paragraph and in Table 2. Emphasis was placed on survivability and years to desired output and was coordinated with District biologists and foresters.

**HQUSACE Final Analysis: This concern is resolved.**

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**I. Mitigation.** Mitigation lands are discussed in the main report in a few areas but the acreage mentioned is higher than that discussed in the REP. Please verify the acreage required for mitigation and the estate to be provided.

**District Response:** Concur, mitigation acreages did not correlate through the report and have been amended in the main report, Appendix G - Environmental, and Appendix I - 404(b)(1). In Appendix G, see Table 1 “Mitigation Acres for Impacts at Birdland Park and Central Place” and general acreages changes in Section 1. This table is also used in the main report in Section 6.C.5 “Cumulative Impacts”. All mitigation acreages referenced throughout the report now match with this table.

**HQUSACE Final Analysis: This concern is resolved.**

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**J. Cultural.** With regard to the closure structures being located within a Historic District, how does this eligibility for inclusion on the NRHP affect the project?

**District Response:** The closure structures will cause no adverse affect to the Historic District, see (Section 8.A.1.) of the main report.

**HQUSACE Final Analysis: This concern is resolved.**

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**K. Recreation.** The Report and Items of Local Cooperation should reflect cost sharing for recreation.

**District Response:** Local cost sharing includes recreation in Table 38, second column.

**HQUSACE Final Analysis: This concern is resolved.**

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**L. Miscellaneous**

**(1) Appendix G.** Page G-3 incorrectly identifies Table 11 of the main report as containing the incremental cost analysis for the project. The correct reference is Table 10 on page 33 of the main report.

**District Response:** Concur, amended to read “A cost comparison of mitigation costs of three alternatives can be found in the main report (Table 10).”

**HQUSACE Final Analysis: This concern is resolved.**

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**(2) Appendix F.** Page F-4, paragraph L – “their” should be “there”. Consider rewording to put into active voice. Unless the Attorney’s Opinion already finds that PL 91-646 requires payment, change the statement to something like “Public Law 91-646 may require payment of benefits to some of the affected owners.”

**District Response:** Appendix F is amended to read “The project will not require relocations of homes, farms and businesses.”

**HQUSACE Final Analysis: This concern is resolved.**

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**(3) Appendix F.** Page F-9, paragraph D – reads there are 20 affected ownerships. It should read “2.” Extra zeros.

**District Response:** Concur, Appendix F amended, now Page F-10, paragraph D now reads Two.

**HQUSACE Final Analysis: This concern is resolved.**

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**(4) Appendix F.** Page F-10, paragraph M and Page F-14, paragraph J – should “in cast and Attorney’s” read “in case an Attorney’s”

**District Response:** Concur Appendix F, Park Central Place section 2.M. page F-11, and Downtown Closures section 3.J. page F-14 have been revised to read “The project will require relocations of water lines, sidewalks and driveways, which do not qualify for Relocation Assistance Benefits; therefore; there are not any Public Law 91-646 Relocation Assistance Benefit payments allowed.”

**HQUSACE Final Analysis: This concern is resolved.**

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## V. HQUSACE POLICY COMPLIANCE REVIEW OF THE ALTERNATIVE FORMULATION BRIEFING DOCUMENT

**A. Legal Certification.** The transmittal memorandum states that the final legal certification will be signed after public review. In accordance with paragraphs H-4.c and H-2.f of ER 1105-2-100, documentation of the legal certification will need to be included with the draft report when it is submitted for policy compliance review.

**District Response:** Concur, will change accordingly.

**Discussion:** Satisfactory response.

**Required Action:** District will provide legal certification with draft report submission.

**Action Taken at the District:** Legal Certification is attached to this memorandum.

**HQUSACE Final Analysis: The concern is resolved.**

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### **B. Authority.**

(1) The Study Authority section cites the Energy and Water Development Appropriations Act of 1998 and Section 216 of the 1970 Flood Control Act. The section should present the pertinent text of the appropriations act (if there is any), identify the project under review, and present the text of the construction authority for the project under review.

**District Response:** Concur, will change accordingly in Section 1.

**Discussion:** Response is not adequate. The District needs to provide the authorization text to HQUSACE in order to confirm that there are no authorization issues and add authorization language for all projects and reaches to the draft report. The initial project authorization and any modifications should be provided.

