



Department  
of the Army  
Office, Assistant Secretary  
of the Army (Civil Works)

**FISCAL YEAR 2015  
Civil Works  
Budget Details of the  
U.S. Army Corps of Engineers  
for  
Remaining Items (I, C and O&M)**

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March 2014

# Remaining Items – Investigation

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Allocation in FY13 \$	Allocation in FY14 \$	Budgeted Amount in FY15 \$
950,000	750,000	750,000

Project Name: Access to Water Resource Data

Engineer Research and Development Center

AUTHORIZATION: Water Resources Development Act 2007; Section 2017.

JUSTIFICATION: The U.S. Army Corps of Engineers (USACE) Civil Works Strategic Plan presents a bold initiative for the USACE to manage our Nation's public water resources in collaboration with others through a watershed approach. The watershed approach recognizes that physical, chemical, and biological processes are intertwined and must be managed in an integrated manner. The USACE advocates a holistic view to sustainable water resources solutions in partnership with other Federal agencies, Tribes, State and local governments, and non-governmental organizations. America faces real water challenges — such as deteriorating infrastructure, increasing demands for water resources functions, competing water uses, and serious environmental challenges — in a climate of diminishing fiscal resources and fragmented responsibilities. Successful implementation of these strategic goals requires that the USACE provide access to water resources data and related water quality data to the public and all stakeholders for integrated water resources decision making.

Funds are requested to implement “Water Quality Data Management Implementation Plan” which calls for the Development of standard business processes, procedures and database models to manage water quality and quantity data generated by the full range of Corps water resources activities in conjunction with EPA, USGS and NOAA Water Control and Water Quality Programs. This may include water quality/quantity information associated with stream gages, water quality gages and other monitoring devices and water resources model and analytical tool output. These data include variables such as precipitation, water chemistry, temperature, evaporation, sedimentation, biological and habitat data, riverine discharges and stages, reservoir storage, inflows and outflow. This will include developing QA/QC processes and criteria for collected data. Water quantity and water quality data will be made available to the public through a standard web interface in a downloadable format as soon as quality assurance/quality control has been conducted by the USACE.

PROPOSED ACTIVITIES FOR FY 2015:

- Continue to provide public access to USACE water resources data and publish standard operating procedures for Districts to follow in managing their water quality data.
- Develop policy and guidance regarding public access to Corps water quality and water management data.
- Make data on the permits issued under the authority of the USACE Clean Water Act and Rivers and Harbors Act available to the public
- Coordinate with Other Federal Agencies and solicit feedback on management and implementation strategy.
- Develop tools and processes for making it easier to add water resources data to a central database.

Engineer Research and Development Center

Access to Water Resource Data

- Develop long-term strategy and funding needed to sustain public access to USACE Water Resources.

ACCOMPLISHMENTS FOR FY 2014:

- Implemented database standards for national internet dissemination of water resources data
- Developed policy and guidance regarding consistent public access to Corps water quality and water management data. Used standard internet pages for varying entry points to be consistent throughout the USACE. Views of data made available at watershed, basins, USACE boundaries and other administrative boundaries
- Coordinated with Other Federal Agencies and solicited feedback on management and implementation strategy. Employed joint standards developed by the USACE, US Geological Survey and National Weather Service for inundation mapping and other standard data sets.
- Developed tools and processes for managing water resources data in a central database.
- Developed upward reporting streaming technologies to synchronize water management data at the national level between water management national backup systems and Enterprise Geographic Informations Systems (EGIS) servers.
- Implemented unified approach for upward reporting of water quality data

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

	Allocation in FY 2014	Budgeted Amount in FY 2015
Committee on the Marine Transportation System (CONTINUING)	\$480,000	\$100,000 <u>1/</u>

**AUTHORIZATION:** The Committee on the Marine Transportation System (CMTS) is an interagency working group of Federal agencies with responsibilities for matters affecting marine transportation. The CMTS was established in the *Ocean Action Plan – The Administration’s Response to the U.S. Commission on Ocean Policy* – 17 December 2004.

**JUSTIFICATION:** The CMTS held its first meeting in July 2005 and continues to meet 2-3 times per year. However, staff from the Federal agencies represented on the CMTS work with each other throughout the year. The Assistant Secretary of the Army for Civil Works has been named as the Department of Defense (DOD) representative to the CMTS. A CMTS Coordinating Board advises and implements the work of the CMTS. An interagency Executive Secretariat supports the day-to-day activities of the CMTS on behalf of the Coordinating Board. The Corps is providing a full-time GS-15 liaison to the CMTS Executive Secretariat. This position reports to the Chief of Operations, HQUSACE, and HQ Operations has had the lead in CMTS coordination. The Corps has also been tasked by the CMTS to lead an interagency team to conduct an Assessment of the Current and Future State of the U.S. Marine Transportation System. With support from the Deputy Commanding General for Civil and Emergency Operations, this Assessment effort was redirected into a new action team to form a consolidated CMTS response to the National Ocean Policy Task Force Report and other key maritime issues requiring interagency coordination. This Corps funding supports the participation of the Corps in a variety of CMTS activities, including a leadership role in the Ocean Policy Response Team.

**PROPOSED ACTIVITIES FOR FY 2015:** The funds requested in FY 2015 will be used to continue interagency coordination and to support the DOD share of other initiatives requested by the Committee, including MTS Data and Information Portal, and MTS Research and Development (R&D) Needs. There will be continued work by the Infrastructure Investment Integrated Action Team (IAT) to advance work between DOT and Army to align transportation infrastructure investments. The e-Navigation Integrated Action Team will enact implementation plans and provide reports to describe the application of e-Navigation integration. A newly-established Arctic Shipping Integrated Action Team will share information and provide recommendations for safe and successful shipping in the Arctic Ocean. Continue to co-lead the Integrated Action Team for MTS R&D Needs. Potential follow-up work related to the assessment of the maritime system. Coordinate with other Departments and agencies participating in CMTS and provide support for studies and initiatives requested by the CMTS (National Export Initiative, etc).

**ACCOMPLISHMENTS IN FY 2014:** Activities in FY 2014 included the work by two new IATs (Investment IAT and e-Navigation IAT), continued follow-up work associated with the 2<sup>nd</sup> biennial CMTS/Transportation Research Board MTS Research & Development Conference, “Diagnosing the Marine Transportation System: Measuring Performance and Targeting Improvement”. In addition, Corps funding supported senior leaders and the Assistant Secretary of the Army (CW) participation in CMTS and Coordinating Board meetings and activities. Participated in interagency working groups and reviews.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$ 0. This amount will be used to perform work on the study as follows: N/A

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

1. Surveys

Coordination With Other Federal Agencies, State, and Non-Federal Interest Other Coordination Programs

The CALFED request is \$100,000 1/ which is a portion of the CALFED coordination funds cited in section 103(f)(4)(A) of PL 108-361, the CALFED Act. The funds will be used to continue program support, coordination, and USACE representation efforts in the Federal and State CALFED process in Fiscal Year 2015. The CALFED Record of Decision named the Corps and State of California as implementation co-managers of the CALFED Levee System Integrity program. As stated in section 103(f)(4)(A) of PL 108-361, the CALFED Act, the Corps requests funds for program management, oversight, and coordination. Activities stated in the Act include: program support; program-wide tracking of schedules, finances, and performance; multi-agency oversight and coordination of program activities to ensure program balance and integration, development of interagency cross-cut budgets and a comprehensive finance plan to allocate costs in accordance with the Record of Decision; coordination of public outreach and involvement, including tribal, environmental justice, and public advisory activities in accordance with the Federal Advisory Committee Act; and development of annual reports. . The FY2014 allocation was \$100,000.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is\$ 0. This amount will be used to perform work on the study as follows: N/A

APPROPRIATION TITLE: Investigations, FY 2015

1. SURVEYS

e. Cooperation with Other Federal Agencies, States, and Non-Federal Interests

(5) Chesapeake Bay Program. The amount of \$75,000 <sup>1/</sup> is requested to continue, increase, and invigorate activities initiated under Special Investigations. The Chesapeake Bay Program (CBP) is an interagency program, initiated by the US Environmental Protection Agency (EPA), for the protection and restoration of the bay's natural resources. These natural resources have tremendous environmental and economic significance to the northeast region and to the Nation. Following extensive studies in the 1970's and early 1980's, it became increasingly clear that the Chesapeake Bay ecosystem was under intense pressure from development and overuse, leading to degradation in water quality, living resources and other ecological indicators. With the funds requested, the Baltimore District will continue participation and provide leadership involvement in the CBP Implementation Committee; the Federal Agencies Subcommittee; the Living Resources, Monitoring, Modeling and Toxics Subcommittee; and numerous workgroups addressing various subjects such as regional sediment management, wetlands, submerged aquatic vegetation, and land stewardship.

ASA (CW) was a signatory on a Special Tributary Strategy for Federal Lands in the District of Columbia agreement that commits the Corps to develop stormwater pollution prevention and nutrient management plans. The Baltimore District will play a key role on this Special Tributary Strategy as well as initiate activities to enhance stewardship of Corps -owned land within the Bay watershed. Many of these actions affect Corps authorized missions in the Chesapeake Bay.

The District participated in development of Executive Order (E.O.) 13508: Chesapeake Bay Protection and Restoration, signed by President Obama on 12 May 2009, which uses the Chesapeake Bay as a pilot for other "national treasures". The District is also intimately involved in the Federal Leadership Committee for the Chesapeake Bay, Agency Action reports in support of the E.O., and on Goal Implementation Teams. All of these efforts require extensive consultation and collaboration to achieve successful shared leadership, planning, accountability, and restoration of the largest estuary in the United States of America.

<sup>1/</sup> Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into the Fiscal Year 2015 from prior appropriations for use on this effort is \$0. N/A The FY 2014 allocation was \$200,000.

HQ

Chesapeake Bay

28 March 2014

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APPROPRIATION TITLE: Investigations, FY 2015

**Coordination Studies With Other Agencies**

	Allocation In FY2014	Budget Amount For FY2015	
<b>Other Coordination Programs (Continued)</b>	\$500,000	\$398,000	1/

(c) The Coordination with Other Water Resources Agencies budget amount is \$398,000. This account provides funds to enable coordination with other Federal agencies. These include cooperation with the Department of Agriculture (USDA) under the Watershed Protection and Flood Prevention Act of 1954 (Section 5 of PL 566-83), as amended; the Flood Control Act of December 22, 1944 (Section 1 of PL 534-78), as amended; and the National Environmental Policy Act of 1969 (PL 91-190). The Corps is also required by Section 102 (2)(c) of the National Environmental Policy Act of 1969 to review the environmental impacts that would result from installation of USDA project features. Cooperation with the Bureau of Reclamation of the Department of the Interior includes preparation of estimates of flood control requirements, and benefits, and reservoir operating criteria for storage reservoirs to be constructed with Federal funds, in accordance with Sections 1 and 7 of PL 534-78 and Section 7 of PL 984-84, as amended. Studies made by the Bureau of Reclamation of the flood control features of proposed reclamation projects are submitted to the Corps of Engineers for review and determination of the flood control benefits. Corps representation is required for cooperation with Federal and state agencies such as River Basin Compact Commissions; Interstate River Basin Compacts; and Regional Planning Commissions in authorized, but unfunded investigations. Funds are also used to support Corps participation in the North American Waterfowl Management Program. These funds will be used to continue cooperation with Federal and State agencies, and non-Federal interests in support of the NAWMP administered by the Department of the Interior, Fish and Wildlife Service. The NAWMP is an international program designed to reverse downward trends in North America's waterfowl populations by protecting and improving waterfowl habitats nationwide, particularly in 34 areas within the United States identified as being critical to meeting NAWMP goals and objectives. Department of the Army support to the NAWMP is set forth in an agreement signed with the Department of the Interior on January 23, 1989. These funds will be used to participate with Federal and State agencies in the National Estuary Program (NEP) administered by the Environmental Protection Agency under the Water Quality Act of 1987 (Section 320 of PL 100-4). The NEP is an interagency planning program to develop management plans for nationally significant estuaries designated by the EPA. Because of extensive Corps involvement with Federal water resources projects in the nation's estuaries and other responsibilities in waters of the U.S., the Corps participates on the management and technical advisory committees of those NEP estuaries being studied. The requested funds would be used to cover costs of Corps field office meeting attendance, field reconnaissance, and data transfer. These funds will also be used for district staff to represent USACE at Regional Planning Bodies (RPBs) under the auspices of the National Ocean Council and work with our state and local partners to assure that their concerns are addressed at these meetings. Districts included are New England District for the Northeast Region, Jacksonville District for the Caribbean, Honolulu District for the Pacific Islands, and Alaska District for the Alaska/Arctic Region.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$ 0.



APPROPRIATION TITLE: Investigations, Fiscal Year 2015

The Gulf of Mexico Program (GMP) request is \$100,000 to continue the Corps' participation in the GMP. Funds will be used to support participation by Corps personnel from Gulf districts/divisions in the execution of the Corps' effort to advance the Regional Sediment Management (RSM) and Community Awareness components of the Gulf of Mexico Alliance - Governor's Action Plan II. The GMP/Coastal America partnership uses a cross-cutting collaborative approach to formulate and implement creative, place-based, non-regulatory solutions to economic and environmental issues with Gulf-wide and national implications. Funds will also be used to support participation by Corps personnel from the Gulf districts and ERDC in the execution of the Ocean Action Plan: Gulf of Mexico Alliance - Governor's Action Plan II as follows: 1) refining/calibrating sub-Gulf coast regional sediment models in support of producing a set of Gulf regional sediment management models that; 2) will be used in conjunction with the Gulf Regional Sediment Management Technical Framework Final Report, dated – December, 2010, to formulate recommendations and guidelines for implementing Gulf regional sediment management to be included in the Gulf Regional Sediment Management Master Plan (GRSMMP); and, 3) engage in addressing Community Resilience (CR). The bulk of the requested funds will be used to execute specific Corps commitments found in the Gulf of Mexico Alliance Action Plan II in support of the Alliance's GRSMMP and CR efforts. Funds will also be used to: 1) coordinate with Corps district, Engineer Research Development Center, and Institute for Water Resources personnel to advance RSM and CR efforts, and 2) manage the requested funds. The total dollars estimated to be carried in from prior appropriations for use on this study is \$0. This amount, together with the "Budget for FY 2015" shown above, will be used to perform the FY2015 study activities. The FY 2014 allocation is \$100,000.

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

	Allocation in FY 2014	Budgeted Amount in FY 2015
Interagency and International Support (CONTINUING)	\$500,000	\$400,000 <u>1/</u>

AUTHORIZATION: Section 234, Water Resources Development Act (WRDA) 1996

JUSTIFICATION:

Interagency and International Support (IIS) allows USACE to support other Federal agencies, international organizations and foreign governments to address problems of national significance, and to collaborate with these entities on water resources issues. The 2012 Intelligence Community Assessment “Global Water Security” concluded that “During the next 10 years, many countries important to the United States will experience water problems...that will risk instability and state failure, increase regional tensions, and distract them from working with the United States on important US policy objectives.” The State Department (DOS), USAID and international organizations such as the World Bank and the United Nations often request USACE involvement in interagency and international task forces, training courses and workshops to provide technical assistance in their strategic interactions with other nations. Recent Quadrennial Reviews for DOD, DOS, and USAID have emphasized whole-of-government approaches, and water security is a recurring theme in these reports. Through these interactions, the Corps’ abilities to perform its civil works mission and promote national security interests, especially those related to stability objectives, are also enhanced.

PROPOSED ACTIVITIES FOR FY 2015:

(1) Support ICIWaRM—the Corps’ International Center for Integrated Water Management, under the auspices of UNESCO. Program lines include:

(a) Scientific interaction with UNESCO’s network of global and regional water centers. These include: Center for Arid and Semi-Arid Zones in Latin America and the Caribbean (CAZALAC); Institute for Water Education (IHE); International Centre for Water Hazard and Risk Management (ICHARM), Centre for the Sustainable Management of Water Resources in the Caribbean Island States (CEHICA), the University of Dundee IHP-HELP Centre for Water Law, Policy and Science, and other UNESCO water centers and IHP initiatives. Activities anticipated for FY 2015 include:

- Support of USG interests by providing training and capacity development for water managers and technical assistance for water security in developing and emerging nations, with focus-area initiatives in SE Asia, Africa, the Middle East, and Latin America & the Caribbean. These activities generally highlight Corps tools and approaches; these can include HEC models such as HEC-HMS and HEC-RAS, the Corps’ drought management program ICI-Raft; collaborative planning; multi-stakeholder conflict resolution; strategic scenario planning for climate adaptation; environmental flows; and unique approaches to flood risk management (e.g. Silver Jackets).
- Global Technical Secretariat for UNESCO’s semi-arid regions water program “G-WADI”. Many of the world’s trouble spots are in arid or semi-arid regions. G-WADI will hold a workshop or training course on a water security-related issue, such as “rainwater harvesting”—a method of infiltrating flashy streamflows into groundwater, dissipating the flood wave while preserving the water for use in the dry season.
- Further whole-of-government work in water security for West Africa, combining satellite based precipitation estimates with modeling, with applications to floods and droughts. Unlike many regions, the ground-based network of precipitation, soil moisture and stream gauges in Africa is generally sparse, making the prediction and monitoring of hydrologic extremes highly difficult. Along with USACE, five other US Government agencies—NASA, NOAA, USAID, NSF and the State Department—have contributed to one or more of these sub-initiatives.
- Alliance for Global Water Adaptation (AGWA): Water management is the principal medium through which projected impacts of climate change will be felt

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

and ameliorated and guidance is needed for engineers and planners that are required to make decision now about an uncertain future. The AGWA project advances a practical approach to guide international and domestic engineers and planners in decision making under uncertainty for water resources management. ICIWaRM leads two of the four working groups—hydrology and climate, and engineering and ecology. The overall project is co-funded by the World Bank, State Department and Conservation International.

- A new initiative with Oregon State University and UNESCO IHE to develop a joint water conflict resolution program, involving both applied and academic aspects.
- Collaborative activity with the Great Rivers Partnership of The Nature Conservancy, in accordance with the 2011 Addendum to the existing USACE-TNC MOU.
- A collaborative activity, likely in Gurara River basin, with the Regional Centre for Integrated River Basin Management, Kaduna, Nigeria, under the auspices of UNESCO.

(b) Technical coordination with the US National Committee for the UNESCO International Hydrological Programme (USNC-IHP), of which USACE is a founding and continuing agency member, and through which it collaborates with other Federal agencies such as USGS and NASA on interagency IHP activities. ICIWaRM also supports the USNC-IHP at the biennial IHP intergovernmental council meetings, and provides strategic advice to UNESCO on the implementation of the 8th phase of IHP.

(2) Support USACE's bilateral and multilateral engagements with equivalent ministries or bureaus in the United Kingdom, the Netherlands, Japan, Brazil, China, Panama and other nations. This involves the sharing of technical knowledge on: flood risk management methods and tools, approaches for integrated water resources management (IWRM) at the river basin level, and incorporating water resources adaptation strategies for climate change as applied to water management and systems operations.

Examples of such engagements include:

(a) Collaboration with the Netherlands Rijkswaterstaat (RWS) to continue to gain knowledge from the Dutch in a number of areas. This exchange, initiated in FY2005, has been particularly useful in the wake of our coastal hurricanes. Thrust areas that have been mutually identified include: Dredging, Coastal Zone Management, Risk and Reliability and Navigation.

(b) Corps water resources technical exchange of information with Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLITT). Under the terms of the 2008 agreement on cooperation (to be extended). USACE and MLITT alternate with formal annual visits to each agency in addition to other periodic interactions. The agreement has not only fostered the exchange of water resources technical and management information, but also may be considered part of the growing relationship on cooperation on addressing large scale disasters, improving water conditions that lead to country stability, and the overall US-Japan relationship so important to our security interests in Asia.

c) A protocol between USACE and the Chinese Ministry of Water Resources to facilitate the cooperation and coordination of the exchange of scientific and technological information concerning the sustainability and management of water resources, under an existing USG-China S&T Agreement. Forms of cooperation may include exchange of information, experience and personnel; and joint workshops and seminars.

(d) A USACE technical support agreement with the Panama Canal Authority.

(3) Support USACE planning for, and participation in, the Seventh World Water Forum (WWF7), scheduled for April 2015 in Korea. This includes participation in

FOA: Headquarters

Interagency and International Support

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

World Water Council (WWC) planning meetings, support for a full-time Korea District USACE Liaison during the run-up to the Forum, broader participation in planning and preparation for sessions relevant to USACE missions, and TDY support for Forum attendance itself. The Corps is on the Board of Governors of the WWC, and as with previous fora, USACE has had a leading role in the planning for the WWF7,

(4) Support the Department of State on engagements related to strategic, and typically international, river basins, such as the Mekong (S.E. Asia), Nile (Africa), Tigris-Euphrates (Middle East), Indus (Central Asia) and other international waters as requested. This includes the Memorandum of Understanding (MOU) between the Mekong River Commission and the Mississippi River Commission. Technical assistance will also be provided to DoS as requested for water resources development in their high-priority countries.

(5) Support USACE participation in the U.S. Water Partnership. USACE has been a core partner within the US Water Partnership - for which the State Department was one of the five founding members. AGWA (see above) and the Asia Pacific Disaster Risk Reduction & Resilience (APDR3) network—both of which have significant Corps involvement—are among the USWP's "signature initiatives".

