REVIEW PLAN

SECTION 729 WATERSHED ASSESSMENT FOR WEST MAUI WATERSHED (IN SUPPORT OF THE WEST MAUI RIDGE TO REEF INITIATIVE)

U.S. Army Corps of Engineers, Honolulu District

Photo Courtesy of S. Langsdale

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REVIEW PLAN

SECTION 729 WATERSHED ASSESSMENT FOR WEST MAUI WATERSHED

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the Section 729 Watershed Assessment – West Maui Watershed (the "West Maui Watershed Assessment"), Island of Maui, Hawaii. The West Maui Watershed Assessment will result in a watershed plan. The assessment is conducted in support of the State of Hawaii, Department of Land and Natural Resource's West Maui Ridge to Reef Initiative.

This review plan was developed using the U.S. Army Corps of Engineers (USACE) National Planning Center of Expertise (PCX) review plan template dated 1 November 2012.

b. References

1) Engineer Circular (EC) 1165-2-214, Civil Works Review Policy, 15 December 2012.

2) EC 1105-2-411, Watershed Plans, 15 January 2010.

3) EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2011.

4) Engineer Regulation (ER) 1110-1-12, Quality Management, 30 September 2006.

5) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 November 2007.

6) West Maui Watershed Plan, Island of Maui, Hawaii, Watershed Assessment Management Plan, 3 April 2012.

7) USACE Pacific Ocean Division (POD) Quality Management Plan, December 2010.

8) USACE Honolulu District (POH) Civil Works Review Policy (ISO CEPOH-C_12203), 1 November 2010.

c. Requirements. This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review, certification (per EC 1165-2-214), and planning model certification/approval (per EC 1105-2-412) and the Value Management Plan requirements in the Project Management Business Process (PMBP) Reference 8023G and the ER 11-1-321, Change 1.

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a PCX or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the ECO-PCX.

The ECO-PCX will coordinate with the Cost Engineering and ATR Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies.

While aquatic ecosystem restoration is the main focus of the West Maui Watershed Assessment, flood risk management, coastal storm management and water supply will be addressed to ensure the aquatic ecosystem restoration scenarios are developed in a holistic, integrated fashion. The ECO-PCX will coordinate with the Flood Risk Management PCX (FRM-PCX), the PCX for Coastal Storm Damage Reduction (CDSR-PCX) and the RMC as needed to ensure that the review teams with the appropriate expertise are assembled.

3. STUDY INFORMATION

a. Authority. The Section 729 Watershed Assessment – West Maui Watershed is authorized under Section 729 of Water Resources Development Act (WRDA) of 1986.

b. Decision Document. In accordance with Section 729, the West Maui Watershed Assessment will result in a Watershed Plan that will be approved by Chief, Planning and Policy Division, Headquarters USACE (HQUSACE) (EC 1105-2-411, 10(a)). Because the Watershed Assessment is a planning study and the Watershed Plan will not contain recommendations for authorization or funding for construction, it is categorically excluded from National Environmental Policy Act (NEPA) documentation pursuant to 33 Code of Federal Regulation 230.9(d). Preparation of a NEPA document is therefore not required. Any action identified in the Watershed Plan that is selected for implementation would require NEPA documentation by the implementing or funding agency, as appropriate. If the Watershed Plan generates one or more proposals for a USACE project, then the NEPA documentation would be done as part of the associated feasibility study (EC 1105-2-411, 9(e)).

