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PACIFIC OCEAN DIVISION, U.S. ARMY CORPS OF ENGINEERS
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FORT SHAFTER, HAWAII 96858-5440

CEPOD-PDC (1105) 5 April 2021

MEMORANDUM FOR Commander, Alaska Engineer District (CEPOA-PM-C/Amber Metallo), P.O. Box 6898 JBER, AK 99506-0898

SUBJECT: Approval of the Review Plan for the Talkeetna Flood Risk Management Continuing Authorities Program Section 205 Feasibility Report

1. References:

a. Engineering Circular 1165-2-217, Review Policy for Civil Works, 20 Feb 18.

b. HQUSACE, CECW-CE memorandum (Interim Guidance on Streamlining Independent External Peer Review (IEPR) for Improved Civil Works Product Delivery), 5 Apr 19.

c. Review Plan for the Talkeetna Flood Risk Management Continuing Authorities Program Section 205 Feasibility Report, Alaska District, U.S. Army Corps of Engineers. (Encl)

2. This memorandum constitutes approval of the Review Plan for the Talkeetna Flood Risk Management Continuing Authorities Program Section 205 Feasibility Report, Alaska District, U.S. Army Corps of Engineers, which does not include a Type I Independent External Peer Review.

3. The approved Review Plan is subject to change as circumstances require, consistent with project development under the Project Management Business Process. Subsequent significant revisions to this Review Plan or its execution require Division Commander written approval.

4. POC is Mr. Russell Iwamura, Team Leader for Planning and Policy, Civil Works Integration Division, at 808-835-4625 or email Russell.K.Iwamura@usace.army.mil.

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Encl

JASON D. WILLIAMS
Colonel, EN
Acting Commander

REVIEW PLAN

Talkeetna Flood Risk Management

Continuing Authorities Program (CAP) Section 205

Feasibility Study

Alaska District

MSC Approval Date: 05 April 2021
Last Revision Date: 24 March 2021

US Army Corps
of Engineers ®

REVIEW PLAN
March 2021

Project Name: Talkeetna Flood Risk Management, Talkeetna, Alaska
P2 Number: 400788

Decision Document Type: Feasibility Report

Project Type: Flood Risk Management

District: Alaska District (POA)
District Contact: Project Manager, 907-753-5621

Major Subordinate Command (MSC): Pacific Ocean Division (POD)
MSC Contact: CAP Manager, 808-835-4621

Review Management Organization (RMO): POD
RMO Contact: Chief of Planning, 808-835-4625
Note: The RMO is the MSC for CAP projects.

Key Review Plan Dates

Date of RMO Endorsement of Review Plan: 05 April 2021
Date of MSC Approval of Review Plan: 05 April 2021
Date of IEPR Exclusion Approval: 05 April 2021
Has the Review Plan changed since PCX Endorsement? No
Date of Last Review Plan Revision: None
Date of Review Plan Web Posting: 06 April 2021
Date of Congressional Notifications: N/A

Milestone Schedule

	Scheduled	Actual	Complete
Feasibility Cost Share Agreement	N/A	20 Jul 2020	Yes
Feasibility Kick-off Meeting	N/A	19 Oct 2020	Yes
Charette	09-10 Nov 2020	09-10 Nov 2020	Yes
Tentatively Selected Plan Milestone	17 Aug 2021		
Release of Draft Decision Document	18 Oct 2021		
Concurrent Review Starts (ATR, NEPA, Legal, Policy, Public Comment Period)	19 Oct 2021		
Final Decision Document Approval	05 May 2022		

Project Fact Sheet
March 2021

Project Name: Talkeetna Flood Risk Management

Location: Talkeetna, Alaska

Authority: Section 205 of the Flood Control Act of 1948 as amended (33 U.S.C. 701s)

Sponsor: Matanuska-Susitna Borough

Type of Study: Feasibility Study

SMART Planning Status: This CAP study is on a two-year timeline. No policy waivers are anticipated at this time.