ACCOMPLISHMENTS IN PRIOR YEARS:

In FY 2014, IIS will have helped fund programs and activities such as the following:

- Coordination of an Africa Initiative to bring US Government agencies, universities and international organizations together to solve flood and drought challenges in Africa, including a workshop on drought monitoring in Niamey, Niger in October 2013.
- Further development of tools that assist water managers in developing countries in predicting drought likelihood and duration. Effort included partial support for a Collaborative workshop on regional frequency analysis with the Center for Arid and Semi-Arid Zones in Latin America and the Caribbean (CAZALAC) and UNESCO-LAC.
- USACE-Dutch Rijkswaterstaat (RWS) Collaboration under the MoA between the two organizations. These coordination activities include Geo-Risk Mgt; Hazards and Disaster Mgt; a study of Historical Trends in Water Mgt; Asset Mgt; Life-Cycle Mgt; applications of IWRM; and implementation of public participation principles.
- USACE and Japanese Collaboration: Preparations and attendance at the 9th MLIT/USACE Technical Exchange on International Flood Initiative planned for December 2013 in Japan and coordination of a new USACE/MLIT Agreement for signing in 2014.
- Support of participation in World Water Council (WWC) meetings and advance planning of the Seventh World Water Forum (WWF7) scheduled for April 2015 in Korea. This included partial support for Korea District USACE Liaison to WWF7.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$ 0. This amount will be used to perform work on the study as follows: N/A

APPROPRIATION TITLE: Investigations, FY 2015

**Coordination Studies With Other Agencies**

	Allocation In FY2014		Budget Amount For FY2015	
<b>Other Coordination Programs (Continued)</b>	\$955,000	2/	\$721,000	1/

(f) The Interagency Water Resources Development budget amount is \$721,000. Funds are included for Corps of Engineers district activities, not otherwise funded that require coordination effort with non-Federal interests. These activities include items such as meeting with City, County and State officials to help them solve water resources problems when they have sought advice or to determine whether Corps programs are available and may be used to address the problems. This will also cover costs of meeting with potential study sponsors before studies are budgeted to insure they understand study cost sharing and to obtain an indication of their interest in participating in a future study. Funds are included to provide support to the American Heritage Rivers program based on Executive Order 13061, dated 11 September 1997 and to provide support to the Coastal America Partnership. Funds are also included facilitate regional interagency coordination, including funds to sustain the benefits of the Great Lakes Habitat Initiative to continue multi-jurisdictional coordination, enhance decision-support capability, improve and advance monitoring..

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2014 from prior appropriations for use on this effort is \$ 0.

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

	Allocation	Budgeted
	in FY 2014	Amount
		in FY 2015
National Dam Inventory (CONTINUING)	\$400,000	\$400,000 <u>1/</u>

AUTHORIZATION: Section 215 of the Water Resources Development Act of 1996 (Public Law 104-303) authorized \$500,000 to be appropriated each fiscal year for the maintenance and publication of the National Inventory of Dams (NID). This authorization was continued in the Dam Safety Act of 2006 (Public Law 109-460).

JUSTIFICATION: The Inventory was initially compiled in 1975 has been periodically updated to reflect construction of new dams, changes in ownership, major modifications to existing dams, decommissioning and removal of dams, and improvements in the data accuracy and completeness. The current database includes 87,359 dams, and focuses on current internet technology to improve the ease of use, accuracy, and accessibility of the data. Annual funding is used to implement improved information flow and data quality control processes, to greatly enhance the state of knowledge management for dam safety. The importance of continued maintenance and publication of the NID has increased. The inventory is now required for use by the Secretary of Homeland Defense and the National Dam Safety Review Board in the allocation of dam safety program assistance funds to the various states in proportion to the number of dams in the state. Inventory data is also included in the biennial report to Congress on the National Dam Safety Program. The Inventory also plays an important role in the identification of infrastructure at risk due to terrorist activities. The ongoing maintenance and publishing of the NID is a coordinated effort involving data from the federal and non-federal dam safety community in cooperation with the Interagency Committee on Dam Safety and the Association of State Dam Safety Officials.

PROPOSED ACTIVITIES FOR FY 2015: These funds will be used for continued maintenance and publication of the NID. During 2015, a request will be made to the state and federal dam safety agencies to provide their entire dam inventory using the web-based application. During FY2015, the inventory web site will continue to be improved utilizing the Geographic Information System (GIS) interface, and integration with other dam and levee safety resources. The web-based NID submittal tool will also be improved and modified to allow greater ease of updating the national dam information from federal and non-federal dam safety agencies.

ACCOMPLISHMENTS IN PRIOR YEARS: An updated inventory was published during 2013 based on the condition assessment data provided by the state and federal agencies during 2012. As a result of this data collection, almost 70 percent of the high hazard potential dams included in the NID contain an assessment of the dam based on the last inspection, a 30 percent increase since 2009. Routine maintenance continued on the inventory information as well as providing an internet based, searchable inventory available to all federal, state, and local government agencies and the public. During January - July 2013, there were more than 1,400,000 hits to the NID web site, more than 1,000 user account requests and an average of 17 users per day accessing the web site.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$ 0. This amount will be used to perform work on the study as follows: N/A

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

1. Surveys

Coordination With Other Federal Agencies, State, and Non-Federal Interest Other Coordination Programs

The Corps' FY 2015 request for Lake Tahoe is \$100,000 1/. This funding is required to continue work associated with the Lake Tahoe Federal Interagency Partnership as directed in Executive Order 13057. The Federal Interagency Partnership is working with state and local agencies and public interest groups to arrest further deterioration of Lake Tahoe while maintaining a viable economic climate. FY2015 activities will include full active participation in Partnership Activities (includes working with local and state agencies, public advisory committees, Southern Nevada Public Lands Management Act program participation, and staff work to support District, Division and HQ executive level involvement).

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is\$ 0. This amount will be used to perform work on the study as follows: N/A.

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Total	Budgeted
Estimated	Amount
Annual Cost	for FY15
\$10,000	\$10,000 <sup>1/</sup>

Pacific Northwest Forest Case Study

FY 2012 Accomplishments

Study Name

Pacific Northwest Forest Case Study

State

WA

Accomplishments

The FY 2012 actual obligations are \$18,641. In FY12 the Corps developed and implemented two workshops on hydric soils. These classes demonstrated how to effectively use the Hydric Soil Indicators in the Regional Supplements to the Corps of Engineers Wetland Delineation Manual. Instructors will describe the basic processes that take place in saturated soil, and how to “read the story” in a soil profile. The training included an introduction to identifying layers, distinguishing concentrations and depletions, and preparing hydric soil descriptions from soil profiles. Several Forest Service employees from Mt. Baker and Olympic Forests attended the two workshops. The Corps paid for an instructor at these workshops.

BY 2013 Accomplishments

Study Name

Pacific Northwest Forest Case Study

State

WA

Accomplishments

The FY 2013 estimated obligations are \$10,700. The Corps is setting up a meeting with the Olympic National forest to review the results of the FY11 engineered log jams monitoring study and discuss the methodologies on successfully monitoring. During the meeting with the US Fish and Wildlife Service (who developed the protocols and did the monitoring), Scientist from the Olympic National Forest and the Corps, we will discuss:

- 1) A protocol that could be used for an extensive assessment of the influence of Engineered Log Jams on river habitat and biological communities.
- 2) A short report describing the feasibility and time requirements for collecting the data described in the protocol.
- 3) A summary report on the Engineered Log Jams constructed by the US Forest Service during calendar year 2011 comparing the physical and biological conditions at the restored and control reaches in the South Fork Skokomish River.



BY 2014 Accomplishments

Study Name

Pacific Northwest Forest Case Study

State

WA

Scheduled Accomplishments

The FY 2014 request for described activities is \$10,000.

The District wishes to assist the Mt Baker National Forest on removal of an unstable and abandoned high head dam on Rocky Creek near Baker Lake which is a tributary of the Skagit River. The dam was built in the early 1920's and the forbay is loaded with sediment. There are no residences downstream of the dam. In 2009 (using Pacific NW Forest study money) we (the Seattle District) developed a reconnaissance type report detailing what we already knew about the Dam and identified additional information needs. These additional needs include:

- a. Record search
- b. Access road construction and fencing
- c. Survey of upstream and downstream channel for 200 feet, extend to north and south roadways, above and subsurface measurements of dam structure. Required for plans and spec package
- d. Concrete core samples. Drill through dam structure to retrieve samples for strength testing and to determine internal structure of dam for demolition planning
- e. Laboratory testing, sediment and concrete.

BY 2015 Accomplishments

Study Name

Pacific Northwest Forest Case Study

State

WA

Anticipated Accomplishments

The FY 2015 request for described activities is \$10,000.

The work in FY15 will be a continuation of the work above, it will include conceptual plans and conceptual ideas and/or designs for demolition.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY15\_ from prior appropriations for use on this effort is \$\_0. This amount will be used to perform work on the study as follows: N/A.

APPROPRIATION TITLE: Investigations, FY 2015

Coordination Studies with Other Agencies

Other Coordination Programs

	Allocation in FY 2013	Allocation in FY 2014	Budget Amount for FY 2015
Study Name: Special Investigations	\$1,767,865	\$1,350,000	\$1,350,000 1/

**AUTHORIZATION:** : Investigations of limited scope, in replying to requests from sources outside the Corps of Engineers, for information relating to unauthorized projects and other activities which have no funds, and which are not accomplished with a view toward determining whether a project can be developed. Also included is work specifically authorized by the Chief of Engineers; the review of reports and Environmental Impact Statements requested by other agencies, unless otherwise provided for; and attendance at meetings of local interests and other agencies during the preliminary stages of project investigations.

**PROPOSED ACTIVITIES FOR FY 2015:** Funds will be used to support efforts on requests from sources outside the Corps of Engineers, for information relating to unauthorized projects, flood risk management business line tasks and other unfunded activities, attendance at meetings of local interest and other agencies during the preliminary stages of a project .

**ACCOMPLISHMENTS IN PRIOR YEARS:** Funds were used to respond to various special requests by local interests for investigating flooding, erosion, and potential ecosystem restoration at multiple locations and attendance at meetings of local interest and other agencies during the preliminary stages of a project.

**1/ Estimated Unobligated Carry-in Funding:** As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A

APPROPRIATION TITLE: Investigations, Fiscal Year 2014

Collection and Study of Basic Data

Other programs – Special Investigation

	Allocation for FY 2014	Budgeted Amount for FY 2015	Increase over FY14 and FY13
FERC Licensing	\$ 200,000	\$ 200,000 <u>1/</u>	\$ 0

AUTHORIZATION: The Corps of Engineers conducts reviews of Federal Energy Regulatory Commission (FERC) preliminary permit and license applications for development of hydroelectric power at Corps of Engineers and/or non-Corps projects. This work was funded under a different budget line item until 2012.

The Corps of Engineers conducts reviews of applications for Federal Energy Regulatory Commission (FERC) preliminary permits and licenses, under the authority of the Federal Power Act. Review of applications for preliminary permits and licenses filed with FERC for development of hydroelectric power at Corps of Engineers projects or at non-Corps projects to ascertain potential impacts on Corps of Engineers' responsibilities and mission. Also, the Corps reviews applications for surrender or termination of licenses to ascertain impacts on Corps' responsibilities and mission. Funds are used for the various Districts to review several applications per year and to prepare the response to the Division and Headquarters at the end of each fiscal year. Every year request for funding has been consistently increasing for this work effort.

PROPOSED ACTIVITIES FOR FY 2015: These funds will be used by various Districts of the Corps of Engineers for review of several FERC licenses applications. Approximately, 100 applications will be reviewed at the District levels that provided valuable services to UASCE multipurpose projects and meet the Nation's sustainability goals of meeting its energy needs from renewable resources.

ACCOMPLISHMENTS IN PRIOR YEARS: These funds were provided to various Districts of the Corps of Engineers for review of several FERC licenses applications. Approximately, 80 applications were reviewed at the District levels that provided valuable services to UASCE multipurpose projects and meet the Nation's sustainability goals of meeting its energy needs from renewable resources.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2014 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A

APPROPRIATION TITLE: Investigations, FY 2015

Coordination Studies with Other Agencies

	Allocation for FY 2013	Allocation for FY 2014	Budget Amount for FY 2015
Study Name: Planning Assistance to States	\$6,076,536	\$4,000,000	\$3,500,000 1/

**AUTHORIZATION:** Section 22 of the Water Resources Development Act of 1974, as amended, which authorizes the Secretary of the Army to assist States, local governments, Indian tribes, and other non-Federal entities in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources. The studies are cost-shared on a 50% Federal, 50% non-Federal basis. The program can encompass many types of studies dealing with water resources issues, including environmental conservation/restoration, wetlands evaluation, water supply and demand, water quality, flood damage reduction, flood risk management, coastal zone management, navigation, and dam safety. This program provides a means of working with partners on broad water resources matters of interest to them and outside planning and authorization for site-specific studies and projects. It is a primary resource for the interagency Silver Jackets teams. Use of the Planning Assistance to States program to achieve common interagency and inter-governmental flood risk management goals optimizes the use of our and our partners' resources, providing the best risk reduction possible with available funds.

**JUSTIFICATION:** The Planning Assistance to States program has continued to evolve into a highly effective tool for providing technical and planning assistance to states, local governments, and Indian tribes. As more states develop and update hazard mitigation plans, watershed plans and floodplain management plans, this program provides the opportunity for the Corps to provide expertise. This program supports the initiative to facilitate pre-disaster and post-disaster assistance. This program has been used to develop erosion control designs that a region continues to use which has improved water quality, helped with flood damage reduction and conserved significant water and related resources. The states, local governments, and Indian tribes recognize the need to develop locally directed solutions to their water resources problems, and this program continues to be a valuable resource.

**PROPOSED ACTIVITIES FOR FY 2015:** The FY 2014 amount will enable the Corps to provide much needed planning and technical assistance to assist in a wide variety of water resource efforts, including watershed activities benefitting environmental restoration, flood risk management, and other watershed resources. Program funds are distributed across the country for each of the Corps' Major Subordinate Commands (MSC) to assess, prioritize, and fund the needs of the MSC region

**ACCOMPLISHMENTS IN PRIOR YEARS:** In fiscal year 2013, the Corps of Engineers spent more than \$6.2 million on 132 studies in most States. These studies provided technical and planning assistance for a full range of water resources issues. Significant efforts involved studies to assist local communities in addressing their flood risk through flood hazard information reports, restoring urban river environments, and accomplishing wetlands identification and mapping studies. Efforts were undertaken to assist states and local governments in flood damage reduction, ecosystem restoration, drinking water supply and demand, and water quality. Examples of FY 2012 accomplishments include the completion of the Assabet water quality study, the outfall survey with the City of Fredericksburg, VA census urban area, and a hydrodynamic model to examine flow dynamics, salinity, and water quality in the Delaware Estuary to address impacts on critical habitat for the Eastern oyster and Atlantic and shortnose sturgeon in Delaware and New Jersey.

**1/ Estimated Unobligated Carry-in Funding:** As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A  
The total unobligated dollars estimated to be carried into FY 2014 is 0. Description of work to be completed: N/A.

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Allocation for FY13 \$	Allocation for FY14 \$	Budgeted Amount for FY15 \$
699,000	350,000	251,000

Project Name: Automated Information Systems Support - Tri-Service CAD/GIS Technology Center

Engineer Research and Development Center

JUSTIFICATION: All Corps districts use computer-aided design (CAD) and geographic information systems (GIS) computer systems for Civil Works engineering, design, mapping, planning, and facility management. Many now use building information modeling (BIM) as an engineering and O&M tool. All engineering drafting tables have been replaced with CAD platforms or computer mapping systems and most Corps environmental and natural resource analysis are being performed on GIS platforms. The geospatial data standard efforts of the Center were coordinated with the American National Institute of Standards to develop a National GIS Standard that was approved in November 2001 and includes civil works and homeland defense features. Standards and productivity enhancement tools developed by the Center are used for both in-house and contractor produced drawings, maps and analyses, which assure that all Corps offices have the ability to exchange their work among themselves and with others, including the private sector. The Center is actively coordinating its architecture, engineering, and construction (AEC) CAD Standard with the National Institute of Building Sciences' U.S. National CAD Standard, thus reducing the redundancy with the private sector, and reducing cost for both government and the private sector. In 2006, the Center began coordination and developmental support for the U.S. National Building Information Model (BIM) Standard. The BIM standard addresses the latest building information model technology within the US building and construction industry. The Center ensures that the Corps obtains the maximum return on its investment in BIM, CAD, and GIS by coordinating development efforts and distributing products to Corps offices. The BIM, CAD, and GIS systems at field offices achieve maximum productivity when they take advantage of the economies of scale offered by sharing the development and use of common data standards, procedures, and applications. This sharing is accelerated through a concerted effort by the Center, working with various field-working groups, to draw from field expertise and dissemination of this knowledge in the form of lessons learned and standards to benefit all Corps users. Comprehensive data standards supported by the Center permit government and industry users to produce equivalent designs, maps, and analysis on a variety of computer systems using commercial off-the-shelf BIM, CAD, and GIS software.

The \$350,000 requested for FY 2015 will support over 2,400 users of BIM/CAD/GIS and facility management technologies for Civil Works projects.

PLANNED ACCOMPLISHMENTS FOR FY 2015:

- Publish the Spatial Data Standard for Facilities, Infrastructure, and Environment (SDSFIE) 3.2
- Publish SDSFIE 3.2 USACE adaptation
- Maintain and update USACE SDSFIE How-to Manual and Training
- Implement Phase 2 of USACE SDSFIE 4.x implementation
- Update correlation matrix tool for AEC CAD Standard and SDSFIE

Engineer Research and Development Center

Automated Information Systems Support - Tri-Service CAD/GIS Technology Center

- Develop system architecture to host BIM models in a Cloud computing centralized repository
- Enhance BIM design templates to include modeling content to support Civil Works projects
- Update Civil Work Design Detail for incorporation into USACE CAD Detail Library.
- Publish Update to AEC CAD Standard. Includes: (1) adapting the standard to incorporate changes in CAD technology, incorporate enhancements from the U.S. National CAD Standard, and needs of field users; (2) Updating CAD Library files, border files, and template drawings as necessary to support Civil Works engineering design mission

#### ACCOMPLISHMENTS FOR FY 2014:

- Published SDSFIE 3.1.1
- Published SDSFIE 3.1 USACE adaptation
- Updated USACE How-to Manual and Training
- Implemented Phase 1 of USACE SDSFIE 3.x implementation
- Maintained correlation matrix tool for AEC CAD Standard and SDSFIE
- Published USACE BIM Road Map Updates for Civil Works.
- Published Update to AEC CAD Standard. Includes: (1) adapting the standard to incorporate changes in CAD technology, incorporate enhancements from the U.S. National CAD Standard, and needs of field users; (2) Updating CAD Library files, border files, and template drawings as necessary to support Civil Works engineering design mission

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Allocation in FY13 \$	Allocation in FY14 \$	Budgeted Amount in FY15 \$
2,196,000	2,314,000	1,000,000

Project Name: Coastal Field Data Collection

Engineer Research and Development Center

SCOPE: The Coastal Field Data Collection program systematically measures, analyzes, and assembles long-term coastal data that field offices use to accomplish the Corps mission in coastal navigation and storm damage reduction. These are critical, high quality data sets, nationwide or regional in scope, which support multiple projects, but which no single project would have the mandate or funding to collect.

AUTHORITY: The basic authority for the Coastal Field Data Collection Program is 33 USC 426a which originated with the River and Harbor Act of 1945, which originated in the River and Harbor Act of 1930. The latest Engineering Regulation governing the program is ER 1110-2-1406 dated 1990.

JUSTIFICATION: Inaccurate and insufficient observation data results in project design errors for coastal navigation and storm damage reduction. For example, wave data with a 20% error that are used to design a coastal rock structure will yield a 70% error in the stone size used to build the structure. Oversized stone makes initial construction costs much higher and undersized stone results in early failure and higher than necessary life cycle repair costs. Similarly, a 5-10 degree error in wave direction can result in an error, or even reversal, in predicted sediment transport, compromising the success of a regional sediment management strategy. Cost-effective mission accomplishment in the coastal zone requires accurate and complete data. Long-term data are required to determine climatic changes that may impact Corps projects. Lack of available high-quality observation data was highlighted as a critical issue by the Coastal Working Group of the Hydraulics, Hydrology and Coastal community of Practice in a Corps-wide survey on data requirements in 2009 and reinforced in 2012.

Field Research Facility, a long-term Coastal Observatory: Critical to measuring, analyzing and providing useful coastal data products for Corps districts is the collection of long-term, high-resolution data for improving project design and performance. The *Field Research Facility* (FRF) in Duck, North Carolina (<http://frf.usace.army.mil>), is a real-world coastal facility that collects a comprehensive suite of wave, current, meteorological, bathymetric, and topographic data, typically required, but often unavailable at a Corps project site. The facility is used to: evaluate oceanographic measurement techniques and equipment, collect high-resolution data during storms, and collect spatially and temporally-intensive long-term measurements required to better understand complex coastal processes and coastal climate. Collected data are made available online in real time to engineers and scientists in the Corps, other agencies (National Oceanic Atmospheric Administration (NOAA), National Science Foundation (NSF), Navy, US Coast Guard (USCG), US Geological Survey (USGS), etc.), universities, and the private sector. They are used for coastal research and for developing coastal engineering tools that predict wave environments and sediment movement affecting coastal projects, navigation safety, and dredging quantities. In addition the facility is serving as a testbed for evaluating and developing coastal numerical models (many models exist, but few have been rigorously evaluated).

Recent activities at the FRF have included the development and deployment of state-of-the-art lidar and radar systems for monitoring beach and nearshore changes in real-time including during storms; allowing highly accurate, temporally detailed observations. CLARIS, *the Coastal Lidar And Radar Imaging System*, is

Engineer Research and Development Center

Coastal Field Data Collection

a mobile system for rapidly mapping the beach, both alongshore and offshore. RIOS, the *Radar Inlet Observation System*, is a radar-based system for remotely mapping evolving inlet shoals in real-time for navigation safety and dredging activities. A permanently mounted Terrestrial Lidar system, which continuously maps the beach and breaking waves, captured the first ever hour by hour record of wave run-up and beach changes during Hurricane Irene as it passed Duck, NC in 2011.

As a unique coastal observatory, the FRF is a significant Corps contribution to the Integrated Ocean Observing System (IOOS) as specified in the President's Ocean Action Plan and authorized in the Integrated Coastal and Ocean Observation System Act of 2009 (PL No. 111-11).