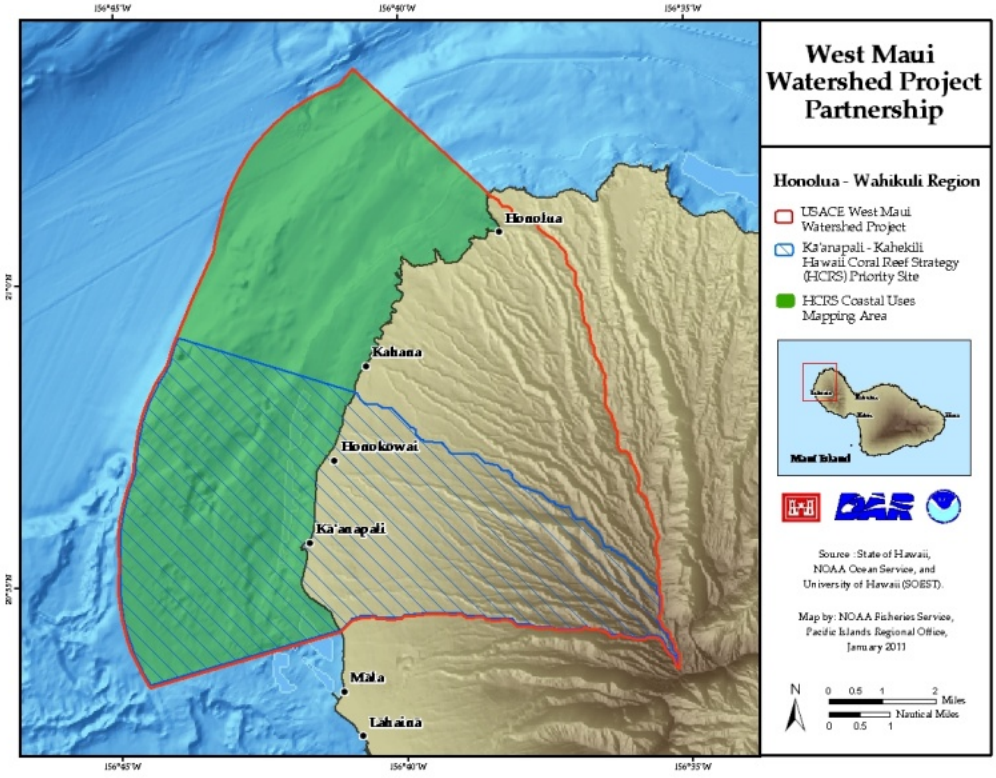
The Watershed Plan will provide a comprehensive strategy for the West Maui Ridge to Reef (R2R) Initiative, identifying solutions to restore coral reef ecosystems by addressing land-based threats to coral reefs. Where feasible, the Watershed Plan will also address other aquatic ecosystem restoration actions. The Watershed Plan will consider other issues and purposes such as flood risk management, coastal storm damage reduction, water quality, wildfire management, and drought management. However strategies will not be developed for these other purposes unless funds become available at a later date. Solutions identified will be implemented by federal and non-federal sponsors and partners. If solutions are

identified that would fit within the authorities of USACE, then a tiered feasibility study would be conducted under the appropriate authority.

c. Study Sponsor. The non-Federal sponsor for this plan is the State of Hawaii, represented by the Department of Land and Natural Resources (DLNR).

d. Study Location. The study area extends from Kaanapali northward to Honolua and from the top of the West Maui Mountains at the summit of Puu Kukui to the outer reef, including the watersheds of Wahikuli, Honokowai, Kahana, Honokahua, and Honolua (24,000 acres). Figure 1 shows the study area location.

Figure 1: West Maui Watershed Assessment Study Area



e. Study Description. The Section 729 Watershed Assessment for West Maui will develop a Watershed Plan to support the West Maui Watershed R2R Intiative. The West Maui R2R Initiative is an all-encompassing approach across multiple agencies, organizations and jurisdictions to address adverse impacts to coral reefs in West Maui. The State recognized that an integrated and comprehensive approach to reduce land-based sources of pollution is one of the most important steps to help restore coral reef ecosystems. The R2R Initiative builds on already established efforts underway and leverages resources across a number of agencies and community groups to implement actions to reduce one of the key sources of reef decline – land-based sources of pollution. The Hawaii Coral Reef Strategy identified the coral reef ecosystem along the West Maui region as a priority management area. The U.S. Coral Reef Task Force designated the West Maui Watershed as the priority partnership in the Pacific in 2011. The goal

in the area is to restore and enhance the health and resiliency of West Maui coral reefs and nearshore waters through the reduction of land-based pollution threats from the summit of Puu Kukui to the outer reef.

DLNR and USACE are sponsoring the Section 729 Watershed Assessment that will develop a comprehensive Watershed Plan for the West Maui Watershed R2R Initiative. The National Oceanic and Atmospheric Administration (NOAA), the U.S. Department of Agriculture – Natural Resources Conservation Service (NRCS), the U.S. Environmental Protection Agency (EPA), and the National Fish and Wildlife Foundation (NFWF) are all partners in the West Maui R2R Initiative, providing assistance to implement a suite of integrated activities to improve the health of West Maui's reefs.

The DLNR and USACE-funded Section 729 Watershed Assessemnt will provide a comprehensive plan to reduce land-based pollution. The plan will include activities that other agencies, organizations and the community can undertake to contribute to the goal and suggestions for further research. The plan for the West Maui R2R Initiative will be completed by 2015. The plan will build on activities already underway in West Maui and a wealth of existing information, past actions and lessons learned.

f. Factors Affecting the Scope and Level of Review. Table 1 outlines the factors affecting the scope and level of review for the West Maui Watershed Assessment with a rating of the factors as high, medium, and low, based on the difficulty to address within the watershed plan. The IEPR Trigger notes if any of the factors warrant the need for an IEPR based on guidance provided in EC1165-2-214.