Project Area: Talkeetna is a community of about 900 people located in the Matanuska-Susitna (Mat-Su) Borough 115 road miles (75 air miles) north of Anchorage (Figure 1). It is one of the most sought-after tourist destinations in Alaska, with approximately 240,000 people visiting the "Gateway to Denali" annually. The city is unincorporated and falls under the jurisdiction of the Mat-Su Borough. The downtown is constructed near the confluence of the Talkeetna River and Susitna River. Both rivers are large, glacially fed, braided rivers.

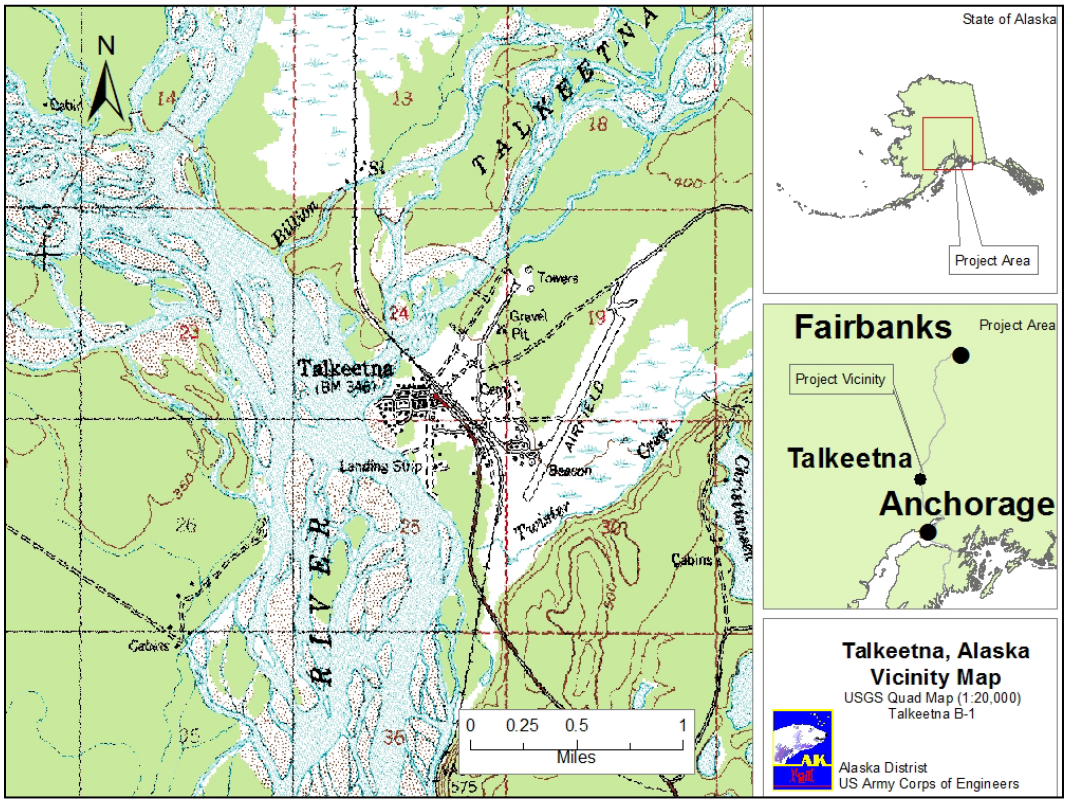

Figure 1. Study Location, Talkeetna, Alaska.

Problem Statement:
Fluvial flooding in Talkeetna threatens critical infrastructure including the railroad bridges, public businesses, private residences, electrical facilities and other utilities, and historic properties, and creates hazards including impassable roads and the inability for emergency services to reach residents, placing the health and safety of the community in jeopardy within the 100 year flood zone.

Federal Interest: The Federal Interest Determination (FID) was approved by POD on 13 March 2020 and demonstrated federal interest in conducting flood risk management measures at Talkeetna, Alaska. The Feasibility Cost Share Agreement (FCSA) was executed on 20 July 2020.

Risk Identification: None of the risks identified to date appear to represent a significant risk to human health or the environment now or in the future. The primary sources of study risk are summarized below:

- A portion of the bank along the Talkeetna River is owned by the railroad. The ability to obtain properties during the Design and Implementation (D&I) phase, access to private property, and landowner cooperation within the project boundaries may cause challenges and delays.

