MVD PLANNING DECISION DOCUMENT REVIEW PLAN

January 2023

Project Name: Fenton, MO, CAP Section 205

P2 Number: 495157

Decision Document Type: Feasibility Report

Project Business Line: Flood Risk Management

District: St. Louis District (MVS)
District Contact: Project Manager, 314-331-8293
Plan Formulator,

Major Subordinate Command (MSC): Mississippi Valley Division (MVD)
MSC Contact: District Support Team,

Review Management Organization (RMO): MVD
RMO Contact: District Support Team,

Key Review Plan Dates

Date of RMO Endorsement of Review Plan: Pending
Date of MSC Approval of Review Plan: Pending
Date of IEPR Exclusion Approval: N/A
Has the Review Plan changed since RMO Endorsement? N/A
Date of Last Review Plan Revision: None
Date of Review Plan Web Posting: Pending
Date of Congressional Notifications: Pending

Milestone Schedule

	Scheduled	Actual	Complete
Federal Interest Determination:		**29 October 2021**	**Yes**
FCSA Execution:	**2 Dec. 2022**	**29 Nov. 2022**	**Yes**
Tentatively Selected Plan:	**18 July 2023**	**(enter date)**	**No**
Release Draft Report to Public:	**18 Sept. 2023**	**(enter date)**	**No**
Final Report Submittal:	**29 Nov. 2024**	**(enter date)**	**No**
Final Report Approval:	**30 Dec. 2023**	**(enter date)**	**No**

Project Fact Sheet

January 2023

Project Name: Fenton, MO, CAP Section 205 Feasibility Study

Location: Fenton, Missouri

Authority: Section 205, Flood Control Act of 1948, as amended – Small Flood Control Projects.

Sponsor: City of Fenton, Missouri

Type of Study: Feasibility Study

SMART Planning Status: N/A

Project Area: The City of Fenton is located approximately 30 miles southwest of St. Louis. Fenton, Missouri is within the Meramec River Basin. See Figure 1.

Problem Statement: Over the last six years, the City of Fenton, Missouri (population of 4037) has experienced several significant flood events including two floods of record within a 16-month timeframe (DEC 2015 & MAY 2017) from the adjacent Meramec River as well as recent flash flood events in August 2019 and again in June 2020 along the Yarnell and Fenton Creeks both exceeding the 1% AEP. The two floods of record damaged homes and critical infrastructure and located within the declared area for federal disaster assistance (DR-4250-MO in 2015, DR-4317-MO in 2017). The flood in December 2015 impacted ~11% of homes with more than $3M in documented damages and exceeded the previous 1982 flood of record by 4 feet. The city also experienced $1.2M in estimated infrastructure damage, loss of the sewage treatment plant, and closure of the major transportation link, Interstate 44 and multiple major connecting routes. Sixteen months later in May 2017, new and near record levels occurred on all Meramec Basin gaging stations with near record levels recorded on the Fenton gage. There are 60 flood prone structures located in the 1% AEP floodplain.

The community of Fenton has one the highest percentage of structures within the high flood risk category in the Lower Meramec River Basin. These areas also typically have lower foundation heights and a higher concentration of commercial and industrial structures. Nonstructural mitigation activity for these kinds of structures is limited and relocating the industrial activity is generally infeasible. The primary source for severe flooding for the City of Fenton is backwater from the Meramec River. Major tributaries and lakes of the Meramec River around the City of Fenton include: Fishpot Creek upstream of the project area, Grand Glaize Creek and Simpson Park Lake adjacent to the project area, Fenton Creek and Yarnell Creek within the project area, and Saline Creek and Butler Lakes downstream of the project area. The potential also exists for flash flooding on these creeks, resulting from local storms; however, the flood damage reduction measures discussed in this report are focused on the major Meramec River flooding, which produced the floods of record in 2015/2016 and 2017.

Federal Interest: There is a general Federal interest in addressing flood risk. The study will determine if there is a Federal interest in participating in a flood risk reduction project in the City of Fenton.