TABLE 1: FACTORS AFFECTING THE SCOPE AND LEVEL OF REVIEW

FACTOR	RATING	IEPR TRIGGER	DESCRIPTION
Construction Costs	Low	With no construction activities proposed, the IEPR mandatory trigger of construction equal or greater to $45 million is not met.	In accordance with WRDA §729 and EC 1105-2-411, the West Maui Watershed Plan will identify planning scenarios or strategies. It does not result in recommendations for design and construction. If management measures are identified that would fall under a USACE authority, a new feasibility study would be requested for that action, including a new cost share agreement and project management plan. A NEPA document would be prepared under the appropriate authority referencing information in the Watershed Plan.
Plan Formulation - Integrated Water Resource	High	None	As the first jointly-sponsored watershed assessment in the POH, the West Maui Watershed Assessment involves a variety of requirements while fully incorporating

FACTOR	RATING	IEPR TRIGGER	DESCRIPTION
Management			a ridge to reef planning perspective. The development of the Watershed Plan will be challenging.
Ecosystem Output Model	High	None	This will be one of the first USACE plans to incorporate coral reef restoration as part of the aquatic ecosystem restoration objectives. There are no ecosystem restoration output models available for coral reef systems, and worldwide there has been limited success in large scale coral reef restoration.
Hydrologic/ Hydraulics - Flashy Tropical Systems	Medium	None	Hawaii is characterized by flashy, steep tropical systems in relatively small watersheds. Designing aquatic ecosystem restoration projects that may minimize flood risk within these systems is challenging.
Forecasting Resources – Climate Change	High	None	As an island state, Hawaii is likely to experience significant changes to its environment due to global climate change including sea level rise, an increase in alien invasive species, changes in rainfall duration, intensities, and frequencies, and changes in water supply. Identifying and incorporating these likely changes in baseline conditions will be a challenge within the planning process.
Risk Assessment	Low	None	The West Maui Watershed Assessment will reflect the uncertainties and assumptions inherent in planning on a larger scale and will result in a more comprehensive and strategic vision or plan. Because the Watershed Plan will result in alternative scenarios or strategies rather than specific projects, a general risk assessment of each scenario's ability to meet the goals and objectives of the plans will be conducted. If any proposals are identified that meet USACE authorities, separate feasibility studies with associated detailed cost engineering and risk assessments would be conducted as tiered studies to this Watershed Plan.

FACTOR	RATING	IEPR TRIGGER	DESCRIPTION
Life Safety	Low	With no construction proposed and the focus on aquatic ecosystem restoration, the IEPR mandatory trigger of significant threat to human life is not met.	At this time, flood risk management is not a primary planning objective. The development of aquatic ecosystem restoration strategies will consider their interaction with flood risk management issues to provide a systematic and holistic approach to the strategy. As such, there are no life safety issues associated with the Watershed Assessment. In the event that additional funding and the need to develop flood risk management strategies arises during the planning process, the issue of life safety will be re-evaluated.
Governor Request for IEPR	Low	There has been no request by the Governor of Hawaii for a peer review by independent experts. The IEPR mandatory trigger is not met.	The State of Hawaii is the non-federal sponsor of this watershed assessment. The Watershed Plan will meet specific needs and objectives to the State and the Governor of Hawaii. Based on discussions with the State, the State does not see any need to request a peer review by independent experts for this Watershed Plan.
Public Dispute	Low	There are no public dispute issues related to this plan. The IEPR mandatory trigger for significant public dispute is not met.	As part of the public involvement plan, the goal is to collaborate with the public through the planning process. To meet this objective, the State is proposing an intensive public involvement process, including a State sponsored and facilitated steering committee to help ensure the plan meets the overall goals and objectives of the West Maui community. At this time, no issues of public dispute over the goals and objectives of the Watershed Assessment have arisen.
Economic - Environmental Costs and Benefits	Medium	None	Consistent with EC 1105-2-411, identifying a National Economic Development (NED) or National Ecosystem Restoration (NER) plan is not required. The Watershed Assessment will follow the USACE planning process and conduct a screening level economic comparison among the strategies to prioritize actions. The detailed