- The most recent Light Detection and Ranging (LiDAR) measurements in the Talkeetna area is from 2011. The Sponsor is planning to collect LiDAR in 2021, but if this is not completed, assumptions will need to be based on 10-year old LiDAR.

- The structure inventory for Talkeetna is available for the study for the use of the HEC-FDA. However, some data-gaps will be addressed by assumptions. The economics analysis will document these assumptions in its methodology. It was determined that for the level of analysis in a CAP study, the risks associated with data gaps are minor.

1. FACTORS AFFECTING THE SCOPE AND LEVEL OF REVIEW

Scope of Review: This study will undergo one concurrent review to include District Quality Control (DQC), legal review, Agency Technical Review (ATR), and policy review, as outlined in the next section. Type I Independent External Peer Review (IEPR) is mandatory when any of three statutory triggers is met. When none of the three mandatory triggers for IEPR are met, Major Subordinate Command (MSC) Commanders have the discretion to conduct IEPR based on a risk-informed assessment of the expected contribution of IEPR to the project. Type 1 IEPR is discussed further in the next section.

The feasibility report and appendices will undergo District Quality Control, Agency Technical Review, and MSC Quality Assurance (QA), as outlined in the next section.

- Will the study likely be challenging? No, the project does not have any significant technical, institutional, or social challenges. The study consists of flood risk management measures that do not involve innovative materials or techniques and do not present complex challenges or precedent-setting methods or models.

- Provide a preliminary assessment of where the project risks are likely to occur and assess the magnitude of those risks. A preliminary list of risks has been identified by the PDT, as noted in the section above. The magnitude of each identified risk is assumed to be low, but the risk will be managed as the data gaps are filled. Additionally, a risk register is being developed for this study.

- 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 project is expected to have National Economic Development (NED) justification based on the FID. Life Safety is not expected to be substantially impacted.

- Has the Governor of an affected state requested a peer review by independent experts? No. There has been no request by the Governor of Alaska for peer review by independent experts, and such a request is not anticipated.

- Will the project likely involve significant public dispute about the project's size, nature, or effects? No. The project is unlikely to involve significant public dispute as to its size, nature, or effects because the project has community and borough support. A charrette was held on 9-10 November 2020, and the Sponsor has been included in several PDT meetings with no concerns raised to date.

- Is the project/study likely to involve significant public dispute as to the economic or environmental cost or benefit of the project? No. The project is not likely to involve significant public dispute regarding the economic or environmental cost or benefit of the project. Preliminary evaluation of project costs and potential benefits indicates that there is likely at least one alternative that would reduce flood risk in Talkeetna and result in positive net NED benefits. This initial evaluation is based on a qualitative assessment of potential project benefits and the Rough Order of Magnitude (ROM) construction cost of approximately $6.6 million, which is within the Federal CAP authority limit. There are likely wetlands in the project area, and almost any alternative would require work below the ordinary high-water mark in the Talkeetna River, requiring coordination with environmental agencies

- 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. Project design and implementation techniques will be based on similar flood risk management projects in Alaska and are unlikely to be contained precedent-setting, unique, or change prevailing practices.

- Does the project design require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design/construction schedule? No. The project is small in scope and complexity and is unlikely to require redundancy, resiliency, and/or robustness.

- Is the estimated total cost of the project greater than $200 million? No. This CAP study has a Federal funding limit of $10 million. The estimated total project costs identified in the FID were approximately $6.6 Million.

- Will an Environmental Impact Statement (EIS) be prepared as part of the study? An EIS is not anticipated at this time. An Environmental Assessment (EA) is being prepared with an anticipated Finding of No Significant Impact (FONSI).

- Is the project expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources? This project has the potential to impact cultural resources within the community of Talkeetna. There are 44 sites listed on the Alaska Heritage Resources Survey (AHRS) within the community or immediate vicinity, including the Talkeetna Historic District (TAL-033), which is listed on the National Register of Historic Places (NRHP). In total, there are four sites listed in NRHP, five contributing properties to TAL-033, and two sites determined to be not eligible. The eligibility of the remaining 33 sites for the NRHP has not yet been evaluated. Under the National Historic Preservation Act (NHPA), a survey will be required to determine sites' eligibility within the project's area of potential effect (APE) for inclusion on the NRHP. Previous work in the tentative APE did not conduct any subsurface testing, so a Phase I survey is recommended to identify any previously undiscovered cultural resources.