#### PROPOSED ACTIVITIES FOR FY 2015:

- Continue the long-term data collection program and support the data requirements of the real-time model test bed. This will be the 36<sup>th</sup> year of observations. These observations include maintaining the unique cross-shore array that extends from very shallow water offshore to -26m which is providing data to advance coastal wave modeling technology and coastal inundation predictions
- Continue the long-term morphologic survey program
- Continue to operationalize CSHORE-C15 (or another morphologic model) to evaluate its performance in real-time using the Interactive Model Evaluation & Diagnostics System (IMEDS) toolkit, developed by ERDC, to refine morphology evaluation metrics and model performance.
- Expand and continue to develop the applicability and software analysis tools for real-time, advanced coastal mapping techniques of dune, beach, and nearshore using radar and topographic lidar sensing techniques.

#### ACCOMPLISHMENTS IN FY 2014:

- Continued the long-term data collection program and supported the data requirements of the real-time model test bed. This was the 35<sup>th</sup> year of observations. These observations included maintaining the unique cross-shore array that extends from very shallow water offshore to -26m which is providing data to advance coastal wave modeling technology and coastal inundation predictions
- Continued the long-term morphologic survey program
- Operationalized CSHORE-C15 (or another morphologic model) to evaluate its performance in real-time using the IMEDS toolkit, developed by ERDC, to refine morphology evaluation metrics and model performance.
- Expanded and continued to develop the applicability and software analysis tools for real-time, advanced coastal mapping techniques of dune, beach, and nearshore using radar and topographic lidar sensing techniques.



APPROPRIATION TITLE: Investigations, Fiscal Year 2015

	Allocation in FY 2014	Budgeted Amount in FY 2015
Environmental Data Studies (CONTINUING)	\$190,000	\$75,000 <sup>1/</sup>

AUTHORIZATION: Section 2036, Water Resources Development Act (WRDA) 2007 (P.L. 110-114)

The Environmental Data Studies program includes general national or regional environmental data collection; support of field offices in the use of innovative information system technology, including geographic information systems to demonstrate the relationship between project-funded environmental activities with national or regional environmental issues. Environmental data includes biological, physical, and/or cultural resource components. The access to data systems that house information is both intra- and interagency, involving all concerned Federal agencies, notably the US Fish and Wildlife Service, National Oceanic and Atmospheric Administration, US Geological Survey, US Forest Service, Natural Resources Conservation Service, Environmental Protection Agency, as well as State fish and wildlife and natural resource agencies, and non-governmental organizations like NatureServe. Coordination with other USACE data systems (e.g., CorpsMap) will ensure compatibility of uses.

PROPOSED ACTIVITIES FOR FY 2015: The funds requested in FY 2015 are to continue the Environmental Data Studies Program and to improve the efficiency with which District staff assemble and analyze environmental information for Civil Works projects. Funds will be used to support the access and sharing of environmental information for national and regional inventories and assessments and train field personnel in its access and use. New or updated linkages will be developed to ensure access to current data sources. Applications will be developed to increase the ease with which Districts can analyze the data. Query links between the environmental data system and other data systems in USACE will be developed to provide seamless, efficient flow of information to support programmatic decisions. The aim is to reduce costs, avoid duplication, improve procedures for complying with environmental statutes, aid in addressing environmental issues of national and/or regional significance, and to assist in watershed or ecosystem-based management.

ACCOMPLISHMENTS FOR FY 2014: Activities in FY 2014 included the full deployment of the data system, and updating links to new data sources, particularly improved evaluations of ecosystem restoration proposals. Training and support to Districts on environmental data were provided. Programming was developed to link the environmental data system with the integrated Budget Evaluation Tool, and CorpsMap. The subscription to NatureServe data was renewed.

<sup>1/</sup> Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$ 0. This amount will be used to perform work on the study as follows: N/A

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

	Allocation for FY 2014	Budgeted Amount for FY 2015
Flood Damage Data Program (CONTINUING)	\$220,000	\$220,000 <u>1/</u>

AUTHORIZATION: Section 904, WRDA 1986 (P.L. 99-662); Section 308, WRDA 1990 (P.L. 101-640)

The Flood Damage Data Program is required to facilitate the collection and maintenance of basic flood damage data to support Corps field offices in accomplishment of flood damage reduction studies. Planning and evaluation of flood damage reduction projects requires knowledge of actual damages caused to various types of properties. The relationships between flood depth, flood duration and velocity, value and type of property, and the amount of damage are essential to making accurate and supportable estimates of the value of projects. The distributions of damages resulting from the various factors involved are needed for the risk analysis framework adopted for water resource studies. Damage data are obtained in rare instances when a damaging event occurs and funded studies are underway. However, in most instances when flooding occurs there are no current studies in the area or other funding mechanism to collect the requisite data to be used in future analysis or to report and accurately record the damages incurred and account for the effect of the factors that caused the damages. Previously no centralized flood damage data source existed which retrieved basic data for research efforts and for specific project studies. The major purpose of the program is to improve the technical quality and accuracy of flood damage data, to improve the understanding of the interrelationships of the characteristics of flooding on property damage, to improve the formulation of flood damage reduction projects, and reduce the costs of feasibility studies. Coastal damage data collection will be needed to adapt to new coastal protection policies and to respond to concerns from the Office of the Assistant Secretary of the Army (Civil Works) in the review of recent coastal protection projects. The activities of the program are to: (1) conduct actual flood damage surveys following flood events for riverine and coastal events; (2) develop, maintain, and improve the economic database for flood damage reduction projects; (3) calculate flood depth-damage functions for riverine and coastal flooding based on actual damage data; (4) collect data and derive damage relationships for roads, public building and facilities, and other public costs of flooding; (5) develop and maintain a floodplain inventory application that would be used to apply flood damage estimation models to feasibility, reconnaissance, and continuing authority studies; and (6) provide information to communities of hazard mitigation plans and grant applications.

PROPOSED ACTIVITIES FOR FY 2015: The funds requested in FY 2015 for Flood Damage Data would be used to update and maintain data collection survey forms and data collection techniques, to collect post-flood damage data, to employ the flood damage database to estimate National models where regional or local flood characteristics can be specified to estimate flood damage relationships, to update and maintain a geospatial computer application for floodplain inventory data. A model for estimating residential and nonresidential structure values would be field tested and expanded. Funds would also be used to facilitate the collaboration in collecting and sharing of flood damage data within the Corps and between other agencies. The results of damage function calculations would be particularly useful to communities applying for Federal Emergency Management Agency (FEMA) mitigation grants. Generic damage functions from the Flood Damage Data Collection Program are now imbedded in the FEMA Benefit/Cost Analysis Program for common use for grant applications. Funds would also be used to refine functions for estimating cleanup and relocation costs associated with flooding. Finally, funds could be used to continue developing and refining depth-damage curves for coastal areas, which the Corps has very limited information at present and in which effects (wave attack, erosion, storm surge, saline water) are markedly different from riverine flooding. A contract for Post-Superstorm Sandy was awarded in late 2013 (as part of the larger North Atlantic Coast Comprehensive Study), which was aimed at developing coastal damage relationships for residential, nonresidential, and public property, including structures, content, vehicles, and public infrastructure. Further activities in 2015 will build off of the work completed by the contractors on the Comprehensive Study and will incorporate data from more recent coastal events, ultimately improving the accuracy of damages associated with coastal storms.

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

ACCOMPLISHMENTS IN PRIOR YEARS: Activities in FY 2014 included the collection of post-flood damage data, programming of a new version of IWR-GeoFIT that incorporated new structure valuation and depreciation procedures, providing technical support for IWR-GeoFIT, quantifying the statistical properties and variation in USACE estimated depreciated replacement values, performing a statistical comparison of inventory sources (RS Means and Marshall & Swift's Depreciated Replacement Costs) as well as techniques, releasing nonresidential damage functions, providing technical support for flood damage analysis, and beginning to develop damage functions for coastal properties. In addition, work was initiated on developing depth-damage curves for coastal properties in the aftermath of Superstorm Sandy through extensive interviews, database searches, and expert elicitation (early 2014).

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$ 0. This amount will be used to perform work on the study as follows: N/A

APPROPRIATION TITLE: Investigations, FY 2015

Collection and Study of Basic Data

	Allocation in FY 2013	Allocation in FY 2014	Budget Amount for FY 2015
Study Name: Flood Plain Management Services	\$14,187,153	\$8,000,000	\$8,000,000 1/

AUTHORIZATION: Section 206 of the 1960 Flood Control Act (PL 86 645), as amended, which authorizes the Secretary of the Army to acquire, compile and disseminate data on floods and flood damage potential and to provide guidance in their use in flood related planning to State and local agencies.

JUSTIFICATION: This information and guidance has long supported planning and implementing actions that reduce flood risk through wise use of flood plains. The lessons of the gulf coast disasters and the concerns about the Sacramento levees have heightened concern and interest in increasing our focus on flood risk management and increasing and improving the Nation's awareness and understanding of actual flood risk exposure. As we better understand the risks we face, the need to provide accurate and timely flood risk information, interpretation, and guidance for coping with these risks is an ongoing challenge. Meanwhile, our local, State, Tribal and Federal partners continue to address similar issues, often independently. Program execution is efficiently leveraging existing intergovernmental State Silver Jacket teams to support State and local flood plain management priorities. Use of Flood Plain Management Services (FPMS) funds to achieve common interagency goals optimizes the use of our and our partners' resources, providing the best risk reduction possible with available funds. This program supports Executive Order 11988 as the federal governments' guidelines for pursuing activities that may impact the nation's flood plains. This program also fills a critical need as one of the few ways that small communities can access the expertise of the Corps. The Corps participates with the Federal Emergency Management Agency and local governments in the conduct of pre disaster hurricane evacuation and preparedness studies for mobilizing local community responsiveness to natural disasters in high hazard coastal areas.

PROPOSED ACTIVITIES FOR FY 2015: The funds requested will enable the Corps to provide critical information and guidance to states and local communities in their application of flood plain management measures, optimizing use of our and our interagency partners' resources. It will provide site-specific flood and flood plain data and assistance; assist with efforts to identify flood hazards in communities under growth pressures; facilitate special studies that concentrate on the prevention of future flood damages and life loss, giving increased emphasis to the application of non-structural measures; communicate the existing risk and alternatives to address the risk; and enable critical pre-disaster hurricane evacuation and preparedness studies for states and counties along the Atlantic and Pacific Oceans, the Gulf of Mexico, and US islands in the Caribbean and Pacific.

This FPMS program for FY 2015 includes \$1,500,000 to evaluate the potential for and encourage the use of nonstructural alternatives and actions on our Nations' major rivers during preparedness and recovery. The initiative would focus on two components related to implementation of nonstructural alternatives for managing flood risks: 1) assessing the potential for non-structural opportunities in our nation's watersheds and recommending incentives for increasing the use of non-structural alternative approaches in the development of mitigation and preparedness projects, improving flood risk communication, and post-disaster recovery of flood risk management systems; and 2) use existing authorities within the Flood Plain Management Services program to provide technical assistance to non-federal, State and local agencies to assist and enable their development and implementation of a broader range of nonstructural actions to manage and reduce their flood risks. The Silver Jackets teams will be used to provide selected technical services and support to assist States and communities in the development and implementation of nonstructural alternatives and actions to reduce flood risks initiative.

The FY 2015 FPMS program also includes \$1,000,000 for Systems Approach to Geomorphic Engineering (SAGE) Initiative. The purpose of the SAGE initiative is to (1) coalesce existing scientific knowledge and engineering experience on (a) "green" or "soft" or "living shorelines" solutions and (b) "SAGE"

or "hybrid" combinations of "green" and "gray" solutions; (2) develop hybrid solutions for the different coastal landscape/ecosystems that contribute to good flood plain management in the coastal zone on a regional scale; (3) propose field tests to be conducted through the Section 2038 authority of WRDA 07 to demonstrate the viability of proposed solutions and other research in both flood risk management and ecosystem restoration research programs; and (4) document the effectiveness of pilots and demos funded by other authorities. This SAGE effort will be accomplished in close collaboration with other agencies (especially NOAA and FEMA), non-governmental organizations (especially The Nature Conservancy and The Conservation Fund), academic institutions, and private sector firms.

**ACCOMPLISHMENTS IN PRIOR YEARS:** In FY 2013, \$3.5 million was utilized for the base program of Corps district offices responding to requests for information in a timely manner. Another \$5.1 million was utilized for 103 Flood Plain Management Studies and special programs in response to requests from Federal and non-Federal agencies, communities, Tribes and individuals for flood-related information, interpretation, and guidance. The requests continue to number into the tens of thousands and involve property valued at billions of dollars. Through 30 inter-agency Silver Jackets projects ongoing in FY 2013 at a cumulative Corps cost of \$2.9 million, the Corps supported 22 states' flood risk management priorities within a shared responsibility approach that leveraged other federal and state resources and resulted in the provision of actionable flood risk information and implementable options to reduce flood risk. Collaborative accomplishments included interactive online availability of flood mapping state-wide, development of a prioritized list of mitigation activities coupled with establishment of an ongoing local flood risk management working group, development of a flood forecast inundation mapping for communities at risk, and assessment of risks due to erosion in coastal estuaries. Of the 30 projects, 24 are expected to lead to actions by those who have the authority to manage flood risk and/or demonstrate that they will tangibly reduce or manage flood risk and 11 are expected to reduce future expenditures related to flooding and flood risk. The Corps initiated 24 inter-agency project in 19 states furthering nonstructural flood risk management activities at a cumulative Corps cost of \$2 million and leveraging other federal and state resources; of the 24 projects, 19 were initiated through Silver Jackets teams and 5 were initiated through other interagency mechanisms. Nonstructural flood risk management activities include modifying structures and adapting them to the floodplain and/or modifying how people occupy and/or develop the floodplain. The Corps participated in pre-disaster hurricane evacuation and preparedness studies for high-hazard areas in coastal states and territories; provided support for updating and improving mathematical models of flood plain hydrology and hydraulics; developed training programs in flood plain hydrology and hydraulics; and prepared flood-proofing studies.

**1/ Estimated Unobligated Carry-in Funding:** As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A  
The total unobligated dollars estimated to be carried into FY 2015 is 0. Description of work to be completed: N/A.

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Collection and Study of Basic Data

Other programs – Special Investigation

	Allocation in FY 2014	Budgeted Amount for FY 2015	Increase over FY14 and FY13
Hydrologic Studies	\$ 250,000	\$ 243,000 <u>1/</u>	\$ 0

**AUTHORIZATION:** The scope of activities under this item is determined annually based on the requests from USACE Commands and Laboratories to meet high priority needs. These items are not covered under regular Civil Works GI and O&M funding programs. Major activities to be undertaken in the program generally include the collection of basic hydrologic data and the studies of these data for major storm events or certain special hydrologic processes. The information to be derived from this program will improve hydrologic engineering techniques for the planning, design, construction, and operation of water resources projects. The program consists of four sub items: Storm Studies, General Hydrologic Studies, Sedimentation Studies, and Stream Flow and Rainfall Data.

**PROPOSED ACTIVITIES FOR FY 2015:** 1. Storm Studies: The Storm Studies Program is a continuing investigation of major storms for the purpose of accumulating comprehensive rainfall data. These data are used to refine the regional hydrometeorological information throughout the nation. The up-to-date hydrometeorological information is essential for design of new projects as well as for safety assessment of existing projects. We have substantial need for hydrologic data for initiation and completion of water resources studies. These data are required in the evaluation of flood producing potentials of river basins, and constitute the major portion of the basic data used in probable maximum precipitation determinations. Funds in the amount of \$50,000 will be required in FY 2015 to work on several storm studies. The need and capability in this area exceeds the requested budget amount. 2. General Hydrologic Studies: Studies under this sub item include needed improvement in the analysis of rainfall runoff relationships, flood frequency, snowmelt studies, hydrograph development and routing at selected watersheds, model calibrations in urban areas, analyses of past floods, methods for the hydraulic analysis of non-gaged streams, and other studies of related hydrologic nature. Also included are planned upgrades to the internal Corps system of accounting for gages used largely both of control of water resources projects and also for studies of major hydrologic events. Studies of new techniques to improve the accuracy of hydrologic modeling require additional resources. New radar applications in rainfall-runoff forecast is an ongoing need. Funds in the amount of \$100,000 in FY 2015 will be required to continue this sub item at a level to insure proper and orderly progress. The need and capability in this area exceeds the requested budget amount. 3. Sedimentation Studies: The program is a continuing effort in which funds are used for conducting non project sedimentation studies, and for the Corps share of an interagency sediment investigation program. The sedimentation studies include: promoting and supporting the standardization and development of equipment, criteria and methodology for the collection, analysis of suspended and bedload sediment characteristics of natural streams; and laboratory studies. An amount of \$50,000 in FY 2015 is required to continue the interagency sediment investigation program, regional sedimentation studies for high priority areas, develop database using all completed sediment survey in support of regional sedimentation studies. The need and capability in this area exceeds the requested budget amount. 4. Streamflow and Rainfall Data: This is a continuing program in which funds are used for installation and operation of hydrometeorology gages of non project nature that are needed by the Corps in addition to the stations in the cooperative programs conducted by the U.S. Geological Survey and the National Weather Service for the Corps. Additionally, gages are needed to observe historical high water marks for validation of hydrologic models. An amount of \$50,000 in FY 2015 is required to continue the establishment and operation of these special purpose gages, and to determine historical flooding in urban sites. The need and capability in this area exceeds the requested budget amount

ACCOMPLISHMENTS IN PRIOR YEARS: 1. Storm Studies: During the period, the Corps has helped lead an effort to develop Extreme Storm Data to assist both the Corps and other federal agencies to meet design criteria for federal projects. Corps offices have gathered data on several major storms, reviewed the scope and interim results of ongoing studies by NWS on development of standard project and probable maximum storms at various basins throughout the United States and territories. 2. General Hydrologic Studies: Examples of some of the more important studies accomplished under this program are: determination of rainfall runoff relationship in urban areas; general hydraulic model calibration; snow cover surveys; and adaptation of hydrologic programs to CADD equipment. Work was completed on the regional frequency studies for Hawaii and data collection was initiated for the State of California. Significant work was also accomplished in assessing the effects of debris in hydrological modeling, particularly in the fire-prone western states. 3. Sedimentation Studies: All of the funds allotted to this sub item assisted in financing the Corps share of the cooperative Interagency Sedimentation Project at the Hydraulics Laboratory, Waterways Experiment Station. In addition, coordination with cooperating agencies was completed. 4. Streamflow and Rainfall Data: Stations funded under this sub item are generally established and operated several years prior to anticipated authorization for project type activities, in order to provide a background of observed data on which to base the planning and design of projects. Progress continued at these gage sites to collect hydrometeorological data in flood prone areas to document historical flood and calibration of hydrologic models.

*1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A*

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Collection and Study of Basic Data

Other programs – Special Investigation

	Allocation in FY 2014	Budgeted Amount for FY 2015	Increase over FY14 and FY13
International Waters Studies	\$ 200,000	\$ 150,000 <u>1/</u>	\$ 0

AUTHORIZATION: The Boundary Waters Treaty of 1909, the Niagara River Treaty of 1950, the Columbia River Treaty of 1961, and other less formal agreements between the Governments of the United States and Canada are concerned with the regulation, control, and use of boundary waters. Under the Boundary Waters Treaty of 1909, the International Joint Commission (IJC) was established and empowered to establish local boards, which conduct investigations and assure adherence to orders of approval pertaining to use of boundary waters issued by the Commission. Corps of Engineers representatives serve on and chair the U.S. Sections of the following IJC Boards: Saint Croix River, Champlain Richelieu, Lake Champlain, St. Lawrence River, Niagara, Lake Superior, Lake of the Woods, Rainy Lake, Souris Red Rivers Engineering, Souris River Control, Kootenay Lake, and Osoyoos Lake. Under separate treaties, Corps representatives serve on and chair the U.S. Sections of the Columbia River Treaty Permanent Engineering Board, the Permanent Engineering Board Committee, the Columbia River Treaty Entities, the Columbia River Treaty Operating Committee, the International Niagara Committee, and the International Lake Memphremagog Board. These Boards and Committees hold joint meetings, review report drafts and correspondence, make field inspections, obtain, collect, and analyze hydrologic and hydraulic data, and report their findings to the establishing parties. The degree of study activity varies depending upon the requirements of the Commission or Treaty under which they were established. These efforts assure better control, use, and orderly development of the jointly controlled water resources, and are of importance in attempting to meet water demands resulting from an expanding economy along the United States Canadian border. Studies are closely related to the Corps of Engineers' Civil Works program and are summarized in the Assistant Secretary of the Army for Civil Works' Annual Report.

PROPOSED ACTIVITIES FOR FY 2015: The amount requested for FY 2014 will fund Corps of Engineers participation in assisting the U.S. Government meet its obligations under provisions of boundary water treaties and other international agreements between the United States and Canada. CELRD provides support for implementation of the Niagara Treaty of 1950 that governs the split of Niagara River Waters between the U. S. and Canada, and between the uses of the waters.

Northwestern Division engages in activities associated with implementation of the Columbia River Treaty and the Kootenay Lake and Osoyoos Lake Boards of Control. CENWD, together with Bonneville Power Administration and British Columbia Hydro annually develop the Assured Operating Plan and the Detailed Operating Plan for the Columbia River Treaty storage projects. Funds also are used to support the work of the Columbia River Treaty Permanent Engineering Board, including publication of its annual report to the Governments. North Atlantic Division is engaged in support of the Saint Croix River Board of Control and the Gulf of Maine Council on the Marine Environment. Work in the Saint Croix R. Basin involves retrieval and analysis of water data to assure compliance with IJC rules and annual inspection of dams and fish passage facilities.

