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

REPLY TO
ATTENTION OF

JUL 3 2014

CECW-SWD

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)

SUBJECT: Leon Creek Watershed Interim Feasibility Report and Integrated Environmental Assessment, San Antonio, Texas – Final USACE Response to Independent External Peer Review

1. Independent External Peer Review (IEPR) was conducted for the subject project in accordance with Section 2034 of the Water Resources Development Act of 2007, EC 1165-2-209, and the Office of Management and Budget's Final Information Quality Bulletin for Peer Review (2004).

2. The IEPR was conducted by Battelle Memorial Institute. The IEPR panel consisted of four members with technical expertise in economics/civil works planning, biological resources/environmental law compliance, hydrology/hydraulic engineering, and geotechnical/civil engineering. The IEPR panel reviewed the January 2014 Draft Feasibility Report and Integrated Environmental Assessment, as well as supporting documentation.

3. I approve the final written responses to the IEPR contained in the enclosed document. The IEPR Report and USACE responses will be posted on the Internet, as required in EC 1165-2-209.

4. Please direct questions to Ms. Sandy Gore, Deputy Chief, Southwestern Division Regional Integration Team, at (202) 761-5237.

Encl

THOMAS P. BOSTICK
Lieutenant General, USA
Chief of Engineers

Leon Creek Watershed Interim Feasibility Study

and Integrated Environmental Assessment,

San Antonio, Texas

DRAFT

U.S. Army Corps of Engineers Response to

Independent External Review

May 2014

Independent External Peer Review (IEPR) was conducted for the subject project in accordance with Section 2034 of WRDA 2007, EC 1165-2-209, and the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (2004).

The goal of the U.S. Army Corps of Engineers (USACE) Civil Works program is to always provide the most scientifically sound, sustainable water resources solutions for the nation. The USACE review processes are essential to ensuring project safety and quality of the products USACE provides to the American people. Battelle Memorial Institute (Battelle), a non-profit science and technology organization with experience in establishing and administering peer review panels for the USACE, was engaged to conduct the IEPR of the Leon Creek Watershed Interim Feasibility Study and Integrated Environmental Assessment (EA), San Antonio, Texas.

The Battelle IEPR panel reviewed the Draft Feasibility Report (DFR) and integrated Draft EA, as well as supporting documentation. The Final IEPR Battelle Report was issued on 14 February 2014. A final back-check review was completed on the Final Feasibility Report (FFR) and EA dated February 2014. It should be noted that the December FFR and EA was further revised, and the final responses contained in this document reflect the revised version dated April 2014.

Overall, 14 comments were identified and documented by Battelle. Of the 14 comments, only one was identified as having high significance. Five comments were identified as having medium/high significance; three were identified as being of medium significance and three as medium/low. The remaining two comments were identified as having low significance. The following discussions represent the USACE Final Response to the 14 comments.

Based on the technical content of the Leon Creek review documents and the overall scope of the project, Battelle identified candidates for the panel in the field of Economics/Civil Works Planning, Biological Resources and Environmental Law Compliance, Hydrology and Hydraulic Engineering and Geotechnical/Civil Engineering Four panel members were selected for the IEPR.

1. **Comment – *High Significance*: The limited number of management measures impacts the array of alternatives and ultimately the selection of the Recommended Plan.**

This comment includes two recommendations for resolution, which have been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) the development of a broader array of management measures, particularly for those Areas of Interest (AOI) identified as having high flood risk. In response, information on additional measures that were identified early in the study was added to Section Three of the integrated Feasibility Report/Environmental Assessment (FR/EA). Some of these measures screened prior to detailed evaluation included on- and off-channel regional stormwater facilities, drainage projects, bridge improvements, natural waterway conveyance, and enhanced conveyance. The IEPR panel also recommended (2) a description of what conditions exist in the various AOIs that prevent identification of a broader array of management measures. In response, additional information was added to the Constraints section in Section Three of the FR/EA detailing the sensitive nature of numerous locations within the study area that limit the array of implementable management measures. These locations include formally designated State Natural Areas, habitat suitable for Federally listed threatened and endangered species, and sensitive ground water areas within the Edwards Aquifer system underlying portions of the Leon Creek watershed.