- Is the project expected to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures? This project is not expected to have substantial adverse impacts on fish, wildlife, or their habitat. In-water work would require coordination with the ADFG Habitat Division to obtain a Fish Habitat Permit (FHP) by the local Sponsor. The placement of fill material in the United States' water, including wetlands, would require analysis under Section 404 of the Clean Water Act (CWA).

- 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? There are no Endangered Species Act (ESA) listed species in the proposed project area. Several species of migratory birds under the protection of the Migratory Bird Treaty Act (MBTA) and eagles under the protection of the Bald and Golden Eagle Protection Act (BGEPA) may be present in the proposed project area.

2. REVIEW EXECUTION PLAN

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

District Quality Control (DQC). DQC is an internal review process of basic science and engineering work products focused on fulfilling the Project Management Plan (PMP)'s project quality requirements. All design documents (including data, analyses, environmental compliance documents, etc.) will undergo DQC review. DQC fulfills the project quality requirements of the PMP.

Agency Technical Review (ATR). ATR is performed to assess whether project analyses are technically correct and comply with the USACE guidance and whether documentation explains the analyses and results clearly. Further, the ATR team will ensure that proper and effective DQC has been performed (as an assessment of which will be documented in the ATR report) and ensure that the product is consistent with established criteria, guidance, procedures, and policy. These teams will be comprised of certified USACE personnel. The ATR team lead will be from outside POD. Additionally, two targeted ATRs will be completed for H&H as outlined in CENAD-PD-X Memorandum, Policy for Targeted Agency Technical Review of Flood Risk Management and Coastal Storm Risk Management Planning Studies, 07 August 2020.

Independent External Peer Review (IEPR). Type I IEPR may be required for decision documents under certain circumstances. Type 1 is the most independent level of review and is applied in cases that meet criteria where the project's risk and magnitude are such that a critical examination by a qualified team outside of the USACE is warranted. A risk-informed decision as to whether Type I IEPR is appropriate is outlined in the next section.

Cost Engineering Review. All decision documents shall be coordinated with the Cost Engineering Mandatory of Expertise (MCX). The MCX will assist in determining the expertise needed on the ATR and IEPR teams. The MCX will provide the Cost Engineering certification. The RMO is responsible for coordinating with the MCX for the reviews. These reviews typically occur as part of ATR.

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.

Policy and Legal Review. All decision documents will be reviewed for compliance with law and policy. ER 1105-2-100, Appendix H provides 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 a higher authority by the POD Commander.

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

Table 1: Levels of Review

Product to undergo Review	Review Level	Start Date	End Date	Cost	Complete
Draft Feasibility Report, EA and Appendices	District Quality Control	01 Sep 2021	22 Sep 2021	$25,000	
Draft Feasibility Report, EA and Appendices	POA Legal Review	23 Sep 2021	6 Oct 2021	N/A	
Draft Feasibility Report, EA and Appendices	Concurrent Agency Technical Review, MSC Legal Review and Policy Review	19 Oct 2021	06 Dec 2021	$45,000	
Final Feasibility Report, EA and Appendices	POA Legal Review	17 Feb 2022	2 Mar 2022	N/A	

a. DISTRICT QUALITY CONTROL

POA shall manage DQC and appoint a DQC Lead to oversee that review (see EC 1165-2-217, Section 8.a.1). The DQC Lead should prepare a DQC Plan and provide it to the RMO prior to starting DQC reviews. The required DQC team expertise is identified in Table 2.