**Action Required:** The District will forward the authorization text to HQUSACE and include the text in the draft report.

**District Response:** Additional language was added to Paragraph 1 to identify the completed project under review and include the text of the construction authority. There was no text for the Des Moines & Raccoon Rivers study in the 1998 Appropriations Act; just a line item for \$100,000.

**HQUSACE Assessment:** The revisions resolve the concern.

**Required Action:** Include the 1998 Appropriations Act language in the draft report.

**Action Taken at the District:** Amended Paragraph 1 “Authority” in the main report.

**HQUSACE Final Analysis: The concern is resolved.**

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(2) The documentation provided does not identify the project that is being reviewed under Section 216, nor does it identify the authorities for the completed projects. The district will need to address this issue in the draft report.

**District Response:** Concur, will change accordingly in Paragraph 1.

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**Discussion:** The District will add a description of the original authorized project at a level of detail of a Chiefs Report description to response and draft report. A general description of the non-Federal projects within the study area shall also be provided. The description should include level of protection, history of project, i.e., when constructed. More detail can also be provided in the description of project reaches.

**Required Action:** The District will provide the descriptions to HQUSACE in order to resolve this concern.

**District Response:** The construction authority for the completed Des Moines, Iowa project was added to Paragraph 1 and is also discussed in Paragraph 3.B. Paragraph 3.B also describes other completed projects in or adjacent to Des Moines. We had discussed putting this information in Paragraph 2, but it seemed to fit better in 3.B, if that is acceptable.

**HQUSACE Assessment:** The revisions resolve the concern.

**Required Action:** Include the construction authority for the completed Des Moines, Iowa Project in the draft report.

**Action Taken at the District:** Previous District Response resolved concerns. The report was amended. See Paragraph 1.

**HQUSACE Final Analysis: The concern is resolved.**

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### **C. Environmental.**

(1) Pages 17 and 104 of the feasibility report discuss the potential for the project to affect threatened and endangered species, but aside from mentioning that coordination is ongoing with the USFWS, little information is provided concerning the preparation of a biological assessment, or the need to open consultation under the Endangered Species Act for the project. HQUSACE recommends that additional information concerning the process that the District would follow with regard to the ESA be added to the report.

**District Response:** The impacts to the listed species are still uncertain. When final alignments are determined, impacts will be evaluated. Surveys and formal consultation will be initiated, as appropriate. The USWFS concurs with this approach.

**Discussion:** The fact that impacts are still uncertain is understood. However it would be helpful to understand the process the District will follow to bring the environmental impacts to closure during the remainder of the study.

**Required Action:** The district will add the process flowchart discussed during the AFB to the draft report.

**Action taken at the District:** Report amended. A process flowchart was added to the main report. See Paragraph 6.C.5 and Figure 24: Endangered Species Clearance Flowchart.

**HQUSACE Final Analysis: The concern is resolved.**

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(2) Page G-2 of the Environmental Appendix states that the permanent impacts to emergent marsh habitats would be mitigated at a 2:1 ratio. It is not clear whether this proposed mitigation ratio was calculated using a habitat-based evaluation methodology, as required by section C-3.d(5) of ER 1105-2-100. The mitigation determinations for several other impacted

habitats were calculated using a method called EXHEP. The methodology used to determine the mitigation requirements for the emergent wetlands should be explained.

**District Response:** The proposed mitigation was calculated using habitat-based evaluation methodology. However, due to the state of the habitat and the insensitivity of the model to the proposed mitigation, the agencies consulted and agreed to use the 2:1 ratio to assure adequate compensation. The mitigation requirements were determined through a coordination and consultation process with the agency partners rather than through a methodology.

**Discussion:** The discussion centered on the question of whether there was a habitat value based evaluation performed as the basis for the 2:1 mitigation ratio. It is not acceptable to base mitigation on a ratio approach.

**Required Action:** The District will prepare a revised response to the comment that better explains what the basis for the mitigation is and include this information in the draft report. The draft report will also be revised to clarify that the requirements for mitigation were not determined by instituting a 2:1 ratio.