The Corps will continue to carry out its multiple responsibilities to the various IJC Boards of Control and to the several Treaty entities, boards and committees. During FY 2015, additional flow data will be obtained and used to update the rating curve used to verify compliance with Niagara Treaty requirements. In addition, pursuant to the October 1999 Plan of Study for Lake Ontario regulation improvements, the IJC established the



Lake Ontario-St. Lawrence River Study Board. Investigations are continuing as the fifth year of a 5-year effort. A Plan of Study for evaluating the Lake Superior regulation criteria outflows is being developed for approval by Governments. A basin-wide hydrologic and regulation model will be implemented. Special studies related to international impacts of evaluation of endangered species compliance related to Columbia River Treaty projects will be continued by CENWD. CENAD will continue normal work in support of the Saint Croix Board of Control and the Gulf of Maine Council on the Marine Environment. Discussions are ongoing with the IJC on expansion of the IJC's mission to include environmental objectives, as described in the report entitled "The IJC and the 21st Century". The Corps will be supporting the IJC as it executes the reference from the governments regarding investigating the feasibility of establishing a demonstration watershed board and its implementation of the reference on diversion, consumption and transfer of international waters. The need and capability in this area exceeds the requested budget amount.

ACCOMPLISHMENTS IN PRIOR YEARS: The Corps Division and District commanders and their staffs met all of their many and diverse responsibilities in representing the United States on the previously listed IJC Boards of Control and Treaty entities, boards and committees. The IJC-sponsored special flood damage reduction study of the Red River Basin was closed without completing the full scope of the planned work because of lack of funds from the United States. CEMVD worked with the International Red River Board on the biota assessment for the Devils Lake basin and also supported an interagency modeling and review effort on the Red River of the North mainstem. CELRD has been very active in multiple Great Lakes IJC boards. CENWD continues to coordinate operations of Libby Dam under the 2001 Libby Coordination Agreement. CENWD participated as part of the U.S. Entity to prepare all Columbia River Treaty required Assured Operating Plans (AOP) and resultant Determinations of Downstream Power Benefits (DDPB). The U.S. Entity finalized the annual Detailed Operating Plan (DOP) that may produce results more advantageous to both countries for the current operating year.

*1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A*

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Collection and Study of Basic Data

Other programs – Special Investigation

	Allocation in FY 2014	Budgeted Amount for FY 2015	Increase over FY14 and FY13
Precipitation Studies (National Weather Service)	\$ 225,000	\$ 225,000 <u>1/</u>	\$ 0

AUTHORIZATION: This is the Hydrometeorological Studies Program conducted for the Corps of Engineers by the National Weather Service (NWS). The Corps transfers funds to NWS who performs analyses of storm rainfall and other meteorological data required to develop hydrologic criteria for use by the Corps in planning, design and water control management of flood control and water resources development projects, and in floodplain management studies.

PROPOSED ACTIVITIES FOR FY 2015: The scientific services provided by the National Weather Service under this program consist of: (1) review of the meteorological aspects of storm data compiled under the Hydrologic Studies Program conducted by the Corps; (2) precipitation depth-duration-frequency estimates for regions and the nation; (4) development of meteorological parameters pertaining to hurricanes, northeasters and other wind phenomena; and (5) other studies necessary to accomplish the Corps mission. Funds in the amount of \$225,000 will be required in FY 2015 to continue the program at a level consistent with Corps needs. The entire cost of the Corps hydrometeorological studies program is funded under this budget item.

With the technology and systems for updating precipitation frequency demonstrated, we now stand ready to update precipitation frequency estimates for the rest of the U.S. and its dependencies. With expected funding of \$225K, efforts in FY 2015 will be to continue the update and revision of the precipitation frequency estimates for the portion of California not already included in NOAA Atlas 14 Volume 1 and continue studies for the U.S. Pacific Islands, Southeastern states, Midwestern states, and Alaska. Additionally, the NWS will be producing areal reduction factors for the U.S. and maintains the Precipitation Frequency Data Server web portal and prepares an annual report on nationwide flooding.

ACCOMPLISHMENTS IN PRIOR YEARS: \$225,000 was provided in FY 2013 and 2014, which was used to complete the update of precipitation frequency estimates for some states and initiated updates and revision of precipitation frequency estimates for the State of California, U.S. Pacific Islands, Southeastern states, Midwestern states, and Alaska. Also, the Precipitation Frequency Data Server (PFDS) web portal was maintained with high availability. The annual report on nationwide flooding and associated assessment of damages was prepared and delivered on 31 May 2013

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Allocation for FY13 \$	Allocation for FY14 \$	Budgeted Amount for FY15 \$
349,000	75,000	75,000

Project Name: Remote Sensing Systems Support

Engineer Research and Development Center

AUTHORIZATION: Various authorities including Public Law 110–114. These efforts are necessary to provide remote sensing and geospatial data for efficient management of Congressionally authorized projects, to meet the performance requirements of the Presidents Management Agenda (PMA), to supply data for programs that are rated by the Program Assessment Rating Tool (PART), as well as to respond to specific public laws, including the National Levee Safety Program, the Government Paperwork Elimination Act (GPEA) and Clinger-Cohen/IT Management Reform Act.

JUSTIFICATION: This item supports the overall technology transfer requirement of the Corps Civil Works Program for Remote Sensing systems, which is the responsibility of the Engineer Research and Development Center (ERDC), through its Remote Sensing/Geographical Information Systems (GIS) Center of Expertise. Located in Hanover, New Hampshire

The Remote Sensing/GIS Center is the USACE Center of Expertise for Civil Works Remote Sensing and GIS technologies, providing mission essential support to Civil Works programs. The Center provides cost-effective centralized management and support through technology transfer and applications development for Corps mission responsibilities in all business practice areas: navigation, flood and coastal storm damage reduction, hydropower, regulatory, environment, emergency management, recreation, water supply, and work for others. An enterprise GIS approach is an essential component of this support. Continuing interaction with other researchers and practitioners throughout the USACE, government, the private sector, and academia assures that state-of-the-art and state-of-the-practice knowledge of evolving trends that are relevant to USACE activities are available, and that duplication of effort is avoided.

Declines in work force require working smarter, better, and faster. Contributing to this effort, the Center develops approaches for the integration of data from the disparate sources necessary for comprehensive and collaborative land and water resources management including: basin-wide studies; water control; support to emergency management; and compliance with the attendant environmental regulations and related policies. The Center promotes state-of-the-art sensors, data collection, analysis, and storage systems, building on commercial software, and integrating these with operational technologies that are then delivered to the USACE divisions, districts, and other agencies’ activities. The Center provides guidance and technical support to the USACE Geospatial Community of Practice (CoP), including no-cost support to USACE elements having problems that can be solved in less than 3 days. The Center also provides supports to other CoPs requiring geospatial or remote sensing information, including the remote sensing, hydrology, hydraulics and coastal, levee safety and emergency management sub-CoPs. This ensures that appropriate linkage to the geospatial technologies is available.

Engineer Research and Development Center

Remote Sensing Systems Support

The existence of the Center ensures that the necessary support can be rapidly directed toward solving operational problems that require specialized expertise. The PROSPECT training program in remote sensing and GIS, managed by Center staff, provides another avenue for the transfer of knowledge to those who are, or soon will be, using these technologies. Training also is conducted in the field through workshops, conferences, and distance learning. White papers, pilot projects, USACE and other publications, including Engineering Letters, Circulars, and Manuals, and the Internet, also are used to transfer procedures and lessons learned to end users.

#### PROPOSED ACTIVITIES FOR FY 2015:

- As the Center of Expertise, serve as key resource and technology point of contact for the Corps of Engineers for Civil Works remote sensing and GIS.
- Continue to expand GIS and remote sensing capabilities to maintain technical leadership for critical USACE programs such as the National Levee Database and USACE Operating Center (UOC) during emergencies.
- Provide guidance and technical support to the USACE Geospatial Community of Practice (COP),
- Support one-stop service requests from USACE districts and divisions related to remote sensing and GIS.
- Provide technical support to USACE district offices for the development of implementation plans for geospatial data, including water control and closer coordination with other agencies.
- Provide leadership and technical support to strategic and enterprise USACE geospatial initiatives.

#### ACCOMPLISHMENTS FOR FY 2014:

- Served as the Center of Expertise, a key resource and technology point of contact for the Corps of Engineers for Civil Works remote sensing and GIS.
- Continued to expand GIS and remote sensing capabilities to maintain technical leadership for critical USACE programs such as the Geospatial Management and Information System (GRiD) chosen as the repository for all USACE Airborne, Mobile and Terrestrial LIDAR data and associated products.
- Provided guidance and technical support to the USACE Geospatial Community of Practice (COP),
- Supported one-stop service requests from USACE districts and divisions related to remote sensing and GIS.
- Provided technical support to USACE district offices for the development of implementation plans for geospatial data, including water control and closer coordination with other agencies.
- Provided leadership and technical support to strategic and enterprise USACE geospatial initiatives: District and Division E-GIS support; Missouri River Restoration Project; Corps Water Management System; Geospatial Operations and Maintenance Business Interlink (gORM) development and implementation; Real Estate Management Information System; National Inventory of Dams; Corps Project Notebook; Access to Water Data; Emergency Management Remote Sensing, GIS, and Modeling Group; Watershed Investment Decision Tool; Federal Water Toolbox and Hydrology and Hydraulics modeling software development and support team member.

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Allocation in FY13 \$	Allocation in FY14 \$	Budgeted Amount in FY15 \$
50,000	50,000	47,000

Project Name: Scientific and Technical Information Centers

Engineer Research and Development Center

SCOPE: Five information analysis centers (coastal engineering, cold regions engineering, concrete technology, hydraulic engineering, and soil mechanics) located at the U.S. Army Engineer Research and Development Center provide the major interface between the Corps of Engineers and the public and private sectors to gather and disseminate information as required by PL 99-802, Federal Technology Transfer Act of 1986. The function of each center is to acquire, examine, evaluate, summarize, and disseminate newly published scientific and technical information generated within the Corps of Engineers and other activities in the U.S. and abroad.

JUSTIFICATION: Public Law 99-802, Federal Technology Transfer Act of 1986, requires technology transfer from Federal agencies to the private sector. In addition, both the Department of Defense and the Department of the Army have objectives of supporting the information needs of engineers and scientists and eliminating unnecessary duplication of R&D. The specified information centers, supported by their host laboratories, critically evaluate and summarize the technical validity and merits of published and unpublished research and technical publications on design, construction, or other technology utilization. User communities have been well established and distribution lists for technology transfer are continuously updated. Electronic media including the World Wide Web are used where appropriate. The effectiveness of activities and services is evaluated on a continuing basis, and technology transfer products and methodology are revised when appropriate. Priority for services will be given to deployed troops, Corps of Engineers staff, and other government personnel.

These centers are a major technology transfer resource between the public, the US scientific and engineering community, and academia for results of over 75 years of research results conducted by the ERDC laboratories in the fields of soil mechanics and foundation engineering, cold regions engineering, concrete technology, hydraulic engineering, and coastal engineering. Each center is supported by multi-disciplinary technical staff and has a comprehensive library of materials that have been published over the years. In a typical year, each Center responds to hundreds of information requests on subjects within its purview. These services are free to the users. In addition, services such as literature research, information synthesis, publication location, research reviews, and methodology comparisons on subjects of mutual interest to ERDC laboratories and other interested parties are available on a cost-reimbursable basis.

PROPOSED ACTIVITIES FOR FY 2015:

- Respond to several thousand technical inquires via various internet and personal contact actions. Inquires are received from Federal, state, and local government activities, universities, private sector engineers and scientists, and citizens.
- Provide technical expertise in the form of copies of reports, arranging to speak with an expert, furnishing generalized technical advice, or giving updates on

Engineer Research and Development Center

Scientific and Technical Information Centers

technical developments.

- Digitize older ERDC research reports of significant technical value and place them on the internet for ready access by the public.
- Distribute reports, technical notes, computer programs, geographic information systems (GIS) data, abstracts, information bulletins, and other scientific and technical information to the Defense Technical Information Center (DTIC), Corps libraries, depository libraries, and identified user communities to ensure wide circulation and availability.

<u>Information Analysis Centers</u>	<u>FY 2014</u>
Coastal Engineering	\$ 10,000
Cold Regions Engineering	10,000
Concrete Technology	10,000
Hydraulic Engineering	10,000
Soil Mechanics	<u>10,000</u>
	\$ 50,000

ACCOMPLISHMENTS FOR FY 2014:

- Responded to several thousand technical inquires via various internet and personal contact actions.
- Provided technical expertise in the form of copies of reports, arranging to speak with an expert, furnishing generalized technical advice, or giving updates on technical developments.
- Digitized older ERDC research reports of significant technical value and placed them on the internet for ready access by the public.
- Distributed reports, technical notes, computer programs, GIS data, abstracts, information bulletins, and other scientific and technical information to the Defense Technical Information Center (DTIC), Corps libraries, depository libraries, and identified user communities to ensure wide circulation and availability.

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Collection and Study of Basic Data

Other programs – Special Investigation

	Allocation for FY 2014	Budgeted Amount for FY 2015	Increase over FY14 and FY13
Stream Gaging (U.S. Geological Survey)	\$ 550,000	\$ 550,000 <u>1/</u>	\$ 0

AUTHORIZATION: The Corps of Engineers cooperates with the U.S. Geological Survey in this effort, and contributes funds for all or part of the cost of the operation and maintenance of about 2,500 stations that are of special importance to the Corps mission. The Corps established this continuing, cooperative program in March 1928, so that streamflow data would be available to meet special needs concerning the Corps water resources responsibilities.

PROPOSED ACTIVITIES FOR FY 2015: The Corps of Engineers makes extensive use of streamflow records in the planning, design, construction, and operation of water resources projects. The Basic network of stream gaging stations operated by the Geological Survey under its normal functions without support from the Corps is inadequate to meet all the special needs of the Corps water resource development responsibilities. Accordingly, a cooperative program was established under which funds are transferred to the Survey to cover, partially, the cost of operating specific stations. In the optimum development and management of water resources, it is essential that continuous records of streamflow be maintained at specific sites over a long period of years to provide a reliable measure of water resources available for various uses. This budget item targets the non-project portion of the cooperative program. To continue the operation of stations of special interest to the Corps, an estimated total of \$17,500,000 will be required by the U.S. Geological Survey during FY 2015, exclusive of funds received from other cooperative sources. The operation and maintenance cost of these stations will be financed from two sources, as follows: (1) \$600,000 from this budget item for stations not directly attributed to the Corps projects; and (2) approximately \$17,000,000 from Corps funds budgeted elsewhere for authorized projects and studies. The basic program will remain at the same level as in previous years. The need and capability in this area exceeds the requested budget amount.

ACCOMPLISHMENTS IN PRIOR YEARS: Records for the streamflow stations supported by transfer of funds are used primarily to operate Federal flood reduction projects. In the past ten years these projects have reduced flood damages by an average of \$23 billion annually. Not only are these gages used by the Corps, but 100 percent of the data are used by the National Weather Service as the basis for its public flood forecasts. In addition, the data are published on the Internet by the Corps and/or in a regular series of reports by the U.S. Geological Survey and provide valuable information for many Federal and state agencies and the public.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

	Allocation	Budgeted
	in FY 2014	Amount
		in FY 2015
Transportation Systems Program (CONTINUING)	\$1,515,000	\$385,000 <u>1/</u>

AUTHORIZATION: Section 904, Water Resources Development Act (WRDA) 1986 (P.L.99-662); Section 334, WRDA 1992 (P.L.102-580) Section 230, WRDA 1996 (P.L. 104-303)

The Transportation Systems Program supports Corps Districts and Headquarters in accomplishing navigation project planning and evaluating responsibilities through the provision of information and technical support. The process of planning improvements for coastal and inland navigation projects involves identifying opportunities for navigation improvements, developing and refining the options, and evaluating the benefits and costs from a national perspective (in a broad context, including both the project-specific areas and the overall national transportation network). The Transportation Systems Program is managed by CECW-P through the Institute for Water Resources (IWR) and is a continuing effort to ensure the development of viable and practical analytical techniques, sources of information, tools and methods including the development of deep draft and shallow draft vessel operating and replacement cost data; provision of timely information regarding world deep draft vessel fleet, commodity, and cargo flow forecasts; the publication of reports documenting the results of research associated with the Transportation System Analysis Program; the provision of technical services and support to District and Division offices and Headquarters personnel. In effect, the Program will help improve the technical quality, accuracy and consistency of navigation planning studies by the field.

PROPOSED ACTIVITIES FOR FY 2015: The funds requested in FY 2015 for Transportation Systems will primarily be used to update deep and shallow draft vessel operating costs (VOCs) and provide costs for new categories such as cruise ships and ever-larger Post-Panamax vessels, which have become more commonplace in the world shipping fleet in recent years.

ACCOMPLISHMENTS IN FY 2014: Activities in FY 2014 included updating and distributing shallow and deep-draft vessel operating costs guidance including investigation of life-cycle hull asset costing procedures and practices; updating bunkerage costs with posting to Corps Headquarters homepage; analyzing load factor inputs and developing and certifying various navigation models. Other accomplishments included refinements to the HarborSym model, a bulk loading tool, vessel and bunkerage requirements as undertaken by the Naval Academy, and a container shipping primer. The Inland PCX continued actively working on surveying and compiling information of industries which rely on the inland waterway system. The Deep Draft PCX has been actively involved in making enhancements to HarborSym, developing webinars on deep draft navigation procedures, advanced workshops for HarborSym and certifying navigation models in accordance with Corps' regulations.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$ 0. This amount will be used to perform work on the study as follows: N/A



APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Project Name: Research and Development

Engineer Research and Development Center

Allocation in FY13 \$	Allocation in FY14 \$	Budgeted Amount in FY15 \$
26,760,000	24,183,000	12,269,600

The Corps must pursue an aggressive research and development (R&D) effort to take advantage of rapidly developing technologies and techniques that will promote significant monetary savings and greater reliability, safety, enhanced efficiency, and environmental sustainability in planning, design, construction, operations, and maintenance of CW activities.

The Civil Works (CW) R&D program is formulated to directly support the established Business Lines of the CW Program including: flood and coastal storm damage reduction, inland and coastal navigation, environment (including natural resources, compliance, mitigation, restoration, and stewardship), water supply, hydropower, recreation, emergency management, and regulatory. The CW R&D needs and requirements are identified based on the USACE Campaign Plan, CW Program Strategic Plan, Corps SES and General Officer Steering Committee, division and district input, and the existing Water Resources Development Act (WRDA) authorities. Corps R&D also must address the challenges facing the Corps' portfolio of water resources infrastructure; aging structures, changing demands, changing environmental conditions, and constrained budgets. Corps R&D examines new ideas, develops approaches, techniques, and technology to solve problems, and transfers field-ready products. The request for \$16,143,000 of General Investigations funds for the FY 2015 program is focused on the very highest priority R&D needs. Additional high priority requirements identified above the base program by practicing District and Division technical experts and by HQUSACE proponents are incorporated into the program as funding becomes available. The FY 2015 program continues efforts started in FY 2014 that will lead to better management of water resources projects, promote public safety, reduce risk, improve operational efficiencies, sustain the environment, and position our water resource systems to be managed as systems and to be adaptable due to the implications of climate change. The Program continues a focused science and technology effort to address needs for resilient water resources infrastructure.

Results of the Corps' GI R&D are directly incorporated into practice within the CW Program through revisions or additions to Engineer Regulations, Engineer Manuals, Technical Guidance Manuals, Engineer Technical Letters, or Guide Specifications. Numerous other means of technology transfer are also used such as training courses, workshops, demonstrations, technology availability in commercial tools and services, and other professional contacts. The Corps CW R&D Program provides essential Product Lines with field ready Products and a high return on investment for the Corps, other Federal agencies and the Nation.

AUTHORIZATION: Authorization for ERDC to conduct R&D is codified in 10 U.S.C. 2358 ("The Secretary of Defense or the Secretary of a military department may engage in basic research, applied research, advanced research, and development projects that are necessary to the responsibilities of such Secretary's department in the field of research and development.")

COORDINATION: The Corps conducts CW R&D through the U.S. Army Engineer Research and Development Center (ERDC) and the Institute for Water Resources (IWR). The ERDC consists of seven research laboratories:

Engineer Research and Development Center

Research and Development

Coastal and Hydraulics Laboratory, Vicksburg, MS  
Cold Regions Research and Engineering Laboratory, Hanover, NH  
Construction Engineering Research Laboratory, Champaign, IL  
Environmental Laboratory, Vicksburg, MS  
Geotechnical & Structures Laboratory, Vicksburg, MS  
Information Technology Laboratory, Vicksburg, MS  
Topographic Engineering Center, Alexandria, VA

The IWR is located in Alexandria, VA, and its Hydrologic Engineering Center (HEC) in Davis, CA. Policy guidance and executive oversight are provided by the CW R&D Steering Committee co-chaired by the Director of Research and Development and the Deputy Director of CW and comprised of CW division chiefs. The Director of Research and Development is responsible for developing the annual program. The Directors of ERDC and IWR are responsible for execution of the CW R&D program.

In order to most effectively use the limited R&D resources and to avoid unnecessary duplication of research effort, the CW R&D Program maintains external technical exchange and technology transfer efforts with other Federal and major water resource agencies including the Tennessee Valley Authority (TVA), Bonneville Power Administration, Western Area Power Administration, Environmental Protection Agency (EPA), National Science Foundation (NSF), Department of Agriculture (National Resources Conservation Service), Park Service, National Oceanic and Atmospheric Administration (NOAA), Department of Interior (US Bureau of Reclamation, Forest Service, Fish and Wildlife Service (FWS), US Geological Survey (USGS), Department of Homeland Security (DHS) (US Coast Guard (USCG), Federal Emergency Management Agency (FEMA), US Border Patrol), Department of Transportation (Federal Highway Administration (FHWA), Federal Aviation Administration (FAA), Maritime Administration (MARAD)), National Aeronautic and Space Administration (NASA), International Boundary Water Commission, International Joint Commission, Department of Energy (Nuclear Regulatory Commission (NRC), Federal Energy Regulatory Commission (FERC), the Navy, and state and local governments.