Table 2: Required DQC Expertise

DQC Team Disciplines	Expertise Required
DQC Lead/Plan Formulator	A senior professional with extensive experience preparing Civil Works (CW) decision documents and conducting DQC. The lead may also serve as a reviewer for a specific discipline (such as plan formulation, engineering, environmental resources, etc.).
Environmental/Cultural Resources	Expertise in evaluating the impacts associated with flood risk. Should also be experienced with environmental coordination, National Environmental Policy Act (NEPA) requirements, Endangered Species Act (ESA) requirements, National Historic Preservation Act (NHPA), historic properties and the unique needs and lifestyles of small communities.
Hydrology and Hydraulics (H&H) Engineer	Expert in the field of riverine hydraulics and have a thorough understanding of analyses of cross-sections, hydraulic modeling, and flood risk measures (i.e., levees). A registered professional engineer is recommended. Proficient in HEC-FDA 1.4.2, HEC-RAS 5.0.7, HEC-SSP 2.2.
Geotechnical Engineer	Experienced in geotechnical investigation practices, including drilling, soil classification, and bank construction measures. A registered, professional engineer is recommended.
Cost Engineering	Familiar with cost estimating using the Microcomputer Aided Cost Engineering System (MCACES) model and preparation of an MII Cost Estimate. The reviewer will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer.
Construction/Operations	Experience in levees and other flood risk management measures. A registered professional engineer is recommended.
Economics	Expertise in evaluating benefits associated with flood risk. Proficient in HEC-FDA 1.4.2, RECONS and IWR Planning Suite.

Office of Counsel	Experienced attorney with expertise reviewing Civil Works Decision Documents to ensure they are policy, ESA and NEPA compliant.

Documentation of DQC. Quality Control should be performed continuously throughout the study. Certification of DQC completion is required prior to ATR. Documentation of DQC should follow the POA Quality Manual and the POD Quality Management Plan. An example of a DQC Certification statement is provided in EC 1165-2-217 (Figure F). DrChecks software will be used to document the DQC review (comments, responses, and issue resolution).

Documentation of the completed DQC review (i.e., all comments, responses, issue resolution, and DQC certification) will be provided to the RMO and ATR Team leader prior to initiating an ATR/subsequent reviews. The ATR team will assess the quality of the DQC performed and provide a summary of that assessment in the ATR report. Missing or inadequate DQC documentation can result in the start of subsequent reviews being delayed (see EC 1165-2-217, Section 9).

b. AGENCY TECHNICAL REVIEW (ATR)

ATR will be performed on the Integrated Feasibility Report and Environmental Assessment (IFR/EA) and supporting analyses (EC 1165-2-217, paragraph 9.i.(3)). The RMO will manage the ATR. ATR will be performed by a qualified team from outside POA that is not involved in the day-to-day production of the project/product (Table 3). ATR will be performed by a team whose members are certified or approved by their respective Communities of Practice (CoPs) to perform reviews.

Table 3: Required Agency Technical Review Team Expertise

ATR Team Disciplines	Expertise Required
ATR Team Lead/Plan Formulator	The lead will be a senior professional with extensive experience preparing CW decision documents and conducting ATR. The lead may also serve as a reviewer for plan formulation.
Environmental Resources	Expertise in evaluating the impacts associated with flood risk. Should also be experienced with environmental coordination, NEPA, and ESA.
Cultural Resources	Expertise in NHPA, historic properties and the unique needs and lifestyles of small communities.
H&H Engineer	Expert in the field of riverine hydraulics and have a thorough understanding of analyses of cross-sections, hydraulic modeling, and flood risk measures (i.e., levees). A registered professional engineer is recommended. Proficient in HEC-FDA 1.4.2, HEC-RAS 5.0.7, HEC-SSP 2.2,

Geotechnical Engineer	Experienced in geotechnical investigation practices, including drilling, soil classification, and bank construction measures. A registered, professional engineer is recommended.
Cost Engineer	Familiar with cost estimating using the MCACES model and preparing an MII Cost Estimate. The reviewer will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer.
Construction/Operations	Experience in levees and other flood risk management measures. A registered professional engineer is recommended.
Economics	Expertise in evaluating benefits associated with flood risk. Proficient in HEC-FDA 1.4.2, RECONS and IWR Planning Suite.