**Action taken at the District:** Both the Main and Appendix G Reports were amended removing ratios and presenting the range of possible impacts and their associated mitigation requirements in acres. Mitigation alternatives were expanded by documenting the incremental cost analysis and reasons why the preferred mitigation alternative was selected. See Paragraph 4.B.6. in the Main Report and Paragraph 1 in Appendix G.

**HQUSACE Final Analysis: The concern is resolved.**

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**D. Period of Analysis.** Pages 2, B-16, and G-10 use the phrase “life of the project” or “project life” where “period of analysis” would be more appropriate. The project’s life will end only when Congress deauthorizes the project. Specifying a 50-year project life implies that the project and its benefits are temporary, which could possibly affect budget priority.

**District Response:** We disagree that the words “project life” should be changed to “period of analysis”. Costs and benefits are assessed over a limited time period. Fifty years is the maximum horizon used in habitat evaluation. We did not intend to imply that the project would fade from existence after 50 years.

**Discussion:** HQUSACE discussed the implications of the term project life and that it is not acceptable terminology.

**Required Action:** District will change the wording throughout the draft report from “project life” to “period of analysis.”

**Action taken at the District:** Reports amended; all verbiage pertaining to “project life” has been changed to period of analysis.

**HQUSACE Final Analysis: The concern is resolved.**

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**E. Levee Improvement/Construction Authority.** The report discussion of the authorities for the existing projects is incomplete, as are the descriptions of the existing projects. A clear understanding of the existing projects and their respective authorities is needed in order to assess the need for authority to implement the recommended plan. In particular:

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- Page 5 states that the Corps improved levees in Reaches 4 and 5 in the late 1960s. What authority was used to achieve the improvements? What was the project(s)?
- Page 6 states that the Corps constructed levees in Reach 8 in 1997. What was the project and the construction authority?
- Page 7 mentions Design Memorandum No. 1. What was the original decision document that supported authorization and what is the citation for the authorization for construction?
- Page 8 mentions a review of a completed project in 1978. What completed project was reviewed? What was the authority for its construction?
- Page 8 mentions a general reevaluation in 1989. What project was reevaluated? What was the authority for its construction?
- Page 9 mentions the “Des Moines River on the Des Moines and Raccoon Rivers” as a Federal flood protection project. Is that the formal project name? What was the authority for its construction? Where is it?
  - Why does the Existing Projects section omit the Des Moines River Basin, Iowa and Minnesota (aka West Des Moines – Des Moines, Iowa) project, which was authorized by Section 401(a) of WRDA 1986 and completed in 1998? Page 9 mentions the West Des Moines Levee on Reach 8 and it is also mentioned in the Engineering Appendix. Is this part of the same project? If not, who built it? If it was the Corps, then what authority was used?

The report should cite the authority for the Des Moines Recreational River and Greenbelt, Iowa project since it is mentioned as potentially implementing recreation features in the area of the proposed project modifications.

**District Response:** Concur, will change accordingly in Paragraphs 2 and 3.

**Discussion:** Same as comment 2b.1 and 2 above.

**Required Action:** Revise the draft report to include the authorization language. The District will forward the authorization text to HQUSACE and include the text in the draft report.

**Action taken at the District:** Report amended. Revised text was sent to HQUSACE 11 Mar 2005 and was approved. See Paragraphs 2 and 3 of the main report.

**HQUSACE Final Analysis:** The concern is resolved.

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**F. Description of the Study Area & Description of Reaches.** The study area is the city of Des Moines, Iowa and there are 11 separable (hydraulic and economic) reaches within the study area, and 8 reaches have existing flood protection (levees). The project formulation initiates with a discussion of the hydraulic system but then evaluates existing conditions, future without project, problems, needs, opportunities, alternative analysis and plan selection at the individual reaches based on the determination that the reaches are separable. This approach makes sense but it would be helpful if there were more discussion in this section to clarify the rationale for going from a system wide assessment to a reach-by-reach approach and the separable nature of the reaches. The effects of induced flooding should be made clearer. It is understood that in reaches 9, 10, and 11 there is induced flooding and the no action alternative was selected in each of these cases. Better definitions of reaches would be helpful.