Corps researchers also maintain contact with the research activities of universities and industry through regular membership in such organizations as the American Society of Civil Engineers, the Civil Engineering Research Foundation, the American Concrete Institute, the American Society of Testing and Materials, the International Conference on Coastal Engineering, the American Association of Port Authorities, the American Society for Photogrammetry and Remote Sensing, Society of Environmental Toxicology and Chemistry, the Coastal Society, the Offshore Technology Conference, International Society of Soil Mechanics and Foundation Engineering, U.S. Society of Dams, and International Committees on Large Dams, the International Association for Hydraulic Research, the Association of American Geographers, Western Dredging Association and the International Navigation Association. The Corps also participates extensively with the Transportation Research Board, the Water Science and Technology Board, and the National Research Council in coordinating and leveraging research activities.

The proposed FY 2015 R&D Program directly supports the CW Business Lines, their mission requirements, and established performance objectives at project, watershed, or river basin scales. The technical foundation of the R&D program includes:

- a. Navigation (including Hydropower)
- b. Flood and Coastal Storm Damage Reduction (including Emergency Management, Water Supply, and Recreation)
- c. Environmental (including Regulatory)

### **Navigation (including Hydropower)**

The Corps builds, operates, and maintains projects in support of commercial navigation. At some of its multi-purpose dams, the Corps also builds, operates, and maintains hydropower plants. Research delivers environmentally sustainable products that improve efficiency, reliability, and capacity of this infrastructure. The research framework integrates infrastructure engineering, power physics, economics, innovative construction, coastal and riverine hydrodynamics and processes, monitoring and sensing technologies, operations research, environmental solutions, and emerging technologies to create effective solutions in concert with the multiple demands, requirements, and constraints of real world commodity transport and power production problems. Research efforts target navigation channels, locks, jetties, breakwaters, harbors, dams and power plants to optimize among life-cycle and reliability trade-offs, assure objective economic assessment, and provide better investment decision tools for predicting performance and deterioration with time, and for scheduling and prioritizing maintenance and repairs balanced with the consequences of delays. Essential to this effort is the development of tools for determining the condition of infrastructure components to make risk-based prioritizations for funding. R&D efforts for development of condition index products include: developing a standardized method and associated computer program for life-cycle engineering analysis of coastal rubble mound breakwaters, improved condition indexing for coastal structures, monitoring of concrete navigation structures, inspection and condition assessment of steel hydraulic structures, and condition monitoring and predictive maintenance for infrastructure. Significant investment has also been directed toward developing improved navigation economic technologies that can be used to support better-informed decision analyses and management of the United States inland and deep-draft navigation system.

### **Flood and Coastal Storm Damage Reduction (including Emergency Management, Water Supply, and Recreation)**

Corps constructs projects to reduce the risk of loss of life and property damage from flooding, both in river valleys and along our coasts. In the daily and seasonal operation of hundreds of Corps projects, the demand for water supply and opportunities for recreation and environmental stewardship are also balanced. The Corps works to improve the efficiency and effectiveness of its existing infrastructure, and assure that new projects incorporate the most advanced knowledge and capabilities in planning, design, construction, operation, and maintenance. Through R&D, the Corps develops technology that optimizes daily operations of water resources projects to meet multiple objectives, including water supply and environmental stewardship. The Corps R&D creates new solutions to challenging infrastructure engineering problems in building, maintaining, upgrading, and operating the Nation's water resources infrastructure such as dams, locks, spillways, channels and levees. Through R&D, the Corps provides guidance and tools to understand the natural setting of water resource projects, to incorporate environmental & economic objectives, to manage flood risk, to assess alternative solutions, and to make optimal decisions. The technological requirements of emergency management are addressed to make possible the most rigorous planning and preparedness and the most efficient and effective response and recovery.

### **Environmental (including Restoration, Regulatory and Stewardship)**

The Corps has ecosystem restoration and environmental stewardship and management responsibilities on more than 11 million acres of land and water resources. In the context of the scope of this mission, Corps field personnel work to apply the latest technologies for ecosystem restoration and natural resource inventory.

Engineer Research and Development Center

Research and Development

The scale of these activities ranges from large projects such as the Florida Everglades down to much smaller, local wetlands and stream restoration projects. The broad scope of these environmental activities (as well as the frequent changes to the legislative mandates that govern them) demands sound research and development to address these critical needs. The goal of this R&D is to provide cost-effective/innovative technologies for project planning, design, engineering/construction, and operation/maintenance. Product lines include Ecosystem Restoration, Ecosystem Functional Assessment (with an emphasis on Environmental Assessment and Evaluation), Environmental Stewardship, and Management. Products include concise, how-to guidance documents that provide rapid/low-cost technologies and methods for high priority field needs as well as sophisticated ecological process assessment models that are critical to the success of the Corps' Ecosystem Restoration business line.

PROJECTED CIVIL WORKS R&D FUNDING ALLOCATIONS (FY 2015)

<u>BY RESEARCH AREA</u>	<u>FY 2015 ALLOCATION</u>
a. Navigation (including Hydropower)	\$ 4,821,600
b. Flood and Coastal Storm Damage Reduction (including Emergency Management, Water Supply, and Recreation)	\$ 4,195,000
c. Environmental (including Regulatory)	\$ 3,253,000
	<b><u>\$ 12,269,600</u></b>

**a. Commercial Navigation**

Allocation in FY13	Allocation in FY14	Budgeted Amount in FY15
\$ 12,426,000	\$ 12,586,000	\$ 4,821,600

JUSTIFICATION:

The Corps' commercial navigation mission facilitates navigation through investments in waterborne transportation systems (channels, harbors, and waterways) that are cost-effective and environmentally sustainable. The U.S. Marine Transportation System (MTS) consists of over 300 ports, 1,000 harbor channels, and 25,000 miles of navigation channels. The MTS is already operating at near-full capacity in many areas and is being challenged by new vessel designs and traffic loads that exceed its channel, harbor, and lock capacities. Over 50 percent of the Corps' 191 lock sites (240+ locks) have been in service for more than 50 years. Research and Development (R&D) can help extend the service life of our locks and dams, reduce the costs associated with delays due to closures for both scheduled and unscheduled repairs, as well as reduce the risk of catastrophic failure of a major infrastructure component.

This R&D area provides advanced and innovative tools and technology for the Corps to improve navigation functional performance, reduce unit costs, and improve safety. The Corps is expected to apply robust, reliable, and comprehensive capabilities to assess all impacts of alternative plans for projects and to select the most balanced and sustainable solutions. R&D delivers efficient and effective capabilities to plan, design, construct, operate, maintain, and upgrade transportation projects in inland and coastal locations and in all climates, from warm to ice-affected. Capabilities to improve system reliability are needed in an asset management framework to extend project life and reduce life cycle costs. Engineering and environmental aspects are integrated in the development of processes and design models, decision support software, infrastructure condition assessment techniques, risk frameworks, infrastructure and design guidance, and innovative monitoring, operation and maintenance technologies.

#### PROPOSED ACTIVITIES FOR FY 2015:

- **Keep the IMTS Locks Reliable and Resilient (\$1827K)** R&D efforts to determine the condition, extend the life, and enable rapid repair of aging IMTS infrastructure
  - Expand our use of alternative repair and replacement materials through the research, development, adaptation, and testing of alternative materials for appropriate navigation infrastructure applications and initiate changes to design guidance to incorporate the knowledge gained.
  - Enhance finite element modeling and design capabilities for lock components and approach walls
  - Develop methods and procedures for replacing major structural components of aging infrastructure.
- **Keep the Coastal Navigation Structures Reliable and Resilient (\$915K)** R&D efforts to determine the condition, extend the life, and enable rapid repair of aging and storm-impacted infrastructure
  - Develop a process-driven, risk-based method to assess navigation structure functionality to support asset management and maintenance management
  - Transition from expert elicitation condition index assessments with science and engineering based analysis capabilities and tools
- **Create new Engineering With Nature concepts and practice (\$610K)** Develop new science and engineering tools that support the synergy required to maximize the simultaneous production of environmental and economic benefits connected to navigation infrastructure and its operation
  - Demonstrate tools that produce “automatically” and efficiently produce environmental benefits
  - Develop the ability to design and predict performance of environmental features and enhancements that increase the resilience and performance of navigation infrastructure systems.
  - Participate in Field Research Facility experiment to assess sediment transport, ocean/coast/bay and ecosystem processes
- **Connect Navigation Data with Data from Other Agencies (\$860K)** Develop a navigation data integration framework that sustains data lifecycle use and management of the range of data used for project operation and maintenance decision support
  - Develop standards, formats, and protocols for an expanded array of navigation decision support data and information.
  - Develop additional web based tools and capabilities to expand utilization of the DIF.

- **Design and Operate an Efficient National Coastal Marine Transportation System (\$610K)** Assess a new paradigm comprised of major ports, feeder ports, and regional intermodal freight movement. Develop a risk-based capability that incorporates coastal hazards and supply chain dynamics to predict regional scale navigation channel shoaling, navigation structure condition, dredging, and project maintenance requirements.
  - Develop engineering and science-based tools incorporating sediment, flood, and wind hazards to predict future conditions
  - Construct tools that analyze data between different models, communicate calculated risks, and visualize results.

ACCOMPLISHMENTS FOR FY 2014:

- **Keep the IMTS Locks Reliable and Resilient** R&D efforts to determine the condition, extend the life, and enable rapid repair of aging IMTS infrastructure.
  - Researched, developed, adapted, and tested composite materials for appropriate navigation infrastructure applications.
  - Initiated enhancement of finite element modeling capabilities of locks and approach walls
  - Expanded Non-Destructive Testing capabilities for steel & concrete
  - Initiated work to quantify the outcome of maintenance on asset condition and level of performance
- **Keep the Coastal Navigation Structures Reliable and Resilient** R&D efforts to determine the condition, extend the life, and enable rapid repair of aging and storm-impacted infrastructure.
  - Developed a nationwide consistent navigation structure risk-based functional condition assessment
- **Create new Engineering With Nature concepts and practice** Develop new science and engineering tools that support the synergy required to maximize the simultaneous production of environmental and economic benefits connected to navigation infrastructure and its operation.
  - Designed tools that “automatically” or most efficiently produce environmental benefits
  - Developing the ability to design and predict performance of environmental features and enhancements that increase the resilience and performance of navigation infrastructure systems.
- **Connect Navigation Data with Data from Other Agencies** Develop a navigation data integration framework that sustains data lifecycle use and management of the range of data used for project operation and maintenance decision support
  - Designed and initiated development of a distributed, service oriented architecture, including standards and data formats and protocols.
  - Developed base-level web based tools and capabilities to support and deploy the DIF.
- **Design an Efficient National Coastal Marine Transportation System** Assess a new paradigm comprised of major ports, feeder ports, and regional intermodal freight movement. Develop a risk-based capability that incorporates coastal hazards and supply chain dynamics to predict regional scale navigation channel shoaling, navigation structure condition, dredging, and project maintenance requirements.
  - Developed engineering and science-based tools incorporating sediment, flood, and wind hazards to predict future conditions
  - Considered an economic tool that supports risk calculations
  - Designed a framework of models and tools to support calculations and to couple models, communicate risk and visualize results.

**b. Flood and Coastal Systems**

Allocation in FY13	Allocation in FY14	Budgeted Amount in FY15
\$ 9,034,000	\$ 6,815,000	\$ 4,195,000

**JUSTIFICATION:**

The Corps of Engineers is responsible for more than 600 dams, operates over 400 major lakes and reservoirs, maintains 8,500 miles of levees, and has over 100 coastal storm-damage reduction and related projects associated with its Flood and Coastal Storm Damage Reduction mission. Flooding that occurs in the United States costs about \$4 billion annually. Without the Nation's investment in flood and coastal storm damage reduction infrastructure through the Corps, that cost would be many times higher. Over the years, Corps flood protection projects have prevented an estimated \$706 billion in damages, most of that within the last 25 years. The cumulative cost of building and maintaining these projects to date is \$119 billion; therefore, every dollar spent on flood protection has prevented more than six dollars in damage. Despite this protection, annual damages in flood plains continue to rise due to changes in land use and urban development. In addition, the 2000 census showed that more than 50% of the U.S. population lives within 50 miles of a coast and is therefore vulnerable to dangerous coastal storms and costly flooding. Consequently, over the past several years, Federal shore protection expenditures increased to more than \$100 million per year to protect the public and related economic investments.

The Corps manages existing water resources projects around the country to maintain a flood-protection infrastructure for the public's welfare. Simultaneously, the Corps balances requirements for hydropower, water supply, environmental stewardship, and recreation. As enabling technologies are developed, the Corps must upgrade and improve water resource projects, use the most advanced capability to assess the risk of alternative operational scenarios, and apply robust, reliable, and comprehensive capabilities to assess the economic and environmental effects of alternative plans for projects and to select the most balanced and sustainable solutions. R&D delivers efficient and effective capabilities to plan, design, construct, operate, maintain, and improve water resource projects in all climates and settings, from warm to ice-affected, and from inland to coastal.

Capabilities that prevent loss of life, minimize property damage, and reduce the life-cycle costs of projects are critical. These capabilities include advanced processes and design models, economic models and decision support software, infrastructure condition and risk assessment tools, infrastructure design guidance, innovative operation and maintenance technologies, flood-alert instrumentation and expedient emergency response capabilities, and the capability to take advantage of new real-time data sources (e.g. precipitation radar) to accurately forecast real-time flow and stages.

This R&D component provides advancements in hydrologic and hydraulic simulation, water resources project optimization, tools for effective alternative analyses for solutions, infrastructure safety, structural design and performance, and assessment of the risk and uncertainty associated with project designs. This R&D component also improves the technology available to emergency managers for emergency planning, preparedness, response, recovery, and assessment.

#### PROPOSED ACTIVITIES FOR FY 2015:

- **Emergency Management and Critical Infrastructure (\$550K)** R&D efforts to enhance national interoperable systems that support flood and coastal storm disaster planning, recovery and mitigation capabilities. Continue efforts in data acquisition, analysis, and reporting capability for improved early warning and response.
- **Resilient Coastal Systems (\$850K)** R&D efforts to support the Corps and stakeholder roles in sustainable coastal management and provide a more resilient coastal system
  - Further research into critical physical, social, and ecological processes unique to coastal and estuarine systems, and the assessment and management of coastal resilience
  - Improve prediction of coastal and estuarine processes and affects on coastal systems for the purpose of evaluating the functional service and performance provided by water resources management measures
  - Develop tools to implement Engineering With Nature principles to mitigate the effects of coastal storms
- **Optimize Alternatives Analysis and Assess Project Risk and Uncertainty (\$950K)** R&D efforts to develop water resources project collaborative planning, risk assessment technologies, and decision support tools.
  - Improve decision support framework to evaluate alternatives with regard to system response to loadings, failure, and consequences (economic, social, and environmental).
  - Continue to develop reliable methods for comprehensive consequence estimation including economic impacts and public safety for management of flood and coastal storm risk
  - Develop guidance for incorporating snow melt hydrology in project flood design parameter estimation
- **Hydraulics and Hydrology and Integrated Water Resource Management Tools (\$950K)** R&D efforts to develop and enhance H&H tools in support of project planning, design and risk assessment
  - Enhance tools for planning and implementation of flood risk management and ecosystem restoration projects in watersheds.
  - Enhance models for integrated hydraulic, hydrologic, sedimentation, water quality and ecologic processes
  - Improvement of tools for multi-purpose project planning and implementation
  - Develop tools to implement Engineering With Nature principles to optimize water resources project performance
- **Water Resources Infrastructure (\$895K)** R&D efforts to determine the condition, extend the life, and enable probabilistic analysis of aging infrastructure.
  - Continue efforts to determine the condition, extend the life, and enable probabilistic analysis of aging infrastructure.
  - Test and further development of methodology to account for internal seepage of levees and earthen structures

#### ACCOMPLISHMENTS FOR FY 2014:

- **Emergency Management and Critical Infrastructure** R&D efforts to enhance national interoperable systems for use in emergency operations during floods and coastal storms
  - Transitioned Mobile Information Collection Architecture (MICA) for handheld device data collection and data management into operation, USACE-wide
  - Provided rapid coastal storm inundation prediction capability using statistical methods and authoritative storm database to support USACE disaster response planning and recovery



- Developed optimal approach for rapid coastal storm simulation for prediction of areas of inundation for disaster response planning and recovery
- **Coastal Systems** R&D efforts to support the Corps and stakeholder roles in sustainable coastal management
  - Developed numerical techniques for simulating the interaction of coastal storms and wetland vegetation to evaluate the functionality of natural features on abating storm surge and waves
  - Advanced the knowledge base associated with the transition between cohesive and cohesionless sediment transport behavior for more accurate quantification of estuarine sediment transport process and coastal delta development
  - Furthered the development of high fidelity hydraulic simulators that predict wave loading for the design of coastal storm risk reduction infrastructure
  - Provided operational capability for simulation of coastal and estuarine processes using fully coupled and interoperable enterprise atmospheric, hydraulic and sediment transport numerical models within the USACE Coastal Storm Modeling System
- **Optimize Alternatives Analysis and Assess Project Risk and Uncertainty** R&D efforts to develop water resources project collaborative planning, risk assessment technologies, and decision support tools.
  - Delivered operational version of software framework that fully encompasses USACE flood risk assessment in a systems-based approach that integrates hydrologic, hydraulic, ecologic, economic and life loss simulators to evaluate lifecycle performance of management measures
  - Provided guidance for implementation of broadly applicable analysis tools for quantifying uncertainty associated with simulation of hydraulic and hydrologic processes for flood risk assessment
  - Initiated guidance development for incorporating snow melt hydrology in project flood design parameter estimation
  - Delivered authoritative interagency coastal storm data base for project design parameter estimation and coastal storm risk assessment including statistical tools for characterizing regional storm hazard in a probabilistic manner
  - Validated a standard methodology for evaluating coastal storm damage reduction project performance in the context of actual damages prevented and risk of future damages for better informed project resource allocation and adaptive management decisions
- **Hydraulics and Hydrology and Integrated Water Resource Management Tools** R&D efforts to develop and enhance H&H tools in support of project planning, design and risk assessment
  - Advanced the capability of USACE distributed hydrology model for simulating watershed flow and transport processes by improving the accuracy of snow melt simulation and snowpack flow, improving efficiency by incorporating of sub-scale features in large modeling domains in a computationally cost-effective manner and implementing comprehensive model parameter calibration methods
  - Continued development of USACE 1-D river hydraulics simulator for include capability for modeling flooding in highly urbanized areas, riverine sediment transport in unsteady flow, and for simulating performance of reservoir sedimentation mitigation measures.
- **Water Resources Infrastructure** R&D efforts to determine the condition, extend the life, and enable probabilistic analysis of aging infrastructure.
  - Delivered engineering software and databases to evaluate I-wall performance in a risk-informed manner for coastal and inland applications
  - Delivered interim guidance for best engineering practices for conducting transient seepage analysis for improved levee infrastructure design more cost effective project implementation
  - Developed guidance for application of large-scale geotechnical centrifuge to investigate internal erosion of levee and embankment structures and foundations. Developed internal erosion database for benchmark construction materials based on laboratory testing.

**c. Environmental**

Allocation in FY13 \$	Allocation in FY14 \$	Budgeted Amount in FY15 \$
5,300,000	4,782,000	3,253,000

**JUSTIFICATION:**

Since the Water Resources Development Act of 1986, there have been dramatic increases in authorized ecosystem restoration studies, projects, and programs. At the same time, the Corps has continued to operate and maintain 25,000 miles of inland and coastal navigation waterways, 5,500,000 surface acres of reservoirs, 240 navigation locks, over 1300 ports and harbors, 75 hydropower projects, 879 flood control projects, and thousands of acres of adjacent lands as part of its water resource mission. Wide-ranging environmental compliance, management, and restoration efforts have become crucial parts of the Corps water resource management mission. The Corps must consider environmental issues related to the operation and maintenance of its existing water resources projects as well as the restoration of degraded ecosystems; e.g., Chesapeake Bay, Everglades, Gulf Coast, Bay Delta, Great Lakes, Puget Sound, Columbia River, Missouri River, Upper Mississippi River and Hudson-Raritan Estuary. In addition, the Corps must proactively address potential negative environmental impacts resulting from proposed activities. This research area addresses the Corps' highest priority environmental issues through the development and application of state-of-science, cost-effective, time-saving technologies including: 1) Maximizing value of ecosystem restoration projects; 2) Restoring Ecological Integrity and Sustainability; 3) Urban Stream Restoration and Management; 4) Coastal Ecosystem Restoration; and 5) Threatened and Endangered / Invasive Species Impacts on Ecosystem Restoration Projects. These user-oriented products will provide scientifically defensible and field validated solutions to the Corps' highest priority environmental problems. They will also reduce unnecessary regulatory burdens, provide environmental benefits, and maintain a high return on taxpayer investment.

Quantifying the environmental benefits and ecological outputs of proposed Corps ecosystem restoration projects is essential for decision makers to be able to select those projects that will yield the highest social, economic, and environmental services. The scientific community has criticized current state-of-the-science assessment approaches regarding the underlying model assumptions, oversimplified relations, excessive data requirements, complexities in integrating impacts, and the lack of meaningful metrics to permit biologically-effective decisions. Moreover, current assessments are static and frequently insensitive to important system dynamics, not applicable across multiple scales, and incapable of predicting future conditions. Corps decision makers need robust assessment tools that: incorporate modern ecosystem principles, are easy to apply, offer significant user flexibility to meet individual project requirements, and that provide quantifiable output relevant to the Corps' Performance Measures. These tools will be provided in brief user-focused technical guidance documents, web-based decision support systems, webinars (interactive web presentations between R&D Scientists and Engineers and Corps Practitioners), classroom and internet based training, and product technical support as required. Additional high priority research and investments in developing Ecosystem Planning Models and in Submerged Aquatic Vegetation research will be conducted as funding becomes available.