Goals and Objectives: This is a feasibility study to investigate possible means to reduce flood risk in the City of Fenton. The objective of any potential project would be to reduce the economic and life safety risks associated with flooding. The study's goal is to identify if there is a Federal interest in participating in a flood risk reduction project.

Measures and Alternatives:
Alternatives examined during the Federal Interest Determination (FID) phase included No Action, three levee alignments, and nonstructural actions. The initial evaluation in the FID indicated that the levees were unlikely to be economically justified. The feasibility study will include all of these alternatives and may explore others as well, though it is unlikely that alternatives will vary significantly from those considered in the FID. The most viable measures are likely to be nonstructural.

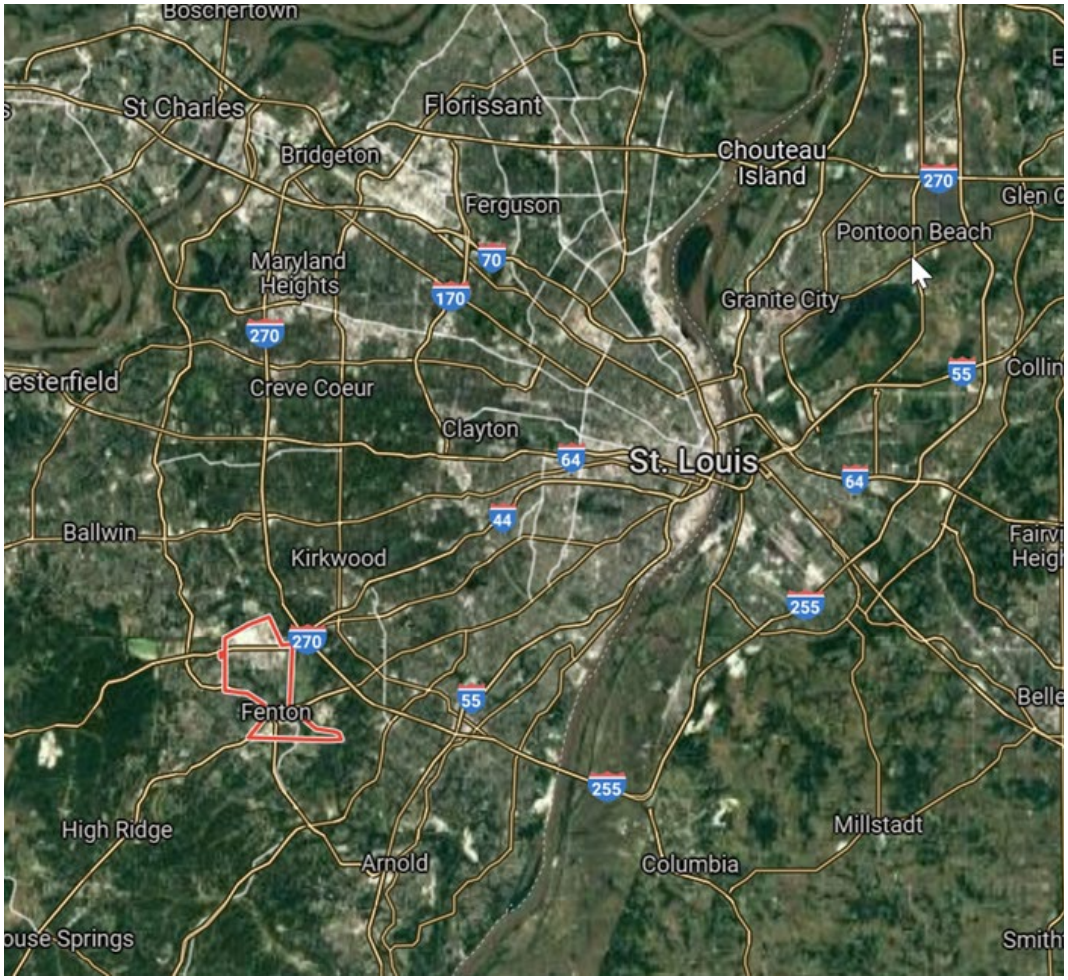

Figure 1. Project location.