System study

**District Response:** Concur; we are currently documenting additional criteria for looking at the combined watersheds as a system and better describing our requirement to address each reach separately because they are economically and hydraulically separate. Although reaches 9, 10 and 11 have no economically justified projects, the existing project (levee) at Reach 9 had minor induced flooding when it was built and that will be described in the description of the reach. We are writing better descriptions of each reach.

**Discussion:** Response adequate.

**Required Action:** The District will revise the draft report to better describe the individual project reaches and why they are economically and hydraulically separate. A description of the minor induced flooding at Reach 9 will also be described.

**Action taken at the District:** Clarification of systemic analysis vs. specific reach analysis is included in Paragraph 4.C. The effects of induced flooding are discussed in the evaluation of each reach that proposes structural flood damage reduction projects; Birdland Park, Central Place, and the Downtown Reaches. See Paragraphs 4.E.7, 4.F.7, 4.G.6, 4.H.6, 4.I.6, and the cumulative impacts in Paragraph 6.A.2. Improved descriptions of each reach are included in Paragraph 2.C.

**HQUSACE Final Analysis: The concern is resolved.**

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**G. Description of the Selected Plan.** There is a brief description of the plan and the reader must wade back through the report to get a detailed description of the selected plan at each reach. The District's approach appears to be that the selected plan is one project and should therefore be presented better as such. Specifically a total project average annual cost, average annual benefits and benefit-to-cost ratio should be presented in one table. The description should include a summary description of the features of the recommended plan, including basic dimensions. The description should also summarize the type and extent of unavoidable impacts and the resulting mitigation plan. The description should also summarize the LERRD requirements.

**District Response:** Concur, we are currently are updating the description of the selected plan (recommended plan) to reflect the features for each of the selected reaches 1 through 5. We are also combining, in one summary table the cost of these features and LERRD requirements.

**Discussion:** Response adequate.

**Required Action:** Revise the draft report to update the description of the selected plan to reflect the features for each of the selected reaches 1 through 5. One summary table will be prepared to show total project costs by feature and LERRD requirements.

**Action taken at the District:** Paragraph 5.A of the report has been revised to include a summary of the recommended plan components, environmental impacts, mitigation, and LERRD requirements. Paragraph 5.B was revised to include Tables 25 and 26 to summarize the benefits and costs of the recommended plan.

**HQUSACE Final Analysis: The concern is resolved.**

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**H. Cost Estimate Displays.** Beginning on page 38, the cost estimate displays for the selected plans should also display the first costs. The cost displays and the allocation tables should agree with one another (numbers do not agree on pages 39, 85, 123, and B-25). The Description of Selected Plan section should present the average annual benefits, residual damages, average annual costs, OMRR&R costs, average annual net benefits, and benefit-to-cost ratio for the recommended plan in order to meet the intent of Exhibit G-7 of ER 1105-2-100. Costs and benefits should be rounded to at least the nearest \$1,000 to avoid implying more accuracy than really exists.

**District Response:** Concur, will change accordingly.

**Discussion:** Response adequate.

**Required Action:** The District will revise the draft report according to the comment, and revise the cost estimates to include first costs, and correct all inconsistencies. An additional table will be prepared that presents the total costs and benefits associated with the Selected Plan as called for in Exhibit G-7 of ER 1105-2-100.

**Action taken at the District:** Estimated first costs for alternatives have been added to Table 13 in 4.E.6, Table 14 in 4.F.6, Table 15 in 4.G.5, Table 17 in 4.H.5, and Table 19 in 4.I.5. Cost displays and allocation tables have been revised to be consistent and all costs and benefits have been rounded to the nearest \$1,000 in the main report (See Tables 7, 13, 14, 15, 17, 19, 24, 25, and 36 in Volume 1 and Table B-20 in Volume 2). Table 25 was added to Paragraph 5.B to present average annual costs, average annual benefits, OMRR&R costs, net annual benefits, benefit-cost ratio, and residual damages for the recommended plan.

**HQUSACE Final Analysis: The concern is resolved.**

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### **I. Plan Formulation.**

(1) The reconnaissance study identified opportunity for environmental restoration at Fourmile Creek and along the Des Moines River yet there is little discussion of this in the feasibility report (Pg 22) and no environmental features are incorporated into the recommended plan except for environmental mitigation.