## PROPOSED ACTIVITIES FOR FY 2015:

- **Maximize Value of the Corps' Aquatic Ecosystem Restoration Program to the Nation (\$1143K)**
  - Provide model certification for 3 ecological models
  - Provide upgrades to ecosystem functions model (EFM) to include watershed-scale eco-performance measures
- **Ensure Ecological Integrity and Sustainability of Aquatic Ecosystem Restoration Projects (\$755K)**
  - Provide guidance for assessing hydrologic connectivity for ecosystem restoration projects
  - Provide new vegetation module for HEC-RAS model
- **Improve Capabilities to Design and Implement Aquatic Ecosystem Restoration in Urban Settings (\$300K)**
  - Provide urban stream/river restoration framework / web portal
  - Provide new tools/models for urban stream/river restoration application
- **Enhance Resilience and Reliability of Coastal Ecosystem Restoration (\$755K)**
  - Provide a modeling suite for restoration of coastal wetlands with beneficial use of dredged material
  - Provide new tools for engineering with nature based on field evaluations
  - Provide guidance related to dredged material placement processes and effects in wetlands
  - Participate in Field Research Facility experiment to assess sediment transport, ocean/coast/bay and ecosystem processes
- **Impact and Relationship of Species (Threatened, Endangered, and Invasive) on Ecosystem Restoration (\$300K)**
  - Develop an ecological model for ecosystem restoration and planning projects for critical species
  - Develop guidance for the use of navigation features to limit upriver movement of non-native species but facilitate movement of native species

## ACCOMPLISHMENTS FOR FY 2014:

- **Maximize Value of the Corps' Aquatic Ecosystem Restoration Program to the Nation Advance the Corps' capabilities to maximize beneficial socio-ecological outcomes of aquatic ecosystem restoration at regional and national level**
  - Provided analytical framework and technical guidelines to integrate ecosystem goods and services in corps project planning
  - Initiated model certification plan for 3 ecological models
  - Provided enhanced features to ecosystem functions model (EFM)
- **Ensure Ecological Integrity and Sustainability of Aquatic Ecosystem Restoration Projects.** Develop new science and engineering tools to substantially improve and apply hydro-geomorphic and biotic components of ecosystem restoration projects and to promote ecosystem integrity and sustainability of Corps ecosystem restoration projects.
  - Provided a decision framework for trading off environmental flow objectives
  - Provided fish passage connectivity tool and users guide
  - Initiated development of riparian vegetation simulation model (RVSM)

- **Improve Capabilities to Design and Implement Aquatic Ecosystem Restoration in Urban Settings.** Develop ecological engineering tools and capabilities to maximize restoration benefits, including multi-purpose benefits, in urban settings
  - Developed and field tested beta tools for successful and sustainable urban stream and other aquatic ecosystem restoration projects
  - Developed numerical and geospatial tools/models for urban stream restoration
  - Developed protocols for monitoring and adaptive management of urban restoration projects
  
- **Enhance Resilience and Reliability of Coastal Ecosystem Restoration.** Developed tools, guidelines, and capabilities to incorporate risk and uncertainties associated with climate change and sea level rise on coastal ecosystem restoration and multi-purpose projects that include restoration and coastal flood damage reduction.
  - Provided capability to characterize and evaluate coastal wetland response to alternative sediment and nutrient flux, climate change and sea level rise
  - Developed measures for estimating and promoting mineralogical sediment processes in coastal wetland environments
  - Provided tools that support efficient planning and engineering practices, promote beneficial uses of dredged materials, and contribute to more sustainable coastal projects
  
- **Impact and Relationship of Species (Threatened, Endangered, and Invasive) on Ecosystem Restoration** Advance the Corps' capabilities to detect, monitor, and evaluate key species that significantly influence restoration activities.
  - Developed conceptual models for critical species modeling
  - Initiated the development of a spatially explicit / index-based approach for critical species modeling
  - Developed management capabilities to reduce impact of invasive species on restoration activities

	Allocation in FY 2014	Budgeted Amount in FY 2015
National Flood Risk Management Program (CONTINUING)	\$5,000,000	\$5,000,000 1/

SCOPE: The Nation faces a growing flood risk crisis with extensive existing development and new development locating in flood prone areas, often behind aging levee systems not intended to protect large populations. Furthermore, through ongoing updates to Federal flood insurance rate maps and the development of the National Levee Database, many communities are learning that they are situated behind inadequately maintained levees no longer providing the levels of flood risk reduction for which they were designed. Confronted with both immediate and future risks to human safety, public infrastructure and private investments, states and communities are seeking and expecting Federal assistance to manage their flood risks. The National Flood Risk Management Program (NFRMP), supported by this line item, makes the most of existing Federal agency programs and funding to assist states and communities in identifying and addressing flood risks by leveraging agency resources, identifying opportunities to jointly implement complementary programs, sharing data and knowledge, and eliminating duplicative or conflicting activities or policies. The NFRMP also supports these same types of coordination activities between Federal agencies and non-Federal flood risk management agencies in order to ensure that federally funded mitigation activities are coordinated with and complement State and local programs and policies that affect flood risks through their influence on land use choices and adoption of flood risk mitigation measures.

JUSTIFICATION: Nationwide, States and communities urgently seek Federal assistance in addressing a growing flood risk crisis. Extensive existing development and newly developing areas are located in flood prone areas, many behind aging levee systems not intended to protect large populations. Furthermore, through ongoing updates to Federal flood insurance rate maps and the development of the National Levee Database, many communities are learning that they are situated behind inadequately maintained levees no longer providing the levels of flood risk reduction for which they were designed. At a time of historic demands on Federal resources, USACE, Federal Emergency Management Agency (FEMA) and other Federal agencies with a role in managing flood risks, recognize the need to pool their expertise and leverage their resources to more cost-effectively assist states and communities in developing near-term interim risk reduction measures. Such efforts are also yielding long term Federal cost savings as Federal and non-Federal agencies coordinate programs to establish a foundation for future state and local capability to implement long term flood risk management strategies that will ultimately reduce reliance on Federally funded disaster assistance and investments in new, large scale flood control works. Through the National Flood Risk Management Program (NFRMP), Federal and non-Federal partners have already experienced several successes cooperatively developing flood risk mitigation solutions by leveraging agency resources, identifying opportunities to jointly implement complementary programs, sharing data and knowledge, and eliminating duplicative or conflicting activities or policies. These accomplishments are described below.

PROPOSED ACTIVITIES FOR FY 2015: The NFRMP establishes partnerships at the Federal, regional, and state levels through which regular and sustained coordination occur. Fiscal Year 2015 funding and beyond will build on these successful collaborative partnership efforts to reach communities nationwide. Specifically, the range of continuing activities involved in this effort includes

- At the national level, sustaining the work of the Federal Interagency Floodplain Management Task Force (FIFM-TF). The FIFM-TF, co-chaired by USACE and FEMA, is a national level task force of agency representatives from Federal agencies with major water resource programs. The task force is responsible for updating and maintaining a Unified National Program for Floodplain Management; coordinating Federal agency policies for flood risk management; and identifying, developing, and recommending actions and policies by the Federal government necessary to reduce losses due to flooding and protect the safety of flood plain residents. Quarterly meetings of the FIFM-TF provide an opportunity for FEMA and USACE leadership to coordinate flood risk management programs, policies and activities with other federal agencies to improve federal program implementation for the flood risk management community. In between

the quarterly meetings the FIFM-TF Working Group composed of senior staff from the member agencies implements the FIFM-TF Work Plan activities. At the regional level, sustaining the activities of the existing Upper Mississippi Regional Flood Risk Management Team and the ongoing flood risk management regional intergovernmental partnerships in the West and Northwest regions to address ongoing flood risk management activities to assess and implement system improvements and environmental and cultural concerns in a sustainable way. USACE-led Regional Flood Risk Management teams provide a venue for interagency and intergovernmental coordination at the regional level to manage flood risks by integrating pre-flood mitigation with a long-term strategy to plan and implement pre- and post-flood emergency actions, while developing promising nonstructural alternatives and other flood risk mitigation actions.

- At the state level, providing direction and oversight to the Silver Jackets program to support existing and establish new intergovernmental teams in each state in order to leverage and coordinate federal and state programs to address state flood risk management and hazard mitigation priorities. Silver Jackets teams bring together Federal agency representatives at the state level to develop and implement solutions to state flood risk management priorities by assisting state agencies and local communities in leveraging information and resources, improving public risk communication, and creating a mechanism to collaboratively solve flood risk management issues and implement initiatives at the State and local levels.
- Developing and initiating a management framework to improve internal communication between USACE's HQ and Districts and FEMA's HQ and Regions on flood risk management policy, practices and guidance.
- Developing tools and methods for communicating flood risk and encouraging public involvement in flood risk management planning.

Priorities across the multiple activities included in this scope will be set by the USACE Senior Executive National Flood Risk Management Program Steering Committee and FEMA. Input from key stakeholder groups, such as the Association of State Floodplain Managers (ASFPM), the National Association of Flood and Storm Water Management Agencies (NAFSMA), and the Association of State Dam Safety Officials (ASDSO) will be taken into consideration when setting these priorities.

#### ACCOMPLISHMENTS IN PRIOR YEARS:

- Cooperating with FEMA, other Federal agencies, and states to start up a Silver Jackets program, with intergovernmental teams initiated in 39 states and ongoing development of an additional 11 teams. By establishing state level teams including representatives of multiple Federal and State agencies, the Silver Jackets program has created the opportunity for optimized delivery of Federal flood plain management and mitigation services through leveraging information and resources, resulting in increased and improved public risk communication, and combined efforts to address flood risk management challenges in States and communities. Specific interagency examples include data sharing across agencies to support mapping studies, combined and coordinated use of models, gage data and databases housed in different agencies to create a flood inundation model allowing for more effective flood response and mitigation, synthesis of existing studies and knowledge from different agencies to develop a comprehensive flood risk mitigation plan for a community without requiring any new study effort, and community recovery through short and long term mitigation strategies focused on nonstructural approaches and planning assistance.
- Established a permanent, standing Upper Mississippi Regional Flood Risk Management Team (RFRMT) to facilitate interagency coordination at the regional level to integrate long-term flood risk mitigation planning with pre- and post-flood emergency actions. The team has focused, in particular, on identifying nonstructural alternatives to reduce flood risk with the region. Examples of team successes include the elevating or removal of USACE lease cabins incurring repetitive losses and claims on the National Flood Insurance Program and the development of a non-structural alternative to a proposed structural repair by combining the use of different agency programs.
- Established the Mississippi River and Missouri River Interagency Flood Recovery Task Forces to facilitate interagency coordination at the watershed levels on the Mississippi and Missouri Rivers during the recovery and repair of flood damage reduction systems resulting from the FY2011 historic flooding in these watersheds.
- Co-leading the Federal Interagency Floodplain Management Task Force (FIFM-TF) to provide a forum for Federal coordination of agency programs and policies for flood risk management and develop a common approach among Federal agencies when implementing water resource authorities and

- programs, and to harmonize communication messages and strategies.
- Improved coordination of the USACE nation-wide levee inventory and assessments, improvements to the USACE levee inspection program, USACE emergency response policies, and USACE levee certification policies with FEMA's levee accreditation policies and nationwide RiskMAP program implementation.
- Convened policy discussion forums involving experts in flood risk management from the private sector as well as Federal and non-Federal agencies and leading in the development of new policy and guidance to address institutional, policy and planning barriers to effective flood risk management.
- Initiated work to improve flood risk communication and ensure public involvement in flood risk management planning, working in coordination with Federal and non-Federal flood risk management partners.
- Working with communities to identify options to remediate deficient levees or otherwise address the resulting public safety hazards in a comprehensive flood risk management planning context.
- Participating in the development of a levee risk screening methodology and tool to conduct risk screenings on levees in the Corps levee safety program. Additionally, developed a Life Safety Hazard Index screening tool to assist in identifying and prioritizing planning studies that provide risk reduction to areas with high life loss flood risks.
- As requested by the Administration, acted as lead federal agency in developing a report to present the results of an intensive Federal interagency effort initiated to assess the status of the efforts of each major Federal agency actively addressing the flooding in the area of Devils Lake, North Dakota and options for additional near-term actions within existing authorities.
- Completed the "Improving the Corps of Engineers' Contribution to Flood Risk Management" report that presents preliminary policy and program recommendations that would allow the U.S. Army Corps of Engineers to be more effective in sharing responsibility with other federal agencies, non-federal governments, and stakeholders in the management of flood risk.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$ 0. This amount will be used to perform work on the study as follows: N/A

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

	Allocation in FY 2014	Budgeted Amount in FY 2015
National Shoreline (CONTINUING)	\$925,000	\$400,000 <u>1/</u>

AUTHORIZATION: The basic study was authorized by Section 215 of Water Resources Development Act (WRDA) of 1999. Work on the regional changes to the coast was authorized in Section 816 of WRDA 1986.

SCOPE: The study is an interagency effort to describe the extent and cause of shoreline erosion and accretion on all the coasts of the United States and describe the regional economic and environmental impacts of that erosion and accretion. The study will analyze and recommend the appropriate level of Federal and non-Federal participation in shore protection and beach nourishment, and the advisability of using a systems approach to sediment management for linking the management of all (shore protection, navigation channel dredging, and environmental restoration and preservation) projects in the coastal zone so as to conserve and efficiently manage the effects of erosion. The basic study was authorized by Section 215 of WRDA 1999. Work on the regional changes to the coast were authorized in Section 816 of WRDA 1986.

PROPOSED ACTIVITIES FOR FY 2015: FY 2015 funding would continue work on this study. The Fiscal Year 2015 efforts would include:

1. \$200,000 for working on Great Lakes Assessment and starting another assessment to be determined.
2. \$100,000 for Coastal Systems Portfolio Initiative. Develop a 5 year program for Hawaii and Great Lakes and South Atlantic Division.
3. \$100,000 for the Rising Oceans and Changing Coasts. Further develop strategy in California and Hawaii.

ACCOMPLISHMENTS IN PRIOR YEARS: The study was initiated with FY2002 funding. Accomplishments in prior years include:

- 1) The detailed assessment of the Hawaii Region will be completed and reviewed by the Corps and many stakeholders during FY 2014 and the finalized version will be published in FY 2015.
- 2) The study continued to support Corps participation in the systematic approach to sediment management reflected in the Corps Regional Sediment Management (RSM) process, regional coastal coalitions from which coastal policies are evolving and emerging, and Corps studies and participation in US Geological Survey (USGS) and National Oceanic and Atmospheric Administration (NOAA) studies describing the state of the Nation's shores, describing systematic movement of sand along the Gulf Coast, and incorporated of the shoreline metadata into the National Coastal Databank. This effort is focused on Hawaii and the Great Lakes.
- 3) The quick overview assessment of the eight regions was completed in FY 2012, with a set of tentative conclusions about the future of shore protection and sediment management, as a starting point for engaging the states and other Federal agencies in a new dialogue about coastal protection and systems approaches. FY 2014 included engagement on coastal management challenges with broader regional interests.
- 4) A complete Technical Review of Coastal Projects: Shore Protection, Navigation, and Ecosystem Restoration for all coastal districts was updated in 2014, and made available for District use in developing their coastal budgets.
- 5) Working closely with USGS and NOAA, the study continued developing detailed Regional Assessments of the Alaska and South Atlantic shorelines.
- 6) The Rising Oceans and Changing Coasts initiative began in 2012 with a review of how the Pacific Ocean is changing and during 2013, the Corps, NOAA, USGS, and Federal Emergency Management Agency (FEMA) continued to work with Hawaii and California to develop appropriate strategies for adapting on a regional scale, given the realistic prospects for coastal change. In 2014, the Corps, NOAA, USGS, FEMA, and State of California focused on a resilience strategy for San Francisco Bay and the Southern California coast. Strategies were also developed for the Pacific Northwest and Alaska.



APPROPRIATION TITLE: Investigations, Fiscal Year 2015

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$ 0. This amount will be used to perform work on the study as follows: N/A

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

Total Estimated Annual Cost	Allocation in FY14	Budgeted Amount in FY15
\$4,000,000	\$4,900,000	\$3,100,000 <u>1/</u>

Planning Support Program (PSP)

SCOPE: The U.S. Army Corps of Engineers Civil Works Program requires a strong planning program to address the full range of complex water resource problems within its mission responsibilities and to better serve the Nation now and in the future. The Planning Support Program (PSP) was established in FY08. This program integrates various initiatives in response to Section 216 recommendations, Corps reform initiatives, and the Corps' Campaign Plan. The program has retained its priority but has received only limited funding (from various sources). The PSP strengthens the capabilities of the Planning Community of Practice (PCoP) to deliver approvable decision documents to Congress in response to identified water resource priorities. The PSP is a vital link to developing the world-class public engineering organization and technical leadership envisioned for the Corps in its Campaign Plan and the Civil Works Strategic Plan.

Congress recognized the need to maintain a strong planning program when it stated in the Water Resources Development Act (WRDA) of 1986 (P.L. 99-662, Sec. 936): "The Secretary shall study and evaluate the measures necessary to increase the capabilities of the United States Army Corps of Engineers to undertake the planning and construction of water resources projects on an expedited basis and to adequately comply with all requirements of law applicable to the water resources program of the Corps of Engineers."

In WRDA 2000, Section 216, Congress asked the National Academies to review Corps' planning and project review practices. In its recommendations, the National Research Council (NRC), parent organization of the National Academies, recognized the many challenges and water resource planning and management controversies facing the Corps. The NRC recommendations are shaping the Corps today and the PSP is critical to moving the Corps and the PCoP forward in response to those recommendations.

WRDA 2007, Section 2033(e) allowed establishment of Centers of Specialized Planning Expertise within the Corps that would provide technical and managerial assistance for project planning, development, and implementation; peer reviews of new major methods, models, or analyses used infeasibility studies; and support independent peer review panels. Section 2033(e) authorization endorsed and accentuated the importance of the six national Planning Centers of Expertise (PCX) established by the Director of Civil Works in August 2003. With the added emphasis of the WRDA, each of the PCXs has a key role in maintaining and strengthening the core competencies of the PCoP.

The ASA(CW) sent a memorandum to the DCG CEO on February 24, 2009 counseling about the considerable variation in the quality of decision documents, feasibility reports and Chief's reports resulting from inconsistent understanding of basic planning and policy among MSC and RIT

HQ

Planning Support Program

members. The ASA(CW) was clear that technical and process consistency must be restored. The ASA(CW)'s views continued support to Corps' planning and policy training and to leadership development "as key commitments that pay valuable dividends", specifically citing the Planning Associates Program as an example. PCXs are also crucial resources for providing technical and process consistency.

JUSTIFICATION: The PSP has four major components—People, Process, Program and Projects—that together provide necessary support to improve the long term capabilities of the PCoP. Two of these components are described below with their estimated funding requirements.

1. Planner Capability and Training. The PCoP is a hub of learning for its practitioners who are now no longer limited by geography. The expertise of the community is bound in its members who share best planning practices, test innovative solutions, and coach and mentor as a Learning Organization. Development of a capable workforce to execute the mission today and in the future is a top priority of the PCoP leadership.

The Planning Associates (PA) Program is an advanced training program for journeyman level water resource planners in the Corps. The program has a long history, but was reinvented in 2003 to include 20 instructional units held at various locations and extending over 1-3 week increments for 11 months. The goals of the program are to broaden the planners' competencies in solving complex water resources problems; to strengthen their leadership skills; and to retain critical planner capability as they progress toward expert planner. Since 2003, 85 planners have completed this rigorous training and 12 more are enrolled in current class. An amount of \$2,100,000 will centrally fund a class of up to 12 students and support instructor and other field related expenses necessary to deliver this demanding and rigorous program.

2. In August 2003, the Director of Civil Works designated six national PCXs to enhance Corps planning capability for inland navigation, deep draft navigation, ecosystem restoration, coastal and storm damage reduction, flood damage reduction, and water management and reallocation. The Centers have key roles in maintaining and strengthening the core competencies of the PCoP; providing technical assistance, conducting or managing peer review; transferring the latest technology or methodologies and sharing lessons learned and best practices throughout the planning community. The Centers focus planning expertise to improve product quality and corporate accountability and will also be instrumental in implementation of new approaches or methods resulting from the Corps' Campaign Plan. The PCXs are essential to preparation of the Water Resource Priorities Report directed by Section 2032 of WRDA 2007. Fully functional PCXs are indispensable resources in developing planning process improvements; establishing feasibility study benchmarks; and, modifying regulations for calculation of benefits and costs for flood damage reduction projects, and formulation and evaluation of alternatives as required by Section 2033(b), (c), (d) and (f). In a memorandum to the DCG CEO dated March 12, 2009, the ASA(CW) reemphasized how critical the PCXs are to the Corps' planning capability and to the success of the independent peer review described in Section 2034 of WRDA 2007. The ASA(CW) also noted the PCXs have been severely limited as they have struggled with insufficient resources since their inception and stated that each PCX needed a full time staff and a funding level of \$3,500,000 for FY 2011. The DCG CEO reemphasized his support of the PCXs in a memorandum to the MSC Commanders dated April 30, 2010, stating "Effective PCX's are a key factor in the efficient execution of our long term CW requirements!" These funds are critical to the maturation and progress of the PCXs, which have been slowed by prior years of inadequate funding. An amount of \$1,000,000 will centrally fund the PCXs key

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Planning Support Program

roles of maintaining and strengthening the core competencies of the PCoP; providing technical assistance, conducting or managing peer review; transferring the latest technology or methodologies and sharing lessons learned and best practices throughout the planning community.

#### PROPOSED ACTIVITIES FOR FY 2015:

The funds requested for FY 2015 will be used to support the Planning Associates Program and enable the National PCXs to fulfill their key roles. Future success of the Planning Support Program including the PCXs and other purposes requires a sustained and reliable source of funds. Funds will also support the Planning Portfolio Management aligning resources with the most viable studies with the greatest benefit to the nation.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY15\_ from prior appropriations for use on this effort is \$\_0. This amount will be used to perform work on the study as follows: N/A.