FACTOR	RATING	IEPR TRIGGER	DESCRIPTION
			NED/NER analyses would be done as part of the feasibility planning process for any potential USACE project that is identified and selected for further investigation. The Watershed Assessment will lean heavily on existing economic data and reports. No novel methods are proposed for the screening level comparative analysis.
Novel Methods	Medium	No novel methods are proposed so the Major Subordinate Command (MSC) discretionary trigger for IEPR is not met.	This watershed assessment will incorporate information developed through the West Maui R2R Initiative, including lessons learned from other agency sponsored implementation projects. This DLNR Coral Reef management and monitoring program has been in place for over 10 years. This information has been used to identify primary threats to coral reefs. On-going scientific research and information will help to continue to identify the primary threats facing coral reefs and creative ways to address them. The Watershed Assessment will consolidate and integrate existing research, but no new research is proposed. New information will be limited to data collection to address data gaps existing, without plan conditions. No novel methods are proposed for the data collection or data interpretation. Data gaps that could be formed into research questions will be identified within the Watershed Plan. However, any research based on these data gaps would be conducted under separately authorized studies by USACE or other partners and would be subject to the appropriate reviews within those tiered-off studies.
Robust or Unique Construction Sequencing	Low	With no construction proposed, the MSC discretionary trigger for IEPR for unique construction	Since the West Maui Watershed Plan will only result in alternative planning scenarios and will not provide feasibility analysis for the design and construction of a project, there are no issues

FACTOR	RATING	IEPR TRIGGER	DESCRIPTION
		sequencing is not met.	surrounding the project design. Considerations of the project design approach and necessary reviews would be addressed in feasibility studies of any potential USACE projects identified within the final West Maui Watershed Plan.
Significant Interagency Interest	Low	This is an interagency collaborative plan. There have been no requests raised by Federal or State agencies for an IEPR. The IEPR discretionary trigger of agency interest in IEPR is not met.	As the U.S. Coral Reef Task Force designated priority partnership initiative in the Pacific, there is a significant level of interagency interest. However, the plan is designed to incorporate a collaborative and integrated process. As such, federal, state and local agencies that have an interest or role in implementing the goals and objectives of this effort will be actively engaged throughout the planning process.
Environmental - Cultural Impacts, including impacts to fish and wildlife species.	Medium	A NEPA document is not required. Any tiered implementation studies that would have potential for significant impacts would address NEPA and IEPR analysis at that time. The IEPR discretionary triggers of potential substantial adverse impacts on fish and wildlife species and their habitat or more than negligible impacts on scarce or unique tribal, cultural, or historic resources are not met.	In accordance with EC 1105-2-411, a NEPA document is not required for the Watershed Plan. However, as part of the planning process, a screening of the potential environmental and cultural impacts of the planning scenarios will be conducted. This will also include a screening of potential impacts to federally listed species and other fish and wildlife species. With a primary purpose of ecosystem restoration, impacts to environmental and cultural issues will be avoided and minimized to the full extent practicable. In some of the more developed areas or in areas with conflicting uses, there could be a potential for significant impacts, should any given planning scenario be implemented. The Watershed Plan will identify these potential impacts or concerns. Assessment of the extent of those impacts and identification of mitigation, if necessary, would be done by the appropriate lead agency in association with any feasibility studies conducted for actions selected for

FACTOR	RATING	IEPR TRIGGER	DESCRIPTION
			potential implementation. If there are projects identified for USACE to consider, then this assessment would be conducted as part of a USACE feasibility study/NEPA documentation as appropriate for the applicable authority.

g. In-Kind Contributions. Products and analyses provided by the non-Federal sponsor as in-kind services are subject to DQC, and ATR. The anticipated non-Federal sponsor's in-kind contributions for this study are discussed in the Watershed Assessmment Management Plan (WAMP).

4. DISTRICT QUALITY CONTROL (DQC)

All watershed plans (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the WAMP. POH shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manuals of the POH and POD.

a. Documentation of DQC. Consistent with the POH Quality Manual, DQC will be documented using the POH DQC review table. When all comments have been addressed and back checked, the DQC lead will sign a DQC certification in compliance with the POH Quality Manual. The DQC comments and responses will be provided for the ATR team at each review.

b. Products to Undergo DQC. The following products will be subject to DQC:

(1) The Draft Watershed Plan;

(2) The Final Watershed Plan; and,

(3) All supporting documentation and technical reports.

c. Required DQC Expertise. The following expertise is needed for DQC. Once identified, the DQC team members for this study and a brief description of their credentials will be added in Attachment 1. Not all disciplines will need to review all documents. Specific expertise will be identified based on the subject matter of the document. For reviews requiring multiple disciplines, a DQC lead will be designated, consistent with the POH Civil Works Review Policy to coordinate the DQC team. Because the POH has limited staff and most will be engaged as part of the Project Delivery Team (PDT) for this plan, the DQC team will likely comprise of subject matter experts from USACE Alaska District (POA). Other federal and state partners on the plan are likely to assist with the DQC related to disciplines and focuses outside of the USACE core expertise, such as water quality or terrestrial ecosystems. Because this is the

first §729 Watershed Assessment conducted by POH, the DQC will include a member from another District that has expertise in §729 Watershed Assessments.