**District Response:** There are opportunities for ecosystem restoration; however, the city of Des Moines does not want to participate in ecosystem restoration at this time. There were no ecosystem restoration features identified during the study that would cost effectively contribute to flood damage reduction. (Pg 22 “Due to the existing urban land uses, relatively high property values, and city funding priorities no ecosystem restoration opportunities will be utilized and is eliminated from further analysis.”)

**Discussion:** Response adequate.

**Required Action:** The District will add remarks to the draft report that explain that the city of Des Moines does not want to participate in ecosystem restoration because there were no ecosystem restoration features identified during the study that would cost effectively contribute to flood damage reduction.

**Action taken at the District:** Ecosystem restoration is discussed in Paragraph 4.B; in Paragraph 4.C.5, Table 6; and in Paragraph 4.C.5.d).

**HQUSACE Final Analysis: The concern is resolved.**

**(2) Feasibility Study Plan Formulation, Description of Measures**

**Eliminated from Further Analysis.** There is discussion about the elimination of non-structural measures and specifically buy-outs and a flood warning system however it is not compelling. Especially because the recommended plan calls for over 37 closure structures to be installed. The existing flood warning system should be closely evaluated to determine if any improvements could be made to increase flood-warning time to facilitate successful closures.

**District Response:** The existing flood warning system was evaluated and is already performing adequately. The city of Des Moines and other local communities are currently contracting an analysis of their flood warning system. Improving the closures is justified because of the high value of the property being protected. We will add language to better describe the flood warning system and performance.

**Discussion:** The discussion of flood warning system evaluation is adequate, however there needs to be more discussion provided in the draft report on how non-structural alternatives were eliminated from further consideration.

**Required Action:** Revise the draft report to include information on the formulation and evaluation of all non-structural alternatives.

**Action taken at the District:** Additional information was added to Table 6: Summary of Measure Eliminated from further Analysis and to Paragraph 4.C.5.c). Additional discussion of non-structural alternatives for Reach 10 - Fourmile Creek was added to Paragraph 4.N.

**HQUSACE Final Analysis: The concern is resolved.**

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**J. Disclaimer.** The disclaimer on page 119 should be moved to the recommendations page.

**District Response:** Concur, will change accordingly.

**Discussion:** Response is adequate.

**Required Action:** Revise the draft report to place the disclaimer with the recommendations.

**Action taken at the District:** The disclaimer is moved to Paragraph 9. Recommendations.

**HQUSACE Final Analysis: The concern is resolved.**

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**K. HTRW Costs.** The documentation states that the sponsor will need to clean up HTRW contamination for Reaches 1 and 2 before the proposed project can be implemented. The feasibility report will need to display preliminary cost estimates of the HTRW response actions in order to ensure appropriate plan selection as required by paragraph 8 of ER 1165-2-132.

**District Response:** The Iowa DNR has determined that there is no further need to investigate contamination and remediation is not anticipated. See Attached letter.

**Discussion:** Response is adequate.

**Required Action:** Document the Iowa DNR determination and include the letter in draft report.

**Action taken at the District:** The DNR letter is with correspondence section in Appendix H.

**HQUSACE Analysis: The concern is not resolved.**

CECW-PC

SUBJECT: Des Moines and Raccoon Rivers, Iowa – Documentation of Review Findings

The Phase IIA HTRW Assessment revealed recognized environmental conditions in the following locations: Birdland Park, Central Place (including the mitigation site), Downtown West and Downtown East. This comment is listed as resolved as Iowa DNR has determined there is no further need to investigate the contamination. In Appendix E, there is discussion regarding the sponsor obtaining a NFRAP Certificate - a No Further Remedial Action Planned Certificate prior to submission of the feasibility report or if not practical, prior to construction. Has this been obtained? It is not clear that a letter from DNR indicating there is no further need to investigate the contamination is the same as a NFRAP Certificate. All costs related to HTRW that are CERCLA-regulated are a sponsor responsibility. Costs related to non-CERCLA regulated material are cost-shared. As the existing project is built on contaminated land, it is not clear how the site can be remediated prior to construction but rather measures must be taken during construction to address the contaminated material. The Corps should conduct its own risk assessment on whether to proceed with the project and the report should clearly indicate that all costs related to CERCLA-regulated material are the sponsor's costs.