2. **Comment – *Medium High Significance*: The reliance on 2008 data to describe the affected environment and associated potential effects on the Recommended Plan lends uncertainty to potential changes to the future without- and future with-project conditions.**

This comment includes four recommendations for resolution, three of which have been adopted and one which has not been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) an update to the DFR/EA to reflect the most current data available to document existing conditions/affected environmental constraints within the project study area. In response, the 2012 "Texas Water Quality Inventory and 303(d) List" information was incorporated into the water quality discussion in Section Two of the FR/EA (Water Quality subsection). Land use and cover data were also assessed and updated in Section Two of the FR/EA (Existing Conditions Flood Risk Management subsection). The IEPR panel also recommended (4) consideration whether the updated/revised data in the recommendations would affect the selected structural and non-structural alternatives. In response, the analysis was reexamined; however, the additional data did not affect the evaluation of alternatives. And the IEPR panel recommended (2) the use of 2010 and 2014 Census data or most current poverty thresholds for the socio-economic analysis in the DFR/EA. Income data was no longer collected at the block group level with the 2010 census, so any localized comparisons to overall 2010 or 2014 poverty levels could not be made. However, poverty characteristics of the Bexar County population were added to the FR/EA (Socio-Economics Appendix - Study Area Demographics), based on 2005-2009 American Household Survey data, which provide an indication of the overall city and county poverty levels over that period.

USACE Response: Not-Adopted.

The IEPR panel recommended (3) an update to the DFR/EA to include the latest site condition information in the Habitat Evaluation Procedures (HEP) and Environmental Protection Agency (EPA) Rapid Bioassessment models. Since the Ecosystem Restoration (ER) measures originally considered for development were dropped from consideration early in plan formulation and updating the information was not expected to change that outcome, it was not necessary to update the report.

3. **Comment – *Medium High Significance*: Using 2035 as the future condition year introduces uncertainty that forecast patterns and trends for the without project condition will continue for 25 years.**

This comment includes three recommendations for resolution, which have been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) the development of a narrative explaining why 2035 is the most reasonable and most likely expected future year for comparing future without-project condition damages. The IEPR panel also

recommended (2) an explanation of what conditions or trends exist in the watershed that contribute to long-range, dynamic conditions that will result in a 25-year horizon between the base year and expected future condition year. And the IEPR panel recommended (3) an explanation of how using a more near-term future year might affect the calculation of future without-project conditions and how that could affect the feasibility of the Recommended Plan. In response to all three recommendations, discussion regarding land use and the relationship between urbanization and increased imperviousness was added to the Land Use and Urbanization and Imperviousness sections in Appendix G1. Discussion describing ultimate land use and the future condition when the sponsor believes the watershed will be fully developed twenty five years after the project is operational was included in the Climate, Flooding and Land Use under the Future Without-Project Conditions subsection in Section Two of the FR/EA. Although twenty five years is reasonable based on the expected development of the watershed, a shorter time horizon may reduce uncertainty for the future condition but would not change the selection of the Recommended Plan.

4. **Comment – *Medium High Significance*: The Helotes Creek Quarry Pond alternative has not been described or analyzed in sufficient detail to assess the potential benefits, impacts, and costs associated with its use as a stormwater detention facility.**

This comment includes five recommendations for resolution, which have not been adopted as discussed below.

USACE Response: Not Adopted.

The IEPR panel recommended (1) assessing the potential impacts of impounding water within the quarry on regional hydrogeology, including groundwater levels and water quality; (2) providing additional details regarding reclamation of the quarry, per Texas Water Code requirements, as it relates to the proposed use as a detention basin; (3) addressing long-term silt management within the quarry detention pond; (4) providing conceptual design details of the weir, over-slope conveyance system, and pumping system; and (5) providing detail on the pump station and OMRR&R requirements. Additional language was included in Section Three of the FR/EA (Description of the Recommended Plan subsection) explaining that the Helotes Creek Quarry Pond alternative was screened from consideration when existing conditions were updated later in the study. This measure proved to no longer be economically justified and is not part of the recommended plan, so additional information was not included.