Table 1: DQC Required Expertise

DQC Team Members/Disciplines	Expertise Required
DQC Lead	The DQC lead should be a senior professional with experience in preparing Civil Works watershed plans and conducting DQC's. The lead should also have the necessary skills and experience to lead a team through the DQC process. The DQC lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc.).
Planning	The Planning reviewer should be a senior water resources planner with experience in watershed planning, ecosystem restoration, and water quality management. The reviewer will also have experience in flood risk, water supply, drought, and wildfire management, as needed.
Economics	The Economics reviewer should be a senior economist with experience in screening level of economic analysis for NER objectives suitable for watershed plans.
Biology/Ecology	The Biology/Ecology reviewer should be a senior biologist/ecologist with expertise in tropical ecosystems including coral reefs and nearshore habitats; tropical freshwater habitats, including wetlands; and tropical terrestrial habitats. Experience in the Pacific Islands, preferably Hawaii is needed. While NEPA documentation and Clean Water Act Section 404(b)(1) alternatives analysis is not required, expertise is needed to review programmatic tools and frameworks that will be developed to assist with implementation.
Cultural Resources	The Cultural Resources reviewer should be a senior cultural resource expert with expertise in native Hawaiian cultural practices, archaeology and historic architecture. While Section 106 of the National Historic Preservation Act (NHPA) consultation is not required, expertise is needed to review frameworks and programmatic tools to assist with implementation.
Coastal Engineering	The Coastal Engineering reviewer should have expertise in tropical systems and bioengineered shore protection activities.
Hydrology and Hydraulic Engineering	The hydrology and hydraulic engineering reviewer should have experience in tropical flash flood systems and low flow conditions analysis to support stream restoration measures.

DQC Team Members/Disciplines	Expertise Required
Cost Engineering	The cost engineering reviewer should have experience in screening level cost engineering analysis suitable for watershed plans.
Engineering and Design	The engineering and design reviewer should have expertise in screening level engineering and design considerations suitable for watershed plans.
GIS Specialist	The GIS specialist should have experience in GIS methodologies to support landscape ecological analysis through the use of spatial and temporal planning tools.
Public Involvement	The public involvement reviewer should have expertise in collaborative planning and communication with multiple interest groups. Familiarity with community planning would be beneficial.
Water Quality	The water quality reviewer should have expertise in water quality solutions related to reduction of sediment, nutrients and contaminants associated with agricultural activities, resort management and urban run-off. Understanding of State of Hawaii Department of Health regulations and EPA regulations and policies would be beneficial.

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all watershed plans (including supporting data, analyses, environmental compliance documents, etc.). The objective of the ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. The ATR is managed within USACE by the ECO-PCX, and is conducted by a qualified team from outside POH that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside POD.

a. Products to Undergo ATR. The following product will be subject to ATR:

- The Draft Watershed Plan.

b. Required ATR Team Expertise. The following ATR expertise is required for this project. Where possible ATR team members will address multiple disciplines and emphasis. The ECO-PCX, as the RMO, will identify the final make-up of the ATR team and identify the ATR team leader in consultation with the Project Manager (PM), the vertical team and other appropriate centers of expertise. Once identified, the ATR team members for this study will be recorded and a brief description of their credentials will be added in Attachment 1.

Table 2: ATR Team Member Expertise

ATR TEAM MEMBERS/DISCIPLINES	EXPERTISE REQUIRED
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works watershed plans and conducting ATR. The lead should have a strong understanding of the unique differences of a WRDA 1986 §729 Watershed Plan versus a traditional feasibility report. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc.).
Planning	The planning reviewer should be a senior water resources planner with experience in multi-purpose watershed plans. The planning reviewer should have a strong understanding of WRDA 1986 §729 requirements and the unique differences to the traditional feasibility report. The planning reviewer should also understand public collaborative planning methods and processes.
Economics	The economics reviewer should be a senior economist with experience in combined NER plans and trade-off analysis. The economists should have a strong understanding of WRDA 1986 §729 requirements and the unique differences to the traditional feasibility report.
Biological Resources	The biological resources reviewer should be a senior environmental specialist with experience in aquatic ecosystem restoration. The biological resources reviewer should have a strong understanding of WRDA 1986 §729 requirements and the unique differences to the traditional feasibility report. Expertise in tropical marine systems including coral reefs and expertise in freshwater stream systems is also needed.
Cultural Resources	The cultural resources reviewer should be a senior cultural resources specialist with experience in coordination with indigenous populations and incorporation of indigenous perspectives such as traditional ecological knowledge within a planning process. The cultural resources reviewer should have a strong understanding of WRDA 1986 §729 requirements and the unique differences to the traditional feasibility report.