**District Response:** Concur, verbiage concerning the need for NFRAP certification was clarified in the following statements; Section 6.B.3. 2nd Paragraph of Volume 1, the main report states: "The contaminants on the property are not an issue. ER 1165-2-132, Water Resources Policies and Authorities - Hazardous, Toxic and Radioactive Waste (HTRW) Guidance for Civil Works Projects, requires coordination with the appropriate stage agency when a non-federal sponsor acquires land that is not contaminant-free. In Iowa, obtaining a No Further Remedial Action Planned (NFRAP) certificate from the Land Recycling Program, administered by the Iowa Department of Natural Resources (Iowa DNR) typically is the state process used by landowners. The non-federal-sponsor contacted the Iowa DNR regarding obtaining a NFRAP certificate for this property. The Iowa DNR informed the sponsor (see Appendix E-G-1 of Volume 2) that due to the low level of contaminants, it would not be appropriate to even enter the state Land Recycling Program, which ultimately issues the NFRAP certificate. The non-federal sponsor (city of Des Moines) received a letter from IDNR stating that due to the very low concentrations (slightly elevated heavy metal concentrations were generally within the background levels in the State of Iowa), no further investigation of the site would be required. "

Also see in Appendix E, Volume 2, the Executive Summary under Recommendations supporting the findings. The site does not require remediation after extensive phase II testing and review by Iowa Department of Natural Resources.

Non-concur, that additional risk analysis be performed. Based on the letter received from the Iowa DNR stating that no further investigation is required for the site, this site does require any remediation. Even if for some unforeseen reason remediation becomes required (for example, contaminants were discovered during construction in excess of those discovered during Phase II Sampling) this would be the responsibility of the sponsor, both in cost, coordination with the State, and in actions. The risk of proceeding with this project is very low with respect to HTRW concerns. The HTRW report Appendix E which provides the basis for a risk assessment concludes with this statement: "No ESA (environmental site assessment) can wholly eliminate uncertainty regarding the existence of recognized environmental conditions concerning a property. This assessment is intended to reduce, but not eliminate, uncertainty regarding the existence of recognized environmental conditions in connection with a property with reasonable

limits of time and cost. Continuing the Environmental Due Diligence Audit process beyond these ESAs may reduce uncertainty, or reveal unidentified environmental liabilities. If any previously unaddressed recognized environmental condition should arise, this report will be revisited.” At this time no additional information has been provided that would alter the conclusions and recommendations and no test has been identified that would provide more information to warrant further risk assessment.

Also in several sections of the report, including Section 6.B.3, is the statement that the sponsor is responsible for any remediation costs associated with the removal of CERCLA-regulated material found in portions of the project sites. The sponsor is aware of this regulation and it will be addressed in the Project Cooperation Agreement (PCA). Also see in Appendix E, Volume 2, the Executive Summary under Recommendations supports the requirement that the Sponsor will be solely responsible for the cost of remediation.

**HQUSACE Final Analysis: This concern is resolved.** HQUSACE understands that based on the information it reviewed, the Iowa Department of Natural Resources believes that the sites present minimal threat to human health and environment and no further investigation is required. We now also understand that although concentrations of certain contaminants are above the Iowa State standard, the state is not requiring any response. The Department has reserved the right to require additional investigations if future information warrants such action.

With this project, HTRW contaminated areas can not be avoided because the existing levees are built on contaminated land. The Report clearly states that the non-Federal sponsor is responsible for any CERCLA response costs, if required, and this requirement is included in the PCA.

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**L. Plan Implementation.** Given the broad range of benefit-to-cost ratios, care should be given to laying out an implementation plan by reach. (i.e., how will the project be built.) The current budget criteria would not allow budgeting for Reach 1 with a BCR of 1.3; how would that impact overall project, cost-sharing and construction.

**District Response:** It will be most cost effective to construct reaches 1 and 2 concurrently and all construction will be budgeted as one project. We have no way of knowing what BCR threshold will be used in future budget guidance.

**Discussion:** This is an advisory comment.

**Required Action:** None.

**HQUSACE Final Analysis: The concern is resolved.**

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**M. Description of Selected Plan Operations and Maintenance.** Who is currently operating and maintaining these projects? What needs to be amended and what is new?