APPROPRIATION TITLE: Investigations, FY 2015

Total Est. Federal Cost FY2005-FY2012 \$11,657,000	Allocation in FY 2013 \$698,400	Allocation in FY 2014 \$1,000,000	Budgeted Amt. for FY 2015 \$1,500,000 <sup>1</sup>
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Study Name: Tribal Partnership Program (Sec. 203, WRDA 2000; Sec. 2011, WRDA 2007); this is a continuing nationwide program.

AUTHORIZATION: Section 203 of WRDA 2000, reauthorized in Section 2011 of WRDA 2007, authorizes the study of flood damage reduction, environmental restoration, the preservation of cultural and natural resources, water-related planning activities, watershed assessments, and “such other projects as the Secretary, in cooperation with Indian Tribes and the heads of other Federal agencies, determines to be appropriate.” Projects follow the standard Civil Works planning process – a reconnaissance report, fully federally funded, and a feasibility report, cost shared 50/50 with in-kind contributions allowed. The WRDA 2007 version added watershed studies that are cost shared 75/25. Separate authorization and appropriations are required from Congress for a project to proceed to PED and construction. The authorization applies to all federally recognized Indian Tribes, including those in the State of Oklahoma and Alaska Native villages. Note: in FY 07 and before, funds were in the Construction account. Beginning in FY08, funding has been through the Investigations account.

JUSTIFICATION: Section 203 was enacted to provide the Corps opportunities to partner with federally recognized Tribes. It is the only authority reserved expressly for federally recognized Tribes, nationwide. As such, it partially fulfills USACE’s Trust responsibility to Tribes. The Trust responsibility establishes that the federal government has a legal relationship with Tribal Nations, as first put forth in the US Constitution, Articles I and VI. Priorities for allocation of Section 203 funds are: 1) continuation and completion of ongoing studies and termination of negative studies where appropriate; 2) initiation of studies requested by Tribes; 3) engagement of additional Corps Districts with Tribal governments to build strategic partnerships. Priorities for 203 ensure that a range of studies throughout the Nation are funded. Because the scope of the authority is so broad, various studies may be considered – floodplain mapping, water control management, self-reliance and economic capacity building, technical capacity building, erosion control, cultural resources, comprehensive planning, emergency management, water quality, water supply, community infrastructure, hazardous and toxic waste assessment and clean up, and a host of other projects. With the growing awareness of the program, an increasing number of Tribes have begun to approach the Corps to participate in these studies. Importantly, 203 is a first step to familiarize Tribes with USACE. Its success leads to the use of other authorities and more complex projects. Currently, 35 Tribes are participating in the program.

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<sup>1</sup> Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2015 is 0. Description of work to be completed: N/A.

PROPOSED ACTIVITIES FOR FY 2015: The following activities will be undertaken with the budgeted amount of \$1,500,000:

Los Angeles District will continue feasibility studies with the Torres-Martinez Desert Cahuilla Indians (CA), and the Augustine Band of Cahuilla Indians (CA). It will also complete reconnaissance studies for the Tohono O'odham Nation (AZ), Hopi Polacca Wash (AZ), and the Gila River Indian Community (AZ). Albuquerque District will continue feasibility studies with the Pueblos of Santa Clara, San Felipe, Acoma and Santa Ana (all NM) and if funding available, begin reconnaissance studies with the Picuris and Navajo Nations. New England District will implement a Watershed Assessment Plan with the Houlton Band of Maliseets (ME); continue a reconnaissance study with both the Wampanoag Tribe of Gay Head (Aquinnah) (MA) and the Mashpee Wampanoag Tribe (MA); and begin a feasibility study with the Penobscot Tribe (ME). Detroit District will continue a reconnaissance study with the Forest County Potowatomie (WI). If there is enough funding, Seattle District will begin reconnaissance studies with the Quinault Tribe (WA), Kootenai Tribe (ID), Coeur d'Alene Tribe (ID), and Stillamaguamish Tribe (WA). Omaha District will begin a reconnaissance study with the Crow Tribe (MT) and the Prairie Band Pottawatomie. NWK will continue a reconnaissance study with the Kickapoo. NWW would initiate a reconnaissance study with the Shoshone-Paiute Tribes of Duck Valley Indian Reservation and move into feasibility study for the Nez Perce Tribe.

ACCOMPLISHMENTS IN PRIOR YEARS: Early in its enactment, the majority of Section 203 funds went to Alaska to study the feasibility of moving coastal villages inland. The program was budgeted at a consistently high level (\$4,000,000 to \$2,400,000) through FY 2007 to accommodate Alaskan concerns. Villages with the greatest need included (and still include) Newtok, Shishmaref, Kaktovik, Kivalina and Unalakleet. A major coastal erosion study and technical assistance to several Alaskan Villages were also funded in part by Sec. 203 monies. In FY 2007, the program was also targeted by other Districts and special legislation was included for specific Tribes in New Mexico and Idaho. The funding level dropped to \$1,000,000 in FY 2008, and has never regained its former level of funding. In FY 2013, only \$500,000 was budgeted, but the following activities were completed: LRE completed reconnaissance studies for the Stockbridge Munsee Indian Community (WI) and the Nottawaseppi Band of Huron Potowatomie Indians (MI). Kansas City District finished a reconnaissance study with the Kickapoo Tribe (KS), and Walla Walla District began a reconnaissance study with the Nez Perce Tribe (ID). Two FCSAs were completed by the Los Angeles District with the Torres-Martinez Desert Cahuilla Indians (CA) and the Augustine Band of Cahuilla Indians (CA). Albuquerque District signed WACSAs with the Pueblos of San Felipe, Acoma and Santa Ana (all NM). The first WACSA was signed in FY11, between Albuquerque and the Pueblo of Santa Clara (NM).

Other Districts that have utilized Section 203 funding include Sacramento, Omaha, and Buffalo. Reconnaissance reports on various topics were prepared by the Corps for the Penobscot Tribe (ME), Little River Band of Ottawa Indians (MI), Bad River Band of Chippewa (WI), Cheyenne River Sioux Tribe (SD), Lower Brule Sioux Tribe (SD), St. Regis Mohawk Nation (NY), Seneca Nation of Indians/Cattaraugus Creek (NY), Tuscarora Nation (NY), Oneida Tribe of Indians of WI, Onondaga Nation (NY), Kickapoo Tribe (KS), Lower Brule Sioux Tribe (SD), Houlton Band of Maliseets Indians (ME), the Passamaquoddy Tribe (ME), the Fond du Lac Band of Lake Superior Chippewa (WI), Soboba Band of Luiseno Indians (CA), Havasupai Tribe (AZ), Tohono O'odham Nation (AZ), Hopi Tribe (AZ), Augustine Band of Cahuilla Indians (CA), Gila River Indian Community (AZ), and the Torres-Martinez Band of Cahuilla Indians (CA). Not all reconnaissance studies proceeded to feasibility studies.

In the past, the Albuquerque District received special legislation for reconnaissance studies with the Pueblos of Santa Ana, San Juan, San Ildefonso, Santa Clara, and Zuni, Jicarilla Apache Nation (NM), and the Sacramento District received specific legislation for studies of the Washoe Tribe of NV and CA, and the Shoshone-Bannock Tribes of ID. Many Tribes have stated that even if a project does not proceed to feasibility, the program is still valuable because the resulting report pulls together enough information to proceed should additional funding become available, or if the Tribe decides to move forward using other funds.

APPROPRIATION TITLE: Investigations, Fiscal Year 2015

	Allocation for FY 2014	Budgeted Amount for FY 2015
Water Resources Priorities Study (NEW)	\$0	\$500,000 <u>1/</u>

**AUTHORIZATION:** This investigation is authorized by Section 2032 of the Water Resources Development Act of 2007, which calls for an assessment of the Nation's vulnerability to flooding, and for recommendations for improving existing programs and strategies to better manage flood risks.

**SCOPE:** This investigation will develop a baseline assessment of the nation's flood risks at both a regional and national scale. Through an evaluation of the comparative flood risks across the nation, their key drivers, and their effects, this assessment will reduce costs and serve as a foundation for informed choices at the Federal, State, and local levels about existing programs, authorities, policies, roles, and activities. The investigation will be divided into two elements. The first element will focus on a technical analysis, which will provide background and a basis for the second element, which will result in the public policy recommendations of the report.

The technical section will examine the risks to human life and property from flooding faced in different regions of the United States. The technical analysis will start with a synthesis of existing work related to assessing national flood risk to ensure this effort fully utilizes and builds upon existing knowledge. The technical analysis will provide examples to explain why the risks are greater in some floodplains and some coastal locations than in others, why and how the risks may be changing over time. It will assess existing information on: (1) the number of people who live or work in places where they are potentially at risk; (2) the value of the property that is potentially at risk; and (3) actual flood-related losses (e.g., the frequency and magnitude of large losses, where such losses have been occurring, and the incidence of repetitive losses), in order to identify possible nationwide trends. It will evaluate the existing state of knowledge relating to the drivers of inland and coastal flood risks, including social, economic and climate conditions, as well as the loss of natural flood retention ecosystem services and the effects of changes in these drivers over time. It will also evaluate the uncertainties associated with our current understanding of the way that inland and coastal flood risks could change in the future, both at a regional and at a national scale. This section of the report will also explore the extent to which existing programs and strategies may be encouraging development or other forms of economic activity in flood-prone areas or may otherwise be contributing to flood risks, and their effects on the resiliency and natural functions of floodplains and coastal areas. It will address the full range of effects and tradeoffs associated with current approaches to provide a basis for considering how best to achieve flood risk management goals in concert with other societal objectives.

The second element of the investigation will focus on public policy. Drawing on the knowledge developed through the baseline assessment of national flood risks, it will assess the extent to which existing programs operate successfully (individually and together), and identifies where they may be working at cross-purposes. The report will look at not only programs of the Corps of Engineers, but at a broad array of Federal, state, and local programs and strategies, such as flood insurance, emergency response and recovery, disaster assistance, environmental, land management, and economic development programs and related activities.

This part of the report will include an exploration of the respective and appropriate roles of Federal, state, and local programs, and of their ability to work together. Its purpose is to develop a basis for identifying better ways to approach flood risk management priorities, including ways to reduce costs by improving the effectiveness, efficiency, and accountability of existing programs and strategies. Finally, the report will include specific recommendations and propose a strategy to implement them.

**JUSTIFICATION:** This investigation addresses the critical need for a baseline assessment of the nation's flood risks at both a national and regional scale, as well as an analysis of the effects of the existing portfolio of programs, authorities, policies, roles, and activities. A large body of evidence suggests the nation is facing

growing flood risks. There is currently a lack of adequate information at a national and regional scale about the magnitude and source of those risks, as well as the effectiveness, efficiency, accountability, and impacts of existing programs and strategies. This investigation addresses the critical need for an analytically sound assessment of existing programs, which will provide a basis for significant recommendations on ways to better manage flood risks at the national, regional, state, and local levels. It will provide an understanding of the key drivers and magnitude of flood risks, as well as the net effect that the existing portfolio of Federal and non-Federal programs and policies has on those flood risks. Specifically, this study will provide a baseline assessment of the nation's vulnerability to flooding from a national and regional perspective and identify key drivers of flood risks, including those drivers expected to change over time. Additionally, this study will assess the combined effects of the existing portfolio of Federal and non-Federal programs and policies on choices that impact flood risk, including the choice to develop in flood-prone areas. This knowledge will provide a foundation for recommending improvements to existing programs, authorities, policies, and roles to better manage flood risks in coordination with states and localities.

PROPOSED ACTIVITIES FOR FY 2015:

- Initiate work to assemble and synthesize the existing body of knowledge relating to the assessment of national flood risks and related policies and programs. This entails an inventory of all federal agency work relating to mapping and characterizing flood risks. The inventory and resulting report will identify whether and how existing efforts might be built upon to accomplish the objectives of this study and will provide the basis for developing scopes of work and methodological approaches for both elements of the effort. Additionally, the report will provide a basis for comparing and contrasting efforts, looking for opportunities to combine knowledge, and identifying commonly shared data limitations that could inform data development priorities.
- Assemble an interagency working group to acquire input on direction of the study on an ongoing basis to ensure full utilization of the knowledge and technical expertise each agency can offer.

ACCOMPLISHMENTS IN FY 2014: 2/

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the study as follows: N/A.

2/ No funds were allocated in FY14.



# Remaining Items – Construction

APPROPRIATION TITLE: Construction, FY 2015

Environmental Projects

**Aquatic Ecosystem Restoration (CAP Section 206)**

SUMMARIZED FINANCIAL DATA:

Allocation for FY 2014 <sup>2/</sup>	\$8,000,000
Allocation Requested for FY 2015	\$3,000,000

GENERAL: Section 206 of the Water Resources Development Act of 1996 (PL 104-303), as amended, authorizes up to \$50,000,000 annually to carry out aquatic ecosystem restoration projects that will improve the quality of the environment, are in the public interest and are cost-effective. Non-Federal interests shall provide 35 percent of the cost of construction including provision of all lands, easements, rights-of-way, and necessary relocations. Non-Federal interests pay 100 percent of the cost of operation, maintenance, replacement and rehabilitation. Not more than \$5,000,000 in Federal funds may be allocated to a project at a single locality.

PROPOSED ACTIVITIES FOR FY 2015: The Budget proposes that funds be allocated based on CAP policies and procedures.

2/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this project effort is \$0.

APPROPRIATION TITLE: Construction, FY 2015

Environmental Projects

**Beneficial Uses of Dredged Material (CAP Section 204)**

SUMMARIZED FINANCIAL DATA:

Allocation for FY 2014 2/	\$7,000,000
Allocation Requested for FY 2015	\$2,000,000

AUTHORIZATION: Section 204 of the Water Resources Development Act (WRDA) of 1992 Public Law (PL) 102-580, Section 207 of PL 102-580, and Section 145 of WRDA of 1976 (PL 94-587), as amended by Section 933 of PL 99-662, Section 35 of PL 100-676, Section 207 of PL 102-580, Section 217 of PL 106-53, and Section 111 of PL 106-541.

PROPOSED ACTIVITIES FOR FY 2015: The Budget proposes that funds be allocated based on CAP policies and procedures.

2/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this project effort is \$0.

APPROPRIATION TITLE: Construction, FY 2015

Flood Risk Management Projects

**Flood Control (CAP Section 205)**

Allocation for FY 2014 2/	\$15,000,000
Allocation Requested for FY 2015	\$ 2,000,000

GENERAL: Section 205 of the Flood Control Act of 1948 (PL 80-858), as amended, authorizes up to \$55,000,000 annually for construction of flood control projects where such construction is not already specifically authorized by Congress. Projects, which can include structural and/or nonstructural measures, are designed to provide the same complete project and same degree of protection provided under regular authorization procedures. Each project selected must be economically justified and complete within itself. Federal cost participation is limited to \$7,000,000 per project at a single locality.

PROPOSED ACTIVITIES FOR FY 2015: The Budget proposes that funds be allocated based on CAP policies and procedures.

2/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this project effort is \$0.

APPROPRIATION TITLE: Construction, FY 2015

Environmental Projects

**Project Modifications for Improvement of the Environment (CAP Section 1135)**

Allocation for FY 2014 2/	\$10,500,000
Allocation Requested for FY 2015	\$ 3,000,000

GENERAL: Section 1135 of the Water Resources Development Act of 1986 (PL 99-662), as amended authorizes review of Corps water resources projects to determine the need for structural or operational modifications for the purpose of improving the quality of the environment in the public interest; to determine if the operation of such projects has contributed to the degradation of the quality of the environment; and to carry out a program of such modifications that are feasible and consistent with authorized project purposes. Up to \$40,000,000 may be appropriated annually. The non-Federal share of the cost of any modifications will be 25 percent. Not more than \$5,000,000 in Federal funds may be expended on any single modification or measure pursuant to Section 1135.

PROPOSED ACTIVITIES FOR FY 2015: The Budget proposes that funds be allocated based on CAP policies and procedures.

2/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this project effort is \$0.

APPROPRIATION TITLE: Construction – Flood Risk Management – Remaining Item

PROJECT: Dam Safety and Seepage/Stability Correction Program (Continuing)

LOCATION: The Dam Safety and Seepage/Stability Correction Program provides for studies and modification of completed Corps of Engineers dams. The studies are located in various states (except Hawaii and Maine).

DESCRIPTION: There are 707 dams under the Corps jurisdiction. While no Corps dams are in imminent danger of failure, some have been identified as having a higher risk of a dam safety incident than originally anticipated based on new data, including the likelihood of extremely large floods and seismic events. The Corps has implemented a Portfolio Risk Analysis program and has completed screening 100% of the Corps dams. The dam safety studies funded under the Dam Safety and Seepage/Stability Correction Program help us evaluate the dams in a portfolio prioritization approach, where we confirm the risk characterization and the next appropriate risk reduction measures. Dam modification work is proceeding under existing authorities on projects where cost effective risk reduction measures have been identified in accordance with risk informed guidelines and national priorities.

AUTHORIZATION: Water Resources Development Act of 1986; Dam Safety Act of 2006; Executive Order of the President; and the Federal Guideline for Dam Safety

SUMMARIZED FINANCIAL DATA:

	Program Total	<u>1/</u>
Allocation for FY 2012	\$ 37,155,000	
Allocation for FY 2013	\$ 89,600,000	<u>2/</u>
Allocation for FY 2014	\$ 45,000,000	
Estimated Carry-In Funds	\$ 0	<u>3/</u>
President's Budget for FY 2015	\$ 34,000,000	

1/ The project is an annual program (data is not accumulative)

2/ Program Total includes \$15.8 M for projects slated to be line items but that did not receive CG appropriations due to year-long FY13 CRA and a one-time \$23.8 M for hydrologic studies of river basins to support studies of high risk (DSAC I & II) Dams. There was no net increase to the civil works budget as a result of these additional allocations.

3/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this project effort is \$0. This amount will be used to perform work on the project as follows: N/A

PHYSICAL DATA: The Corps of Engineers has a portfolio of 707 dams located in 48 of the states and Puerto Rico. Each dam has a Dam Safety Action Classification (DSAC) based on a risk assessment. The Dam Safety Seepage/Stability Correction Program supports Issue Evaluation Studies (IES), Dam Safety Modification Studies (DSMS), and Pre-construction Engineering and Design (PED) for the highest risk dams in the USACE national portfolio.

JUSTIFICATION: The Federal Guidelines for Dam Safety (FEMA 93) issued by Executive Order of President Carter require each Federal agency with responsibility for the operations and maintenance of dams to have a dam safety program to include dam safety modification. Dam Safety ensures the integrity and viability of dams such that they do not present unacceptable risks to the public, property, and the environment. It requires the collective application of engineering principles and experience, and a philosophy of risk management that recognizes that a dam is a structure whose safe functioning is not explicitly determined by its original design and construction. The purpose of a dam safety program is to protect life, property, lifelines, and the environment, by ensuring that all dams are designed, constructed, regulated, operated, and maintained as safely and effectively as is reasonably practicable. There are 707 dams under the Corps jurisdiction. The Corps implemented a Portfolio Risk Analysis program and has completed screening 100% of the Corps dams. While no Corps dams are in imminent danger of failure, some have been identified as having a higher risk of a dam safety incident than originally anticipated based on new data, inherent flaws and defects that manifest over time, and the potential adverse affects that could occur from extreme flood or seismic loads that have not been previously experienced. The Dam Safety and Seepage/Stability Correction Program provides for evaluation of completed Corps of Engineers dams that are characterized with having a high or very high risk of a dam-safety incident. (DSAC I, II, and III). Dam Safety Issue Evaluation Studies (IES) are conducted to further evaluate high risk dams identified from the Portfolio Risk Analysis program and make risk informed decisions on the need for modification or reclassification, evaluate the risks of dam safety incidents that manifest over time or exhibit unsatisfactory performance during high pools or seismic events. Dam Safety Modification Studies (DSMS) are conducted to investigate dam safety deficiencies that could result in loss of life, formulate the most economical alternatives that reduce risk to tolerable levels, and result in Dam Safety Modification Reports (decision documents) for construction authorization. Pre-construction Engineering & Design (PED) activities are performed to advance final design and construction until funding appropriations are received. Dam modification work is proceeding under existing authorities on projects where cost effective risk reduction measures have been identified in accordance with risk informed guidelines and national priorities.

FISCAL YEAR 2014: The allocation of \$45,000,000 will be applied as follows:

Dam Safety Studies	\$ 40,200,000
Pre-construction Engineering & Design	\$ 4,800,000
Total	\$ 45,000,000

FISCAL YEAR 2015: The budget amount of \$34,000,000 plus carry-in funds of \$0 will be applied as follows:

Dam Safety Studies & PED	\$ 34,000,000
Total	\$ 34,000,000

PROPOSED ACTIVITIES FOR FISCAL YEAR 2015: The President’s Budget request for Fiscal Year 2015 of \$34,000,000 is to be used for high priority studies on high risk dam safety assurance, seepage control, and static instability correction projects, once their decision documents are approved.

Dam Safety Studies and Pre-construction Engineering & Design: Budget request amount is \$34,000,000. The Corps Screening Portfolio Risk Analysis has identified 326 high risk dam safety projects for studies and evaluations. These dams are the highest priority projects where detailed studies have not been completed in prior years. A list of Dam Safety projects to be worked on in FY15 is provided below.