1. FACTORS AFFECTING THE LEVELS AND SCOPE OF REVIEWS

Mandatory IEPR Triggers.

- Is the estimated total project cost, including mitigation, greater than $200 million? **No**
- Has the Governor of an affected state requested a peer review by independent experts? **No**
- Has the Chief of Engineers determined the project study is controversial due to significant public dispute over the size, nature or effects of the project or the economic or environmental costs or benefits of the project (including but not limited to projects requiring an Environmental Impact Statement)? **No. The study will include an Environmental Assessment (EA).**

Level and Scope of Review.

- Will the study likely be challenging? No. The study will consist of formulating common flood risk reduction alternatives to address the identified problems and risks associated with those problems.

- Provide a preliminary assessment of where the project risks are likely to occur and assess the magnitude of those risks. Study risks include unknown potential future development in the watershed which could change flood frequencies, depths, and velocities, thereby impacting project performance.

- Is the project likely to be justified by life safety or is the study or project likely to involve significant life safety issues? No. The team has not identified any significant life safety impacts.

- Is the information in the decision document or anticipated project design likely to be based on novel methods, involve innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices? No. Standard methods and models will be employed during the study and there is no indication that the alternatives' designs will vary from common USACE design standards.

- Does the project design require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design/construction schedule? No. It is anticipated that all alternatives' designs and construction methods will follow standard USACE requirements.

- Is the project expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources? No. Initial investigations revealed just one NRHP listed historical resource located adjacent to the left descending bank of the Meramec River and an archaeological site that overlaps the nonstructural alternative. The study will continue to investigate and strive to avoid any impacts.

- Is the project expected to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures? No. Although

environmental resources could be impacted by the levee alternatives, the team would mitigate or any impacts that could not be avoided and/or minimized.

- Is the project expected to have, before mitigation measures, more than a negligible adverse impact on an endangered or threatened species or their designated critical habitat? No. Based on preliminary investigations, it does not appear that there will be more than a negligible adverse impact on any endangered or threatened species in the vicinity of the project area. The environmental PDT member will confirm the existing conditions and expected future without project conditions of endangered and threatened species and their habitat. Subsequently, planning measures and alternatives will be developed with consideration of impacts to threatened and endangered species.

  Assessment of the District Chief of Engineering. The District Chief of Engineering has evaluated the risks and determined there is not a significant threat to human life associated with the study or likely project features.

2. REVIEW EXECUTION PLAN

This section describes each level of review to be conducted. Based upon the factors discussed in Section 1, this study will undergo the following types of reviews:

District Quality Control (DQC). All decision documents (including data, analyses, environmental compliance documents, etc.) undergo DQC. This internal review process covers basic science and engineering work products. It fulfills the project quality requirements of the Project Management Plan.

Agency Technical Review (ATR). ATR is performed by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. These teams will be comprised of certified USACE personnel.

Independent External Peer Review (IEPR). Type I IEPR is not required for this decision document. This review is the most independent level of review, and is applied in cases that meet criteria where the risk and magnitude of the project are such that a critical examination by a qualified team outside of USACE is warranted. ER 1165-2-217 identifies three criteria for mandatory performance of Type I IEPR. This project does not meet any of the three criteria. In addition to the mandatory triggers, a risk-informed decision is made as to whether Type I IEPR is appropriate. The information in Section 1 – Factors Affecting the Scope of Review – informed the risk-informed decision to not conduct IEPR. See Section 2.c. for additional discussion.

Cost Engineering Review. All decision documents shall be coordinated with the Cost Engineering Center of Expertise (CX). The CX will assist in determining the expertise needed on the ATR and IEPR teams. The CX will provide the Cost Engineering certification. The RMO is responsible for coordinating with the CX for the reviews. This study is scheduled to follow the "typical" cost process where review of alternatives costs will occur during the ATR of the draft Feasibility Report and prior to the ATR of the final Feasibility Report, a cost review of the recommended plan will occur and cost certification will be acquired.

Model Review and Approval/Certification. EC 1105-2-412 mandates the use of certified or approved models for all planning work to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. The study intends to use standard approved or certified models and, therefore, no model reviews are planned.