Documentation of ATR. DrChecks will be used to document ATR comments, responses, and issue resolution. Comments should be limited to those needed to ensure product adequacy. All members of the review team should use the four-part comment structure (EC 1165-2-217, Section 9(k)(1)). Suppose the review team and PDT cannot resolve a concern. In that case, it will be elevated to the vertical team for resolution using the issue resolution process identified in EC 1165-2-217. The comment(s) can then be closed in DrChecks by noting the concern has been elevated for resolution. The Review Team Lead will prepare a Statement of Technical Review Report (see EC 1165-2-217, Section 9) for design documents, certifying that review issues have been resolved or elevated. Any unresolved issues will be documented in the review report prior to certification.

Public Posting Information per EC 1165-2-217. As required by EC 1165-2-217, the approved Review Plan will be posted on the District public website (https://www.poa.usace.army.mil/Library/Reports-and-Studies/). There is no formal comment period, and there is no set timeframe for the opportunity for public comment. When comments are received, the PDT will consider them and decide if revisions are necessary.

Review Plan Approvals and Updates. The POD Commander, or delegated official, is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving the POA, POD, and RMO) regarding the appropriate scope, level of review, and endorsement by the RMO. The Review Plan is a living document and should be updated in accordance with EC 1165-2-217. All changes made to the approved Review Plan will be documented. The latest version of the Review Plan, along with the Commanders' approval memorandum, will be posted on the District's webpage and linked to the HQUSACE webpage. The approved Review Plan should be provided to the RMO.

c. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

Decision on Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project 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.

The 5 Apr 19 Director of Civil Works (DCW) memo, subject: Interim Guidance on Streamlining Independent External Peer Review (IEPR) for Improved Civil Works Product Delivery, provides the triggers that make IEPR mandatory for a study. If a study does not meet any of the mandatory triggers, the POD Commander has the discretion to conduct an IEPR based on a risk-informed assessment of the contribution of IEPR to the study.

The study does not meet any of the mandatory triggers for Type I IEPR in the 5 April 2019 DCW memorandum: the estimated total cost of the project is capped at $10M in Federal funds, which is less than the $200M trigger; the Governor of Alaska has not requested peer review by independent experts; and the Chief of Engineers has not determined that the project study is controversial due to significant public dispute over either the size, nature, or effects of the project or the economic or environmental costs or benefits of the project.

Even if one of the mandatory triggers had been met, per the 5 April 2019 DCW memorandum, a project study may be excluded from Type 1 IEPR if the project study does not include an EIS and is being conducted under the USACE Continuing Authorities Program. This study is being conducted under the CAP and an EIS is not anticipated.

Considering the scope of review and characteristics of the study described in paragraph 1 above, IEPR would not add value to this study and is not warranted.

Decision on Type II IEPR. Type II IEPR, Safety Assurance Review, is managed outside of the USACE and is performed on design and construction activities for any project where potential hazards pose a significant threat to human life. For Type II IEPRs, a panel is convened to review the design and construction activities before construction begins and periodically after that until construction activities are completed.

As presented in Section 5 of this Review Plan, the PDT has assessed this flood risk management project and determined that it does not meet the criteria for conducting Type II IEPR:

- The Federal action is not justified by life safety, and failure of the project will not pose a significant threat to human life;

- The project does not involve the use of innovative materials or techniques where the engineering is based on novel methods, it does not present complex challenges for interpretations, does not contain precedent-setting methods or models, and does not present conclusions that are likely to change prevailing practices;

- The project design does not require redundancy, resiliency, or robustness; and

- The project does not have unique construction sequencing or a reduced or overlapping design construction schedule.

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, formulate potential alternatives to address the problems, take advantage of the opportunities, evaluate potential effects of alternatives, and support decision-making. The use of a certified/approved planning model does not constitute a technical review of a planning product. The selection and application of the model and the input and output data are the users' responsibility and are subject to DQC, ATR, and IEPR (if applicable) (Table 4).