ATR TEAM MEMBERS/DISCIPLINES	EXPERTISE REQUIRED
Hydrology	The hydrology reviewer should be an experienced hydrologist with expertise in flash flood systems, preferably tropical or sub-tropical systems, and the computer modeling techniques to be used. Models to be used will be determined during the preparation of the watershed study. The hydrology reviewer should have expertise in hydrologic considerations for aquatic ecosystem restoration. The hydrology reviewer should have a strong understanding of WRDA 1986 §729 requirements and the unique differences to the traditional feasibility report.
Hydraulic Engineering	The hydraulic engineering reviewer should be an expert in the field of hydraulics and have knowledge of hydraulic considerations for aquatic ecosystem restoration, bioengineering approaches – specifically bioengineering approaches to help reduce sediment and erosion issues downstream. Understanding of non-structural approaches such as low impact development is beneficial. The hydraulic engineering reviewer should also have experience with the computer modeling techniques that will be used. Models to be used will be determined during the preparation of the watershed study, but are likely to include HEC-RAS and FLO-2D. The hydraulic engineer should have a strong understanding of WRDA 1986 §729 requirements and the unique differences to the traditional feasibility report.
Coastal Engineering	The coastal engineering reviewer should be an expert in the field of coastal engineering with knowledge of and experience applying USACE sea level rise policies and procedures and bioengineering approaches to Coastal Storm Damage Review. The coastal engineer should have a strong understanding of WRDA 1986 §729 requirements and the unique differences to the traditional feasibility report.
Engineering and Design	The engineering and design reviewer should be an expert in the field of civil engineering as it relates to designing aquatic ecosystem restoration. The reviewer should have expertise in multipurpose bioengineering approaches. Specific engineering disciplines of geotechnical, civil, and structure may be needed. The engineering and design reviewer should have a strong understanding of WRDA 1986 §729 requirements and the unique differences to the traditional feasibility report.

ATR TEAM MEMBERS/DISCIPLINES	EXPERTISE REQUIRED
Cost Engineering	The cost engineering reviewer should be a senior cost engineer with experience with multipurpose projects including aquatic ecosystem restoration. The cost engineer should have a strong understanding of WRDA 1986 §729 requirements and the unique differences to the traditional feasibility report.

c. Documentation of ATR. DrChecks[sm] review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

(1) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;

(2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;

(3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and

(4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations where information is incomplete or unclear, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks[sm] will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes POH, ECO-PDX, POD, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks[sm] with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

(5) Identify the document(s) reviewed and the purpose of the review;

(6) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;

(7) Include the charge to the reviewers;

(8) Describe the nature of their review and their findings and conclusions;

(9) Identify and summarize each unresolved issue (if any); and

(10)Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review, certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed based on work reviewed to date for the draft report and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

a. IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review and is applied where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, is made to assess whether an IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines. The IEPR panel will represent a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

b. Type I IEPR. Type I IEPR reviews are managed by an Outside Eligible Organization (OEO) external to 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. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review (SAR)) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.

c. Type II IEPR. Type II IEPR, or SAR is managed by the RMC and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or

other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to the initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

(1) Decision on IEPR. The ECO-PCX determined on 19 March 2012 that this study did not meet the criteria for an IEPR and therefore an IEPR would not be required. If a waiver from HQ USACE is also required, in addition to the determination by the ECO-PCX that a IEPR was not necessary, a waiver will be sought to ensure full compliance with EC 1165-2-214.

(2) Products to Undergo Type I IEPR. Not applicable.

(3) Required Type I IEPR Panel Expertise. Not applicable.

(4) Documentation of Type I IEPR. Not applicable.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All watershed plans will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the POD Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in watershed plans.

8. COST ENGINEERING AND ATR MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION

All watershed plans shall be coordinated with the Cost Engineering MCX, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The MCX will also provide the Cost Engineering Certification. The ECO-PCX is responsible for coordination with the Cost Engineering MCX.

9. MODEL CERTIFICATION AND APPROVAL

a. Planning Models. 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, for the purposes of the EC, are defined as any models and analytical tools that planners use 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 the planning product. 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 (if required).

In accordance with EC 1105-2-412 Paragraph 5.c, models that are single-use or study-specific require approval that the model is technically and theoretically sound and is a functional tool that can be applied during the planning process by knowledgeable and trained staff for purposes consistent with the model's purpose and limitations. For this project, the PM will coordinate with the ECO-PCX in determining the appropriate level of review for model approval. At this time, an additional ATR reviewer has been added to specifically approve models for site specific use.

The following planning models are anticipated to be used in the development of the watershed plan.