Policy and Legal Review. All decision documents will be reviewed for compliance with law and policy. ER 1105-2-100, Appendix H, and Director's Policy Memorandum 2019-01, both provide guidance on policy and legal compliance reviews. These reviews culminate in determinations that report recommendations and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the District Commander.

Table 1 provides the schedules and costs for reviews. The specific expertise required for the teams are identified in later subsections of this plan covering each review. These subsections also identify requirements, special reporting provisions, and sources of more information.

Table 1: Schedule and Costs of Review

Product(s) to undergo Review	Review Level	Start Date	End Date	Cost	Complete
Draft EC/FWOP Targeted DQC	District Quality Control	03/22/23	04/03/23	$7,000	No
Draft Feasibility Report / EA	District Quality Control	08/17/23	09/14/23	$22,000	No
Draft Feasibility Report / EA	Agency Technical Review	09/18/23	11/16/23	$40,000	No
Draft Feasibility Report / EA	District Policy and Legal Review	09/18/23	11/16/23	n/a	No
Final Feasibility Report / EA	District Quality Control	10/02/24	10/16/24	$15,000	No
Final Feasibility Report / EA	Agency Technical Review	10/17/24	11/29/24	$35.000	No
Final Feasibility Report / EA	District Policy and Legal Review	11/29/24	12/18/24	n/a	No

a. DISTRICT QUALITY CONTROL

The home district will manage DQC and will appoint a DQC Lead to manage the local review (see ER 1165-2-217, Chapter 4). The DQC Lead should prepare a DQC Plan and provide it to the RMO and MSC prior to starting DQC reviews. Table 2 identifies the required expertise for the DQC team. The DQC Team members should not be involved in the production of any of the products reviewed.

Table 2: Required DQC Expertise

DQC Team Disciplines	Expertise Required
DQC Lead	A professional with extensive experience preparing Civil Works decision documents and conducting DQC. The lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Project Management	The Project Management reviewer will have extensive knowledge of project management, budgeting and financial systems, and project scheduling.
Planning	The Plan Formulation reviewer will be experienced in flood risk management studies.
Economics	The Economics reviewer will be experienced in flood risk management studies.
Environmental Quality	The Environmental Engineer reviewer will be experienced in performing and reviewing Phase 1 assessments for HTRW and environmental quality concerns.
Environmental and NEPA Compliance	The Environmental Compliance reviewer will be experienced in the National Environmental Policy Act (NEPA) process, Endangered Species Act (ESA), environmental laws, regulations, and executive orders, habitat evaluation □ rocedures, and mitigation requirements.
Cultural Resources	The Cultural Resources reviewer will be experienced in cultural resources and tribal issues, regulations, and laws.
Hydraulic & Hydrologic Engineering/Climate	The H&H Engineering reviewer will have extensive experience in the fields of hydrology and hydraulics and have a thorough understanding of riverine modeling.
Civil Engineering	The Civil Engineering reviewer will have experience in standard flood risk reduction measures.
Geotechnical Engineering	The Geotechnical Engineering reviewer will have experience in standard flood risk reduction measures.
Regulatory	The Regulatory reviewer will have experience with Section 10 or 404 permitting as well as experience in preparing a 404(b)1 analysis.
Cost Engineering	The Cost Engineering reviewer will have experience in flood risk management studies.
Real Estate	The Real Estate reviewer will be experienced in flood risk management studies including real estate requirements for nonstructural measures.

Required Disciplines for Each DQC. The draft report DQC will require review from all disciplines identified in Table 2. The final report DQC will only require review of the changes made to the report since the previous DQC. The disciplines required for the final DQC will be identified as the final report is being finalized. It will likely involve many but not all of the disciplines in Table 2.

Documentation of DQC. Quality Control will be performed continuously. A specific certification of DQC completion is required at the draft and final report stages. Documentation of DQC will follow the District Quality Manual and the MSC Quality Management Plan.