5. **Comment – *Medium High Significance*: The impact of poor ground conditions on the design and stability of the levee are not fully addressed in the conceptual design and may result in an underestimation of project costs.**

This comment includes three recommendations for resolution, which have been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) providing additional details in Appendix G.2 regarding the proposed over-excavation of existing fill and unsuitable foundation soils. In response, information was added to the Earthen Levee section of the Civil/Geotechnical Appendix detailing that additional analysis would be developed during PED and that soft materials beneath the proposed levee embankment would be removed. A levee detail/cross section showing the excavation beneath the existing ground surface would be developed to demonstrate over-excavation of inspection trenches in order to remove soft soils. The IEPR panel also recommended (2) addressing the potential need for, and assumption regarding, temporary dewatering to achieve the required excavation limits, including the handling and treatment of potentially contaminated groundwater. In response, language was added to Section Three of the FR/EA (Description of the Recommended Plan subsection) clarifying that dewatering is necessary for construction of the inspection trench and all locations where removal of soft material beneath the proposed levee embankment are identified. Additionally, a discussion stating there is a low probability for hazard-level groundwater contamination in situ was added to the report. The IEPR panel also recommended (3) showing the assumed excavation limits on the Test Cell Levee Alternative Plan and Profile Sheets C1.01 through C1.04. In response, language was incorporated into the Earthen Levee section of the G.2 Appendix stating that over excavation of soft material beneath the proposed levee embankment will be necessary to ensure embankment stability. Sufficient contingencies are in the current cost estimate to cover any potential cost increases.

6. **Comment – *Medium High Significance*: The potential impacts of soil, stream sediment, and groundwater contamination have not been fully addressed in the feasibility design to support conceptual design.**

This comment includes six recommendations for resolution, which have been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) updating the DFR (pp. 34–35 and 110–111), Appendix F- HTRW and Appendix G.2 (pp. 11–14) to include discussion of potential soil contamination. The IEPR panel also recommended (4) providing additional information regarding the nature of the groundwater contamination at the Jet Engine Test Cell Facility levee and potential impacts on construction dewatering, contaminated soil handling/disposal, and extraction system operation. In response to these two comments, language was included in Section Two of FR/EA (Risk and Uncertainty Assessment subsection) and Appendix F (4.0 subsection) explaining that there is no direct evidence of groundwater or soil contamination in areas impacted by the proposed construction of the levee and sump or other indications that a Phase II ESA should be undertaken. The IEPR panel also recommended (2) assessing the potential cost impacts associated with offsite disposal of contaminated soils as hazardous waste and importation of clean soil; (3) assessing the potential cost and schedule impacts associated with health and safety, contaminated soil management, and testing associated with mitigation of contaminated soils/sediments during construction; and (6) providing documentation in the Main Report DFR/EA describing how alternative selections, including the Recommended Plan, demonstrate avoidance of contamination at the Jet Engine Test Cell Facility. In response to these three comments, language was included in Section Three of FR/EA (Risk and Uncertainty Assessment subsection) based on Engineering Regulation ER 1165-2-132 “Hazardous, Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects”, requiring the sponsor to provide the District with an uncontaminated construction site. This information specifies that if the Contractor encounters contaminated areas during construction, activities will stop in the suspect area(s) pending completion of the sponsor’s remedial activities which will result in an uncontaminated site. Additionally, costs for a full survey and contingencies are accounted for in the project implementation schedule. The IEPR panel also recommended (5) addressing the potential NPDES water quality discharge requirements for the design, monitoring, and operation of the sump and discharge sluice gates. Text was added in Section Four of the FR/EA (Aquatic Resources Water Quality subsection) to address discharge requirements.

7. **Comment – *Medium Significance*: The Jet Engine Test Cell Facility and Helotes Quarry Pond structural alternatives connection with the surface water flows and groundwater are not discussed or documented.**

This comment includes three recommendations for resolution, one of which has been adopted and two which have not been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) providing discussion in the DFR/EA, documenting the evaluation of the connection between surface water flows and groundwater at Alternative 2 and 12 locations. In response, language was included in Section Three of FR/EA (Risk and Uncertainty Assessment subsection) on Alternative 2 showing that there is no direct evidence of groundwater or soil contamination in areas impacted by the proposed construction of the levee and sump or other indications that a Phase II ESA should be undertaken. Also, AOI 12 (Helotes Quarry) is no longer part of the recommended plan; therefore, an evaluation was not conducted.

USACE Response: Not-Adopted.

The IEPR panel also recommended (2) providing discussion in the DFR/EA, documenting the need to incorporate potential changes to the alternative analysis and design of Alternative 2, Jet Engine Test Cell Facility to meet state and Federal requirements for NPDES rules and criteria. The IEPR panel also recommended (3) adding discussion in the DFR/EA evaluating possible pollutant impacts and recommended solutions to prevent violation of NPDES rules and criteria for Alternative 12, Helotes Quarry Pond. No additional analysis was included for AOI 12 due to the fact that it was dropped from consideration and was not part of the recommended plan. A discussion relating to groundwater at AOI-2 is covered under Riparian Habitat Mitigation (Section Three) with an added description of the Air Force's operation of an Environmental Process Control Facility that treats groundwater in that area. And language in the Aquatic Resources Water Quality subsection (Section Four) was added to relay that the proposed levee and sump will be designed so that the NPDES permit best management practices are not compromised.