Table 4: 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
Hydrologic Engineering Center-Flood Damage Analysis (HEC-FDA) 1.4.2	The program provides the capability to perform an integrated hydrologic engineering and economic analysis during the formulation and evaluation of flood risk management plans. HEC-FDA is designed to use risk analysis procedures to formulate and evaluate flood risk management measures (EM 1110-2-1619, ER 1105-2-101). Also, the program assists USACE staff in analyzing the economics of flood risk management projects.	Certified
Regional Economic System (RECONS) (Economics)	RECONS is a regional economic impact modeling tool that estimates jobs, income, sales, and value-added associated with USACE CW spending and additional	Certified

	economic activities. The model will be used to estimate the regional economic impacts of project implementation.	
Institute for Water Resources (IWR)-Planning Suite 2.0 (Economics)	IWR-Planning Suite is a water-resources investment decision support tool originally built to formulate and evaluate ecosystem restoration alternative plans; however, it is now more widely used by all USACE business lines for evaluation of actions involving monetary and non-monetary cost and benefits. This model will be utilized to conduct CE/ICA 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 studies. These models should be used when appropriate. The selection and application of the model and the input and output data are still the users' responsibility and are subject to DQC, ATR, and IEPR (Table 5).

Table 5: 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-FDA 1.4.2	The HEC-FDA program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans along the Talkeetna and Susitna Rivers in Talkeetna, Alaska, to aid in the selection of a Recommended Plan to manage flood risk.	Certified
HEC-RAS 5.0.7 (River Analysis System)	The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations and two-dimensional unsteady flow river hydraulic calculations. The program will be used for one-dimensional steady flow analysis along the Susitna River and its tributaries and the downstream portion of the Talkeetna River and the possible two-dimensional model for the upstream	HH&C CoP Preferred Model

	portion of the Talkeetna River to evaluate the future without- and with-project conditions.	
HEC-SSP 2.2 (Statistical Software Package)	The Hydrologic Engineering Center's Statistical Software Package (HEC-SSP) program is used to perform statistical analyses on stream gage data to determine the appropriate flows to use for each annual exceedance probability within HEC-RAS.	HH&C CoP Preferred Model
Microcomputer Aided Cost Engineering System (MCACES), MII (Cost Engineer)	MCACES is the cost estimating software program tools used by cost engineering to develop and prepare Class 3 CW cost estimates.	CW Cost Engineering MCX mandatory
Abbreviated Risk Analysis, Cost Schedule Risk Analysis (Cost Engineer)	Cost risk analyses identify the amount of contingency that must be added to a project cost estimate and define the high-risk drivers. The analyses will include a narrative identifying the risks or uncertainties. During the alternative's evaluation, the PDT will assist the cost engineer to define confidence/risk levels associated with the project features within the abbreviated risk analysis. For the Class 3 estimate, an evaluation of risks will be performed using Crystal Ball Abbreviated Risk Analysis for projects under $40 million.	CW Cost Engineering MCX mandatory
Total Project Cost Summary (TPCS) (Cost Engineer)	The TPCS is the required cost estimate document that will be submitted for either division or HQUSACE approval. The Total Project Cost for each CW project includes all Federal and authorized non-Federal costs represented by the CW Work Breakdown Structure features and respective estimates and schedules, including the lands and damages, relocations, project construction costs, construction schedules, construction contingencies, planning, and engineering costs, design contingencies, construction management costs, and management contingencies.	CW Cost Engineering MCX mandatory

e. POLICY AND LEGAL REVIEW

Policy and legal compliance reviews for the draft and final planning decision documents are delegated to POD (see Director's Policy Memorandum 2018-05, paragraph 9).

(i) Policy Review.

The policy review team is identified by the POD Chief of Planning and Policy for CAP. The team is identified in Attachment 1 of this Review Plan. The makeup of the Policy Review team will be drawn from POD, the Planning Centers of Expertise, and other review resources as needed.

- The Policy Review Team will be invited to participate in key meetings during the development of decision documents and the milestone meeting. These engagements may include In-Progress Reviews or policy team meetings in addition to the milestone meeting.

- The input from the Policy Review team should be documented in a Memorandum for the Record (MFR) produced for each engagement with the team. The MFR should be distributed to all meeting participants.

- 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 should be documented in an MFR.

(ii) Legal Review.

Representatives from the Office of Counsel will be assigned to participate in reviews. Members may participate from the District and MSC. The POD Chief of Planning and Policy will coordinate membership and participation with the office chiefs.

- In some cases, legal review input may be captured in the MFR for a 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.