Documentation of completed DQC will be provided to the MSC, RMO, and ATR Team leader prior to initiating an ATR. The ATR team will examine DQC records and comment in the ATR report on the adequacy of the DQC effort. Missing or inadequate DQC documentation can result in delays to the start of other reviews (see ER 1165-2-217, Appendix D). The DQC team will use the DrChecks software to document the DQC, and a DrChecks report will be attached to the DQC Certification Statement to help illustrate the thoroughness of the DQC.

b. AGENCY TECHNICAL REVIEW

The ATR will assess whether the analyses are technically correct and comply with guidance, and that documents explain the analyses and results in a clear manner. The RMO will manage the ATR. The review will be conducted by an ATR Team whose members are certified to perform reviews. Lists of certified reviewers are maintained by the various technical Communities of Practice (see ER 1165-2-217, section 5.5.3). Table 3 identifies the disciplines and required expertise for this ATR Team (also see Attachment 1 – the ATR Team roster.

Table 3: Required ATR Team Expertise

ATR Team Disciplines	Expertise Required
ATR Lead	A professional with extensive experience preparing Civil Works decision documents and conducting ATR, preferably for Section 205 studies. The lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The Plan Formulation reviewer will be experienced in flood risk management studies, preferably with Section 205 studies.
Economics	The Economics reviewer will be experienced in flood risk management studies, preferably with Section 205 studies and experience with HEC-FDA.
Environmental and NEPA Compliance	The Environmental Compliance reviewer will be experienced in the National Environmental Policy Act (NEPA) process, Endangered Species Act (ESA), environmental laws, regulations, and executive orders, habitat evaluation □ rocedures, and mitigation requirements.
Cultural Resources	The Cultural Resources reviewer will be experienced in cultural resources and tribal issues, regulations, and laws.
Hydraulic & Hydrologic Engineering	The H&H Engineering reviewer will have extensive experience in the fields of hydrology and hydraulics and have a thorough understanding of riverine modeling, preferably with Section 205 studies.
Climate Change – Inland Hydrology	The climate change reviewer will have experience with inland hydrology climate change analysis and documentation and will be assigned by the Climate CoP.
Geotechnical Engineering	The Geotechnical Engineering reviewer will have experience in flood risk reduction measures, preferably with Section 205 studies.

Civil Engineering	The Civil Engineering reviewer will have experience in flood risk reduction measures, preferably with Section 205 studies.
Cost Engineering	The Cost Engineering reviewer will have experience in flood risk management studies, preferably with Section 205 studies. This reviewer will be assigned by the Cost Engineerin MCX.
Real Estate	The Real Estate reviewer will be experienced in flood risk management studies, including real estate requirements for nonstructural measures, preferably with Section 205 studies.

Documentation of ATR. DrChecks will be used to document all ATR comments, responses and resolutions. Comments should be limited to those needed to ensure product adequacy. All members of the ATR team will use the four part comment structure. All members of the ATR team will use the four part comment structure (see ER 1165-2-217, Chapter 5). If a concern cannot be resolved by the ATR team and PDT, it will be elevated to the vertical team to resolve using the ER 1165-2-217 issue resolution process. Concerns will be closed in DrChecks by noting the concern has been elevated. The ATR Lead will prepare a Statement of Technical Review (see ER 1165-2-217, Chapter 5.9 and Appendix D), for the draft and final reports, certifying that review issues have been resolved or elevated. ATR will be certified when all concerns are resolved or referred to the vertical team and the ATR documentation is complete.

c. INDEPENDENT EXTERNAL PEER REVIEW

(ii) IEPR.

Type I IEPR is managed outside of the USACE and conducted on studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study.

Decision on IEPR: IEPR is not required for this decision document. ER 1165-2-217 identifies three criteria for mandatory performance of IEPR. This project does not meet any of the three criteria. In addition to the mandatory triggers, a risk-informed decision is made as to whether IEPR is appropriate. The information in Section 1 – Factors Affecting the Scope of Review – informed the risk-informed decision to not conduct IEPR.

(ii) Safety Assurance Review.