**District Response:** The city of Des Moines operates all levees and pump stations within the project area. The city is actively or has plans to upgrade existing pumps and construct new ones to reduce interior flooding.

CECW-PC

SUBJECT: Des Moines and Raccoon Rivers, Iowa – Documentation of Review Findings

**Discussion:** The draft report should be expanded to describe the types of activities needing maintenance and a description of what that is. It should also be clear who implements the OMM&R in the description of the selected plan.

**Required Action:** Revisions should be made to the draft report prior to the public release of the document.

**Action taken at the District:** Paragraph 5.C. Operation and Maintenance has been expanded to include a more complete description of operation and maintenance responsibilities and states that the city of Des Moines will operate and maintain the project.

**HQUSACE Final Analysis: The concern is resolved.**

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**N. Floodplain Management Plan.** What is the current status of the Floodplain Management Plan?

**District Response:** The Floodplain Management Plan is 50% complete according to the city of Des Moines and is expected to be completed prior to the Division Engineers Notice.

**Discussion:** Response adequate.

**Required Action:** None.

**HQUSACE Final Analysis: The concern is resolved.**

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**O. Independent Technical Review Documentation.** The district needs to provide a completed documentation of independent technical review. The Dr. Checks document provided with the AFB package does not include closure for all comments. While some of the comments have been back checked and closed by the reviewers, that is not true for most of the comments. From the provided documentation it is impossible to tell whether or not the technical reviewers are satisfied with the district's responses. At each stage of the overall project development process, the documentation of technical review that needs to be provided includes the comments, responses and either the concurrence of the reviewer or an agreed upon path to closure for each comment.

**District Response:** Concur, all action items will be closed satisfactory with MVD approval.

**Discussion:** District explained that 115 out of 117 comments have been responded to.

**Required Action:** Send revised DR. Checks to HQUSACE when complete.

**Action taken at the District:** Sent revised DR. Checks to HQUSACE 9 March 2005. All ITR comments have been closed.

**HQUSACE Final Analysis: The concern is resolved.**

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**P. NED Plan versus LPP.** Since the costs and benefits of at least one plan providing greater flood damage reduction (i.e. a larger plan) than the recommended plan is not presented, the report does not adequately demonstrate that the recommended plan is the NED Plan. Therefore, in accordance with paragraph 4-3b(2)(a) of ER 1105-2-100, the recommended plan should not be labeled as the NED Plan and should be labeled and presented as the Locally Preferred Plan.

CECW-PC

SUBJECT: Des Moines and Raccoon Rivers, Iowa – Documentation of Review Findings

**District Response/Discussion:** Because the selected plan is not bracketed, it is not necessarily the NED Plan. In accordance with the cited guidance, it should be relabeled as the locally preferred plan.

**Required Action:** Revise the draft report to correctly label the selected plan.

**Action taken at the District:** Paragraphs 4 E.6.d), 4 F.6., 4G.6, 4.H.6, and 4.I.6 were revised to clarify that the recommended plan is not the NED plan as discussed above.

**HQUSACE Final Analysis: The concern is resolved.** As net benefits continue to increase, the recommended plan has a categorical waiver from NED plan.

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**Q. Real Estate Plan.** In the REP, paragraph B on page F-2 for Birdland Park Levee indicates that fee is necessary for the levee and recreation trail. On page F-4, justification for acquisition of an easement instead of fee is given, except for the recreation trail. Paragraph G on page F-11 for Central Place Levee also contains the same justification, although easement acquisition is recommended. It is not clear why fee would be recommended for Birdland Park but not Central Place unless there are other facts related to construction, operation, maintenance, repair, replacement and rehabilitation of the project that are not apparent. Although it would seem that a flood protection levee easement is the appropriate estate for both levees, the District should verify this. If so, paragraph G in both sections should be deleted as we are not acquiring an easement in lieu of fee nor are the criteria for determining the appropriate estate based on what is preferable to the local sponsor.

**District Response/Discussion/Required Action:** The District concurs with the comment and has deleted all parts of the report that justified the need for acquisition of an easement interest. The fee interest at Birdland Park is justified because it will be used as recreation. The "right of way" that was connected to fee interest in Birdland Park was deleted. Several misspellings were also corrected.

**HQUSACE Final Analysis: The concern is resolved.**

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