8. **Comment – *Medium Significance*: Resources that affect Pearsall Park, such as recreation, noise, lighting, and aesthetics, are not addressed in sufficient detail to meet NEPA requirements.**

This comment includes three recommendations for resolution, two of which have been adopted and one of which has not been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) revising the DFR/EA to document effects of the Recommended Plan (1% AEP Levee + Hydraulic Mitigation and Channelization) on Pearsall park, including recreation, noise, lighting, and aesthetics. In response, information was added to Section Four of the FR/EA (Recreational Resources subsection) documenting that the project is not expected to affect

recreational features of Pearsall Park. The IEPR panel also recommended (2) revising the DFR/EA to describe Pearsall Park and document all the active and passive recreational resources it provides. In response, information was added to Section Four of the FR/EA (Recreational Resources subsection) identifying the existing recreation features of Pearsall Park and referencing the Master Plan for the park.

USACE Response: Not Adopted.

The IEPR panel recommended (3) conducting a Unit Day Value (UDV) analysis on the recreation associated with the Recommended Plan. If these impacts are negative, include them in the National Economic Development (NED) costs associated with implementing the Recommended Plan. If these impacts are positive, include them in the NED benefits associated with the Recommended Plan. This recommendation was not adopted since the levee channel modifications do not encroach upon or impact any of the existing or proposed features of Pearsall Park based on the 2012 master plan site map.

9. **Comment – *Medium Significance*: The use of multiple discount rates, price levels, and development levels from different years in the Leon Creek DFR/EA and Economics Appendix makes it difficult to compare the cost and benefits of the Recommended Plan**

This comment includes two recommendations for resolution, both of which have been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) clarifying that discount rates, price levels, and property values used in the most recent version of the economic and plan formulation investigations are the most current data available. In response, language was added to the Value of Floodplain Inventory and the Flood Risk Management subsections (Section Two) of the FR/EA demonstrating that economic data was appropriately updated including clear statements of interest rates, price levels and depreciated replacement values of structure inventories. Price level discussion as it relates to formulation begins in the Economic Analysis – Initial Suite of Alternatives subsection and continues through the Development of the Recommended Plan subsection in Section Three. The IEPR panel also recommended (2) using the most recent data for watershed development, economic conditions, price levels, and discount rates to facilitate comparison between plans and the without-project condition. In response, the Value of Floodplain Properties section of Appendix A (Socio-Economics) was updated to match formulation price levels, interest rates and depreciated

replacement values which were current at the time plan comparisons were made and used in the final report. Price levels, interest rates and structure inventory reflect FY 2010 data. The Description of the Recommended Plan subsection (Section Three) includes the current price level and interest rate. Final recommended plans have been presented at FY 2010 and FY 2014 levels, per guidance.

10. **Comment – *Medium Low*: The methodologies and processes used for hydraulic model development and modeling at stream and tributary junctions (confluence) can have an impact on model results that lead to the selection of alternatives to be evaluated.**

This comment includes three recommendations for resolution, all of which have been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) clarification in Appendix G.1 that the methodology used is consistent with USACE (1995). The IEPR panel also recommended (2) clarification in Appendix G.1 that the alternative analysis evaluation is consistent with the methodology and process outlined by Section B-8 of USACE (1995). In response, the Hydraulic Analysis section of Appendix G.1 was modified to clarify that the methodology outlined in EM 1110-2-1419 (Hydrologic Engineering Requirements for Flood Damage Reduction Studies B-8 (USACE, 1995)) was followed in developing baseline, future without project and with project conditions. Stage-discharge and stage-frequency functions and uncertainties for all conditions were defined based on methodology outlined in this EM in Appendix G.1. The IEPR panel also recommended (3) discussion in Appendix G.1 of the model methodology for future conditions backwater analysis and procedures used for model evaluation at stream and tributary junctions (confluences). Clearly document that the hydraulic analysis is consistent with the procedures in USACE (1993 and 1994). In response, language was added to the Hydraulic Analysis section (Backwater Model Development subsection) of Appendix G.1 to clarify that standard USACE Hydrologic Engineering Center – River Analysis System version 3.1.2 backwater models were developed for Leon Creek .