The second kind of IEPR is Safety Assurance Reviews (SAR). These SARs are managed outside of the USACE and are conducted on design and construction for hurricane, storm and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Once the project has been more defined, the life safety impacts will be reevaluated and a determination will be made as to whether or not a SAR will be performed in the implementation phase. The decision will be documented in the implementation review plan.

Decision on Safety Assurance Review: As there is insufficient information at this time, a decision on performing a SAR will be made at a later date, and thus the implementation phase RP will be updated to reflect that decision.

d. d. MODEL CERTIFICATION OR APPROVAL

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models are any models and analytical tools used to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of a planning product. The selection and application of the model and the input and output data is the responsibility of the users and is subject to DQC, ATR, and IEPR.

Table 5: Planning Models. The following models may be used to develop the decision document:

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Certification / Approval
HEC-FDA v. 1.4.3	*Flood damage analysis model would be used to calculate the damage amounts for each of the project alternatives. Will convert to v2.0 as needed after certification.*	*Certified*
IWR Planning Suite	*Cost effective incremental cost analysis would be used to evaluate different mitigation alternatives, if needed. If mitigation is needed, potential HSI models will be identified later.*	*Certified*
RECONS v. 2.0	*Regional economic development model analysis would be used to evaluate the impact of mitigation alternatives on the local, state, and national economies, if needed.*	*Certified*

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue. The professional practice of documenting the application of the software and modeling results will be followed. The USACE Scientific and Engineering Technology Initiative has identified many engineering models as preferred or acceptable for use in studies. These models should be used when appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR.

Table 6: Engineering Models. These models may be used to develop the decision document:

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Approval Status
HEC-RAS (Flood Damage reduction River Analysis Software)	*The software performs 1-D steady and unsteady flow river hydraulics calculations and has capability for 2-D (and combined 1-D/2-D) unsteady flow calculations. It may be used to evaluate parameters related to placement of revetment, such as shear, velocity, and depth.*	*H&H CoP Preferred*
OpenRoads Designer	*Engineering program used to build 2D and 3D models for structural alternatives.*	*Enterprise Standard*

e. e. POLICY AND LEGAL COMPLIANCE REVIEW

Policy and legal compliance reviews for draft and final planning decision documents have been delegated to the District Commander (see Memorandum, CEMVD-PDP, 4 May 2022, CAP Delegation Memo (MVS)).

(i) Policy Review.

Following CAP Delegation to the District Commander, the District instituted its own Policy and Legal Compliance (P&LC) Review to be conducted before the District Commander utilizes the authority to approve documents. Currently the District P&LC Review takes place after DQC and ATR (if applicable) and includes senior level reviewers from Planning (both Plan Formulation and Environmental), Project Management, Engineering and Construction, Real Estate, and Office of Counsel. These reviewers sign the routing slip before the documents are sent to the Executive Office for review and approval.

- The Policy Review Team will be invited to participate in key meetings during the development of decision documents as well as SMART Planning Milestone meetings. These engagements may include In-Progress Reviews, Issue Resolution Conferences, or other vertical team meetings plus the milestone events.

- In addition, teams may choose to capture some of the policy review input in a risk register if appropriate. These items should be highlighted at future meetings until the issues are resolved. Any key decisions on how to address risk or other considerations will be documented in an MFR.

(ii) Legal Review.

Representatives from the Office of Counsel will be assigned to participate in reviews. Members will participate from the District. The Project Manager will coordinate membership and participation with the office chiefs.

- In some cases legal review input may be captured in the MFR for the particular meeting or milestone. In other cases, a separate legal memorandum may be used to document the input from the Office of Counsel.

- Each participating Office of Counsel will determine how to document legal review input.**f. QUALITY ASSURANCE REVIEW**

To document project status, the MVD CAP manager or designee will serve as a policy advisor for CAP projects and attend meetings related to policy issues. Within 2 weeks, the CAP manager will also review each of the post-approval submissions (FID, RP, and final report) for completeness and policy compliance. The CAP manager will hold an issue resolution conference for any identified

policy or legal compliance issues. Following that conference, the CAP manager will document the issues and resolution prior to request of funds for the next phase.