Table 3: Planning Models and Certification/Approval Status

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
Marine Ecosystem Restoration Output Model	As part of the planning process, an ecosystem restoration output model may be identified and/or developed to address the needs of the coral reef and marine ecosystem restoration analysis. Once identified, this model will need to undergo model certification/approval.	Approval review to be coordinated with the ECO-PCX.
Integrated Planning Model	An integrated planning model will be required to effectively formulate and analyze the wide array of objectives and potential alternatives. Models that work within a Shared Vision Planning process will be evaluated and identified based on the planning objectives and constraints. Models being considered include, but are not limited to, IWR Planning Suite, N-SPECT, Stella, Marxan, or a multi-criteria spatial planning model. IWR Planning Suite has been certified by USACE. The other models have not been certified or approved. Once identified, the model will need to undergo model certification/approval as appropriate.	Approval review to be coordinated with the ECO-PCX.

b. Engineering Models. 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 and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and

Engineering Technology (SET) initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selction 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 (if required).

The following engineering model is anticipated to be used in the development of the watershed plan.

Table 4: Engineering Models and Approval Status

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
HEC-RAS 4.0 (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. The program will be used for unsteady flow analysis to evaluate the future without- and with-plan conditions along the streams and tributaries in the West Maui watershed.	HH&C CoP Preferred Model
GSSHA 2.0 (Surface and Groundwater Flow)	Gridded Subsurface Hydrologic Analysis (GSSHA) model is a grid-based two dimensional hydrologic model. Features include 2D overland flow, 1D stream flow, 1D infiltration, 2D groundwater, and full coupling between the groundwater, vadose zone, streams, and overland flow. GSSHA can run in both single event and long-term modes. The fully coupled groundwater to surface water interaction allows GSSHA to model both Hortonian and Non-Hortonian basins. Features of version 2.0 include support for small lakes and detention basins, wetlands, improved sediment transport, and an improved stream flow model. GSSHA has been successfully used to predict soil moistures as well as runoff and flooding.	Developed by USACE Engineer Research and Development Center (ERDC)
Microcomputer Aided Cost Engineering System (MCACES) 2nd Generation (MII)	The MCACES MII construction cost estimating software, developed by Building Systems Design, Inc., is a tool used by cost engineers to develop and prepare all USACE Civil Works cost estimates. Using the features in this system, cost estimates are prepared uniformly, allowing cost engineering throughout USACE to function as one virtual cost engineering team.	Cost Engineering MCX Required Model

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. The ATR for this study will be accomplished in accordance with the cost and schedule in the WAMP. As of the approval date of this Review Plan, the ATR of the various documents are scheduled as follows:

(1) Draft Watershed Plan: June 2015.

(2) Estimated Total ATR Costs: $46,000.

b. Type I IEPR Schedule and Cost. Not applicable.

c. Model Certification/Approval Schedule and Cost. The estimated cost of model approval is $50,000 per model. It is assumed that at least two models (marine ecosystem restoration output model and integrated planning model) will require approval for a total amount of $100,000. The model certification/approval documentation will be provided to the ECO-PCX no later than the Tentatively Select Strategies milestone and will be completed no later than the POD/HQUSACE review of the Final Watershed Plan. The model certification/approval process is likely to take four months. The cost and schedule will be adjusted as needed with the ECO-PCX, once the models have been identified.

11. PUBLIC PARTICIPATION

The West Maui R2R Initiative Public Involvement Plan (PIP), dated 9 October 2012 outlines the process to engage agencies, stakeholders, and the general public for the Section 729 Watershed Assessment process and the implementation activities by other partner agencies. The intent of the public involvement process is to work at a public collaboration level. With this approach, public involvement will be early, often, and consistent throughout the feasibility study process. Consistent with USACE regulations, a public scoping meeting was held on 5 December 2012. A public comment meeting will be held after the release of the Draft Watershed Plan. Consistent with the transparency objectives of the USACE planning process, the Review Plan, final Watershed Plan and applicable review reports will be made available to the public.

Any public comments received on the Review Plan, at public meetings or on draft or final reports will be provided to the review teams before they conduct their reviews.

12. REVIEW PLAN APPROVAL AND UPDATES

The POD Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving POH, POD, ECO-PCX, and HQUSACE members) as to the appropriate scope and level of review for the Watershed Plan. Like the WAMP, the Review Plan is a living document and may change as the study progresses. POH is responsible for keeping the Review Plan up to date. Minor changes to the Review Plan since the last POD Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) will be re-approved by the POD Commander, following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, will be posted on the POH webpage. The latest Review Plan will also be provided to POD and the ECO-PCX.

13. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this Review Plan can be directed to the following points of contact:

Ms. Athline Clark
Project Manager
U.S. Army Corps of Engineers, Honolulu District
Civil and Public Works Branch
Programs and Project Management Division
Building 230
Fort Shafter, Hawaii 96858
Telephone: (808) 835-4032

Mr. Russell Iwamura
U.S. Army Corps of Engineers, Pacific Ocean Division
Building 525
Fort Shafter, Hawaii 96858
Telephone: (808) 835-4625

Ms. Valerie Ringold
U.S. Army Corps of Engineers, Northwest Division
1125 NW Couch Street, Suite 500
Portland, OR 97208-2870
Telephone: (503) 808-3984

ATTACHMENT 1: TEAM ROSTERS

Table 5: Project Delivery Team

DISCIPLINE	TEAM MEMBER	OFFICE
Project Manager/Planner	Ms. Athline Clark	PP-C
Program Analyst	Mr. Geoffrey Lee	PP-PC
P2 Scheduler	Ms. Laureen Vizcarra	PP-P
Archeologist	Mr. Kanalei Shun	PP-E
Coastal Engineer	Ms. Jessica Podoski	EC-T
Coastal Engineer	Mr. Justin Goo	EC-T
Cost Engineer	Ms. Tracy Kazunaga	EC-S
Contracting	Mr. Ed Chambers	CT
Economist	Mr. Bob Finch	EC-T
Economist	Mr. Lance Shiroma	EC-T
Engineering Services	To Be Determined (TBD)	
Value Engineering	Mr. Etlon Choy	PP-S
GIS Specialist	Ms. Sarah Falzarano	EC-G
Geotechnical Engineering	Mr. Russell Leong	EC-Q
Hydrologic/Hydraulic Engineer	Mr. Jarrett Hara	EC-T
Office of Counsel	Ms. Lindsey Kasperowicz	OC
Public Affairs Office	Mr. Joe Bonfiglio	PA
Real Estate	Mr. Michael Sakai	PP-R

Table 6: DQC Review Team

TASK	OFFICE	DESCRIPTION OF CREDENTIALS
DQC Team Lead	TBD	TBD
Planning	TBD	TBD
Economics	TBD	TBD
Biological Resources	TBD	TBD
Cultural Resources	TBD	TBD
Hydrology	TBD	TBD
Hydraulic Engineering	TBD	TBD
Coastal Engineering	TBD	TBD
Engineering & Design	TBD	TBD
Cost Engineering	TBD	TBD

Table 7: ATR Review Team

TASK	OFFICE	DESCRIPTION OF CREDENTIALS
ATR Team Lead	CEMVP-PD-F	Section 729 Watershed Planning Expert
Planning	TBD	TBD
Economics	TBD	TBD
Biological Resources	TBD	TBD
Cultural Resources	TBD	TBD
Hydrology	TBD	TBD
Hydraulic Engineering	TBD	TBD
Coastal Engineering	TBD	TBD
Engineering & Design	TBD	TBD

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The ATR has been completed for the *<type of product>* for West Maui Ridge to Reef Initiative Watershed Plan, Island of Maui, Hawaii. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing U.S. Army Corps of Engineers policy. The ATR also assessed the DQC documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks[sm].

SIGNATURE _____ _____

Name Date
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ _____

Name Date
Project Manager
Office Symbol

SIGNATURE _____ _____

Name Date
Architect Engineer Project Manager[1]
Company, location

SIGNATURE _____ _____

Name Date
Review Management Office Representative
Office Symbol

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: *Describe the major technical concerns and their resolution.*

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE _____ _____

Name Date
Chief, Engineering Division
Office Symbol

SIGNATURE _____ _____

Name Date
Chief, Planning Division
Office Symbol

[1] Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Table 8: Review Plan Revisions

Revision Date	Description of Change	Page/Paragraph Number
11 Jan 2013	Update project schedule and status. Update Review Plan for consistency with SMART planning guidelines and latest revisions to the Review Plan template.	All

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Table 9: Standard Acronyms and Abbreviations

Term	Definition	Term	Definition
AFB	Alternative Formulation Briefing	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
ATR	Agency Technical Review	OEO	Outside Eligible Organization
CSDR	Coastal Storm Damage Reduction	PCX	Planning Center of Expertise
CWA	Clean Water Act	PDT	Project Delivery Team
DQC	District Quality Control/Quality Assurance		
EC	Engineer Circular	POD	U.S. Army Corps of Engineers, Pacific Ocean Division
ER	Engineer Regulation	POH	U.S. Army Corps of Engineers, Honolulu District
FRM	Flood Risk Management	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	SAR	Safety Assurance Review
MSC	Major Subordinate Command	USACE	U.S. Army Corps of Engineers
NER	National Ecosystem Restoration	WAMP	Watershed Assessmment Management Plan
NEPA	National Environmental Policy Act	WRDA	Water Resources Development Act