11. **Comment – *Medium Low Significance*: Although climate change is qualitatively addressed, its impact on hydrologic parameters and the environment under future project conditions to 2035 is not fully addressed for the alternative analysis.**

This comment includes three recommendations for resolution, which have been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) providing a more detailed assessment of future climate change impacts in the context of the future conditions out to 2035 and clarify if the hydrologic parameters are extended to the future project conditions to 2035. The IEPR panel also recommended (3) providing a more detailed discussion of climate change impacts on environmental and future hydrologic conditions to 2035 to ascertain the robustness/validity of climate change hydrologic model parameters and impact on the alternatives to Appendix G.1. In response to both recommendations, detailed information was added to the Future Conditions Hydrologic Analysis section of Appendix G.1 detailing that climate models indicate average temperatures in central Texas will rise significantly over the coming decades, and there is a high level of uncertainty in precipitation predictions at the watershed scale. Future precipitation in central Texas may be more or less than present day; therefore, rainfall values in the hydrologic model were kept the same for existing and future conditions. The IEPR panel also recommended (2) providing a more thorough discussion of how climate change could affect environmental mitigation, land use and future development. In response, detailed discussion was added in Section Two of the FR/EA (Future Without Project Condition subsection) on the affect of climate change on numerous study factors. Climate models predict a decrease in precipitation within the region but increased urbanization is expected to be the most significant factor contributing to the potential for flooding in the future.

12. **Comment – *Medium Low Significance*: Assumptions associated with the Habitat Evaluation Procedure (HEP) and Environmental Protection Agency (EPA) Rapid Bioassessment models are not fully explained or documented, preventing a thorough understanding of the degradation to habitat over time.**

This comment includes one recommendation for resolution, which has been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) providing further information about the assumptions made in the HEP and EPA Rapid Bioassessment models in Appendix B and any coordination with resource agencies in Appendix C. In response, additional detail was added for the assumptions utilized for both aquatic habitat assessment models to the Habitat Evaluation section of Appendix B (Ecosystem Evaluation) of the FR/EA. Additional detail of coordination with resource agencies was incorporated into Appendix C (Agency Coordination and Correspondence) of the FR/EA.

13. **Comment – *Low Significance*: Several inconsistencies in how environmental constraints identified within the study area are presented prevents a complete understanding of project effects and benefits.**

This comment includes four recommendations for resolution, which have been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) revising the DFR/EA to clarify the limits of the project study area between the Leon Creek watershed and the 500-year floodplains within the watershed, and provide revised supporting documentation based on this change. In response, text was added throughout Section Four of the FR/EA clarifying the extent of resources and how they differ in the floodplain versus the entire watershed. The IEPR panel also recommended (2) revising the DFR/EA to provide documentation regarding aesthetics, recreation, light, and public facility and service. In response, details were added to the FR/EA in Section Two (subsection Affected Environment) to document these resources; however, there would be no impacts to these resources resulting from the proposed action. The IEPR panel also recommended (3) the team revise the DFR/EA to document air quality conditions in the affected environment and the evaluation of impacts accordingly. In response, the FR/EA Section Two (subsection Air Quality) was updated by documenting air quality conditions in the affected environment and the evaluation of impacts. The IEPR panel also recommended (4) revising the DFR/EA and Appendix B to include the presence within the study area of the black-capped vireo. In response, the Threatened and Endangered Species Tables in the introductory section (Threatened and Endangered Species) of Appendix B and Section Two (Wildlife subsection) of FR/EA were updated stating that Black-capped Vireos occur within the watershed.

14. **Comment – *Low Significance*: The selection of either a flood wall and levee alternative at the Jet Engine Test Cell Facility property has not been addressed in detail.**

This comment includes two recommendations for resolution, which have been adopted as discussed below.

USACE Response: Adopted.

Action Taken: The IEPR panel recommended (1) considering both a flood wall and levee alternative during PED from a constructability, cost, and construction impact standpoint. In response, discussion was added to Section Four of the FR/EA

(Description of the Recommended Plan subsection) regarding preliminary consideration of the configuration of the original levee footprint and floodwall for this structural measure. The IEPR panel also recommended (2) assessing the short-term and long-term impacts of the proposed improvements, during both the construction and long-term site operations at the Jet Engine Test Cell facility, on the project. In response, information was added to the FR/EA Section Four (Hydrology and Hydraulics sub-section) on the short- and long-term impacts to the Jet Engine Test Cell facility including potential impact of construction.