**Dam Safety Studies (IES, DSMS, PED)**

Allatoona Dam, GA  
 Arkport Dam, NY  
 Ball Mountain Dam, VT  
 Barkley Dam, KY  
 Bayou Bodcau Dam, LA  
 Beach City Dam, OH  
 Beach City Dam, Brewster Levee, OH  
 Big Creek Diversion Dam, IA  
 Black Butte Dam, CA  
 Black Rock Dam, CT  
 Blakely Mountain Dam, AR  
 Blue River Dam, OR  
 Bolivar Dam – Magnolia Levee, OH  
 Bonneville Dam, OR  
 Brea Dam, CA  
 Buckhorn Dam, KY  
 Canyon Lake, TX  
 Carbon Canyon Dam, CA  
 Cecil M Harden Lake Dam, IN  
 Cherry Creek Dam, CO  
 Clendening Dam, OH  
 Cottage Grove Dam, OR  
 Coyote Valley Dam, CA  
 Cougar Dam, OR  
 Cottage Grove Dam  
 Cumberland Dike, OK  
 Dale Hollow Dam, KY  
 Dalles L&D, OR  
 Delaware Dam, OH  
 Denison Dam, OK  
 Dexter Dam, OR  
 Dover Dam - Zoar Levee, OH

Dworshak Dam, ID  
 Edward MacDowell Dam, NH  
 Everett Dam, NH  
 Falls Lake Dam, NC  
 F.J. Sayers Dam / Howard Levee, PA  
 Franklin Falls Dam, NH  
 John Day L/D,, OR  
 John Martin Dam – Fort Lyon, CO  
 FWR Structure Site No. 47, MS  
 Gathright Dam, VA  
 Green Peter -Foster Dam, OR  
 Hansen Dam, CA  
 Hammond Dam, PA  
 Hidden Dam, CA  
 Hills Creek Dam, OR  
 J. Edward Roush Dam, IN  
 John Day Dam, OR  
 Keystone Dam, OK  
 Keystone Dam, Cleveland Levee, OK  
 Kinzua Dam, PA  
 Kopperl Levee, TX  
 Lake Shelbyville Dam, IL  
 Lopez Dam, CA  
 Lewisville Lake Dam, TX  
 Littleville Dam, MA  
 Lock & Dam 3, MN  
 Lock & Dam 25, MO  
 Lockport L/D, IL  
 Lookout Point, OR  
 Lucky Peak Dam, ID  
 Mansfield Hollow Dam, CT  
 Mansfield Levee, CT  
 Markle Levee, KY  
 Martis Creek Dam, CA

McNary Levees, OR  
 Mill Creek Diversion Dam, WA  
 Montgomery L/D, PA  
 Moose Creek Dam, AK  
 Oahe Dam, SD  
 Orwell Reservoir Dam, MN  
 Paint Creek Dam, OH  
 Patoka Lake Dam, IN  
 Pipestem Dam, ND  
 Prado Dam, Housing Dike, CA  
 Prado Dam, Treatment Dike, CA  
 Prompton Dam, PA  
 Robert S. Kerr Lock & Dam, OK  
 San Antonio Dam, CA  
 Santa Fe Dam, LACDA, CA  
 Santa Rosa Dam, NM  
 Saylorville Dam, Big Creek Str, IA  
 Sepulveda Dam, CA  
 Stillhouse-Hollow Dam, TX  
 Somerville Dam, WV  
 Soo Locks, MI  
 Sutton Dam, WV  
 Tappan Dam, OH  
 Terminus Dam, CA  
 Town Bluff Dam, TX  
 Trinidad Dam, CO  
 Union Village Dam, VT  
 Upper Appleton Dam, WI  
 Waterbury Dam, NY  
 West Fork Mill Creek, KY  
 West Point Dam, GA  
 Whitney Point, Dam, NY  
 Whittier Narrows Dam, LACDA, CA  
 Youghiogheny Dam, PA

NON-FEDERAL COST: The cost of Dam Safety Studies are 100% Federal Costs. The non-Federal cost for Pre-construction Engineering and Design activities varies and is identified and calculated in the decision documents prepared during the Dam Safety Modification Study in



accordance with either the Water Resources Development Act of 1986 as amended, or the Reclamation Safety of Dams Act (P.L. 98-404) as amended.

STATUS OF LOCAL COOPERATION: To be determined for each project during Pre-construction Engineering & Design activities from the decision documents prepared during the Dam Safety Modification Study.

COMPARISON OF FEDERAL COST ESTIMATES: N/A

STATUS OF ENVIRONMENTAL IMPACT STATEMENT: NEPA documentation will be or has been included in the various DSMR's.

OTHER INFORMATION: A Dam Safety Investment Plan (DSIP) has been developed for the correction of current deficiencies. The current estimated cost to bring all dams to tolerable risks levels is \$24,000,000,000 based on October 2012 price levels and a current investment rate of \$500M per year thru 2058. This estimate has been reduced by over \$1.8 billion since 2010 due to our risk informed management practices, the significant investments made over the last three years to our portfolio from authorized constructed modifications to our highest risk dams, and the increased understanding and risk assessment of our existing portfolio that has resulted from execution of the Dam Safety Seepage/Stability Correction Program.

APPROPRIATION TITLE: Construction – Fiscal Year 2015

**Employees Compensation (Payments to the Department of Labor)**

Budget Amount for FY 2014	\$19,000,000
Budget Amount for FY 2015	\$19,000,000

GENERAL: Public Law 94-273, approved April 21, 1976, 5 USC 8147b, provides that each agency shall include in its annual budget estimates a request for an appropriation equal to costs previously paid from the Employees Compensation Fund on account of injury or death of employees or persons under the agency's jurisdiction.

BUDGET REQUEST: The \$19,000,000 for Fiscal Year 2015 represents the total estimated cost of benefits and other payments made from the Employees Compensation Fund during the period July 1, 2012, through June 30, 2013, due to injury or death of persons under the jurisdiction of the Corps of Engineers civil functions and also includes \$1,200,000 for the investigation of fraudulent claims for workers' compensation benefits.

APPROPRIATION TITLE: Construction – Navigation – Remaining Item

PROJECT: Inland Waterways Users Board (CONTINUING)

LOCATION: National

DESCRIPTION: The Inland waterways Users Board (Board) is an advisory committee representing the interests of the commercial navigation users of the inland and intracoastal waterways of the United States. Its purpose is to make recommendations to the Secretary of the Army, reflecting its independent judgment, regarding construction and rehabilitation priorities and spending levels on commercial navigation features of these waterways.

AUTHORIZATION: The Board was established by Section 302 of the Water Resources Development Act of 1986, (PL 99-662) and pursuant to the Board's charter, approved by the Secretary of the Army on March 3, 1987. The Board is an advisory committee subject to the requirements of the Federal Advisory Committee Act (PL 92-463 as amended).

SUMMARIZED FINANCIAL DATA:

	Program Total	
Estimated Annual Cost	\$ 860,000	<u>1/</u>
Allocation in FY 2014	\$ 860,000	
Estimated Carry-In Funds	\$ 0	<u>2/</u>
President's Budget for FY 2015	\$ 860,000	

PHYSICAL DATA: N/A

JUSTIFICATION: The \$860,000 requested this Fiscal Year will be used as follows:

- (1) Funds in the amount of \$60,000 are requested to meet the estimated expenses of the eleven-member Board for its travel, meeting, and other needs to meet the requirements of the charter. Board member travel expenses have increased from prior years due to inflation, primarily for airfares.
- (2) Funds in the amount of \$800,000 are requested for Corps of Engineers activities related to its support of the work of the Board, including providing objective analyses related to potential investments in the inland waterways, and the financial outlook for the Inland Waterways Trust Fund. The Deputy Commanding General for Civil and Emergency Operations has been designated Executive Director to the Board, and he has designated staff members to provide continuing Board support. Corps expenses will include personnel costs for administrative Board meeting support, including staff travel, clerical, printing, and related materials; except for expenses incurred by Corps headquarters (other than travel by the Designated Federal Officer and Alternates) and the Office of the Assistant Secretary, which will be paid from the appropriations that fund those offices. Generally, issues regarding the Inland Waterways Trust Fund fall within the scope of the advisory role of the Board. The trust fund balance is depleted due to the low level of annual revenues. In September 2011, the President proposed changes to the laws governing the Inland Waterways Trust Fund, including a user fee that would supplement the revenue from the current inland waterways fuel tax.

ACCOMPLISHMENTS FOR FISCAL YEAR 2014: The FY 2014 appropriations included \$860,000 for these activities. FY 2014 activities included Corps personnel costs to coordinate, attend, and provide analytical support for three scheduled meetings of the Board pursuant to their charter. Support also included Board meeting logistics, including staff travel, clerical, printing, and related materials, as well as analyses conducted at the request of the Board.

FISCAL YEAR 2015: The budget amount of \$860,000 plus carry-in funds of \$0 will be applied as follows:

Board Member Meeting Support	\$ 60,000
Board Activities	\$800,000
Total	\$ 860,000

PROPOSED ACTIVITIES FOR FISCAL YEAR 2015: Proposed activities include Corps personnel costs to coordinate, attend, and provide analytical support for three meetings of the Board pursuant to their charter. Includes conducting analyses requested by the Board and updates to the evaluation of the financial outlook for the trust fund, related matters, and coordination with the Board and stakeholder groups.

NON-FEDERAL COST: N/A

COMPARISON OF FEDERAL COST ESTIMATES: N/A

1/ The project is an annual program (data are not cumulative)

2/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this project effort is \$0. This amount will be used to perform work on the project as follows: N/A

# Remaining Items – Operation & Maintenance

## O&M Justification Sheet

**PROJECT NAME:** IPET/HPDC Lessons Learned Implementation to Improve Operation and Maintenance

**AUTHORIZATION:** Various authorities including River and Harbors Act & Flood Control Act of 1948, Section 102 of the Rivers and Harbors Act of 1962, Section 216 of the River and Harbor and Flood Control Act of 1970, Section 731 of the Water Resources Development Act of 1986, Section 729 of the Water Resources Development Act of 1986, specific project and purpose authorizations, Executive Order 13653, and Executive Order 13514.

**LOCATION AND DESCRIPTION:** Nationwide. The IPET-HPDC Lessons Learned Implementation Team provides a systems- and risk-based approach that is required for USACE to more fully address risks due to extreme events, especially as we increase emphasis on aligning federal, state, and local projects, programs and authorities for risk management; on making decisions collaboratively; and on improving communication about residual risk. This effort captures the impacts of incremental changes from natural, dynamic processes and human activities throughout the lifecycle. The work is being accomplished by multiple national teams producing specific product outcomes related to four major components: comprehensive systems approach, risk management and communication, professional and technical competence, and improved water management. USACE is incorporating the new tools and methods developed here in programs and activities that enhance the operation, safety and sustainability of our built infrastructure based on those lessons learned.

**ALLOCATION FY 14: \$ \$12,544,000**

**BUDGETED AMOUNT FOR FY 15: \$5,800,000 1**

### DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 15:

**N:** N/A

**FRM:** \$5,800,000 will be used to continue building on work accomplished to respond to critical needs identified in the wake of Hurricane Katrina and recent extreme events. Specifically, FY 2015 funding will be used to continue work in the following program components:

#### Comprehensive Systems Approach (\$1,500,000)

Emphasizes an integrated, comprehensive and systems based approach incorporating anticipatory management to remain adaptable and sustainable over the project life cycle, placing the highest priority on protection of public health and safety. Improve the effectiveness of post-authorization evaluations and assessments of physical, social, and institutional change over time. Update existing and develop new tools to provide analyses and decision support on a system basis, including social vulnerabilities; provide methods and guidance to incorporate adaptive management into decision making to account for dynamic processes such as sea level rise and climate change; implement the nationwide datum and subsidence standard, and consolidate and expand policies, methods, and technologies to achieve long-term sustainability of USACE infrastructure.

#### Risk Informed Decision Making and Communication (\$800,000)

Emphasizes integrated risk management through implementation of risk and reliability concepts to operations and major maintenance. Update methods, models guidance to assess engineering and operational reliability of local protection systems; fully develop risk analyses concepts, including social and environmental impacts; update levee certification guidance; apply innovative modeling methods used in IPET to identify failure causes due to soil conditions for other regions

with levees of concern; develop capability to model the risk and reliability effects of surge and overtopping including any dynamic effects. Emphasizes clear and candid communication of risk both internally and externally, supporting risk-informed decision making over the project life cycle. Improve ways to characterize and communicate public health and safety for our built infrastructure. Conduct detailed review and revision of existing engineering and operations guidance to include risk communications. Apply new framework for existing projects that incorporates public involvement in risk reduction strategies.

**Professional and Technical Competence (\$500,000)**

Emphasizes professionalism and technical competence to provide responsible and competent public service professionalism with life safety as a fundamental driver. Operating and maintaining USACE's aging infrastructure requires unique skill sets that differ from those needed for the planning and engineering of new projects. This component includes investments to better equip professional and technical staff competencies in key areas.

**Improved Water Management (\$3,000,000)**

Concentrated program to enhance the operational decision making for floods, droughts, operations planning and real-time operations. Advance the implementation of the Corps Water Management System (CWMS) nationwide, including developing the hydrologic and hydraulic models required for a watershed approach to effectively meet authorized purposes. Data collection, data dissemination, and modeling and analysis capabilities will be addressed on a national level. Funds from this account will be targeted for the most critical watersheds that have not yet moved into the CWMS environment. Establish a National Enterprise Water Management System with continuity of operations capabilities that fully supports the water management mission and complies with US Army Corps of Engineers and Department of Defense Corporate Information Assurance and Security requirements.

**RC:** N/A

**H:** N/A

**EN:** N/A

**WS:** N/A

**OTHER INFORMATION:** Incorporation of lessons learned and new information is crucial for an engineering organization that provides services whose performance can be tested by extreme events, such as floods, droughts, and coastal storms. The program objective is to improve the public safety and performance of USACE's built infrastructure based on gaps, weaknesses and lessons learned from events such as Hurricane Sandy, the 2012-13 drought, the greater Mississippi River Basin flood of 2011, the Nashville flood of 2010, and other extreme events dating back to Hurricane Katrina and its lessons learned efforts (the Interagency Performance Evaluation Taskforce – IPET, and the Hurricane Protection Decision Chronology- HPDC). An integrated, comprehensive, sustainable, and systems-based approach that places the highest priority on protection of public health and safety is the most effective way for USACE to provide safe, reliable projects working together as a system with increased economic and environmental benefits. Incorporating updated and improved methods to estimate, assess, manage, and communicate risk are critical to planning, design, operation, and management of water resources infrastructure to meet the Nation's evolving needs. Recent extreme events have highlighted the need to implement state-of-the-art systems-based water management tools consistently across the nation, to optimize operation of our reservoirs to maximize benefits, including flood risk management and public safety, water supply, and water quality.

1/ Estimated Unobligated Carry-in Funding: The total unobligated dollars estimated to be carried into Fiscal Year 2014 from prior appropriations for use on this effort is \$ 0.





## O&M Justification Sheet

**PROJECT NAME:** Aquatic Nuisance Species Research

**AUTHORIZATION:** The Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990 (PL 101-646). The National Invasive Species Act of 1996 (PL 104-332) reauthorized and amended the Non-indigenous Aquatic Nuisance Prevention and Control Act.

**ALLOCATION FOR FY 2014: \$683,000**

**BUDGETED AMOUNT FOR FY 2015: \$675,000**

### **DESCRIPTIONS OF WORK AND JUSTIFICATION FOR FY 2015:**

Invasive species cost the public over \$137 billion annually. It is now estimated that over 100 nuisance species are introduced into U.S. waters annually – many of which adversely impact operations and maintenance on Corps' facilities - as well as threaten valued natural resources. Zebra mussel impacts alone cost the public over \$1 billion annually. Methods of prevention and more effective, inexpensive methods of control of invasive species must be developed to prevent impacts to public facilities and protect valuable natural resources.

Research efforts have been expanded under the Aquatic Nuisance Species Research Program (ANSRP) to address invasive aquatic species that impact the nations' waterways infrastructure and associated resources. Methods for prevention, control, and restoration of natural resources will be developed. Control strategies are being developed for: (a) navigation structures, (b) hydropower and other utilities, (c) vessels and dredges, and (d) water treatment, irrigation, and other water control structures.

The ANSRP provides Corps managers and operational personnel with innovative technologies regarding risk assessment, prevention strategies, species life history/ecological data, and cost-effective, environmentally-sound options for managing aquatic nuisance species (ANS). Program research focuses on: 1) The evaluation of potential control/barrier methods to prevent the transfer of Asian carps and other ANS between the Mississippi River and Great Lakes Basins; 2) New techniques for control of zebra and quagga mussels moving westward past the 100<sup>th</sup> meridian; 3) Improved control methods for harmful algal blooms through new chemicals and life cycle sensitivity analysis; 4) Corps personnel training in recognition and control methods of ANS on Corps lands/waters; 5) Web-based regional lists of aquatic invasive species on Corps projects; and 6) Methods that reduce invasive species impacts to threatened and endangered species and provide restoration of natural habitats.

### **PROPOSED ACTIVITIES FOR FY 2015:**

- Develop a risk-based decision framework to assist with selecting and evaluating effective control and management actions that will reduce the spread and establishment of zebra mussels in western waters of the U.S.
- Complete revisions and updates to the Zebra Mussel Chemical Control Guide.
- Complete investigations and develop guidance on the feasibility of utilizing electrical fields as a non-chemical alternative for reducing invasive mussel fouling on USACE infrastructure.
- Initiate laboratory testing to evaluate the effectiveness of barrier technologies (e.g., electric, acoustic, hydraulic) to prevent movement of high-risk invasive freshwater fish species.
- Provide aquatic invasive species technology transfer in the form of technical assistance, guidance documents, and webinars to Corps Districts and Divisions.

### **ACCOMPLISHMENTS FOR FY 2014:**

- Completed field validation studies to evaluate the effectiveness and use patterns of an invasive mussel biopesticide.

- Developed operational guidance for a new, bacterial-based biopesticide product (application strategies and dosing requirements) for controlling invasive biofouling mussels that minimize impacts to non-target species.
- Identified and ranked the invasiveness of freshwater fish species relative to the mission of the Corps using a probabilistic risk assessment model.
- Completed an assessment (including information on type, mechanism of activity, dosage requirements, operating contractions, and cost considerations) of existing fish barrier technologies suitable for implementation at Corps projects.
- Developed a spatially-explicit simulation model using available environmental data (species life history, growth rates, reproductive capacity, habitat suitability, etc.) and hydrodynamic requirements that accurately predict dispersal of invasive zebra mussels on Corps projects.
- Developed and tested an electrical reactor prototype for use and effectiveness in preventing bioadhesion of invasive mussels on Corps infrastructure.
- Provided aquatic invasive species technology transfer in the form of technical assistance, guidance documents, and webinars to Corps Districts and Divisions.

**SUMMARIZED FINANCIAL DATA:**

Allocation for FY12	\$669,000
Allocation for FY13	\$648,000
Allocation for FY14	\$683,000
Estimated Carry-In Funds	\$0
President's Budget for FY15	\$675,000

## O&M Justification Sheet

**APPROPRIATION TITLE:** Operation and Maintenance

**PROJECT NAME:** Asset Management/Facilities and Equipment Management

**AUTHORIZATION:** US Army Corps of Engineers Campaign Plan, Action 2d.1: USACE Infrastructure Strategy. EO 13327, "Federal Real Property Asset Management," Feb 2004; DOD (ASD (C3I)) memorandum, 10 Jul 95, Selecting the FEM System as a DoD migration system for Computerized Maintenance Management System [CMMS].

**LOCATION AND DESCRIPTION:** This is a National program.

**ALLOCATION FOR FY 2014:** \$9,953,000

**BUDGETED AMOUNT FOR FY 2015:** \$3,250,000 1/

### DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:

The Corps of Engineers is responsible for managing a portfolio of water resources infrastructure consisting of more than 4000 assets and projects valued at over 239 billion dollars. This diverse infrastructure provides a broad range of critical services supporting the Nation's economy, security, and quality of life. As the service life of this aging infrastructure continues to extend beyond its design life, it is imperative to develop an integrated national strategic plan for assessing those assets through a lifecycle portfolio analysis to improve reliability, minimize risk, and meet the current and projected needs of the Nation. These assets and projects must also be analyzed through a comprehensive watershed, or systems, lens. This entails adaptively developing watershed infrastructure requirements that meet today's needs as well as those of the future; strategically planning to link current and future Corps projects with other federal and non-federal project objectives and investments at the watershed or system level. Another vital aspect of this strategy is to evaluate and employ alternative financing options through public-private partnerships (P3). This effort will involve working within our existing authorities to expand our available financing options, learning from the P3 experiences of other agencies as to the authorities and processes that provided them the most benefit, and working with our stakeholders to fully understand and leverage their investment interests through partnerships that can enable desired infrastructure/system outcomes. Finally, the Corps will make a focused effort to communicate effectively and strategically with our partners, stakeholders, and the public to insure this is a joint effort.

The USACE Infrastructure Strategy (UIS) is one of the four pillars of the CW Transformation (CWT) initiative and is fully aligned with the CW Strategic Plan and the USACE Campaign Plan. The UIS sets the foundation for future water resources infrastructure through effective lifecycle portfolio management that applies the principles of integrated water resources management in a watershed/system context. The end state goal of the UIS: USACE CW infrastructure is relevant, resilient, and reliable utilizing IWRM strategies to address water resources need sustaining communities, energy, water, and land resources.

The Asset Management Program is an integral part of UIS and further supports the Corps in managing the Real Property initiative (EO 13327) to ensure that property inventories are maintained at the right size, cost, and condition to deliver Corps missions.

In support of the lifecycle portfolio analysis, the Corps has deployed the Facilities and Equipment Maintenance (FEM) system (a DoD standard) as its computerized maintenance management tool. FEM provides on-line interactive information for managing the day-to-day maintenance activities and costs of assets, facilities, equipment, and parts and is an integral enabler to asset management. The Corps has also begun deployment of a standard condition assessment methodology to better inform the prioritization of maintenance management processes, and is piloting portfolio analysis tools and processes to prioritize investments in terms of benefits and risk to maximize the effectiveness of resources.

## **PROPOSED ACTIVITIES FOR FY15**

**N: \$1,083,000**

**FRM: \$1,083,000**

**RC: N/A**

**H: \$1,084,000**

**EN: N/A**

**WS: N/A**

### **UIS Activities:**

1. Continue development of Maintenance Management Improvement Plans, including continued development of FEM, and identification of key components for project or system maintenance and/or replacement based on risk reduction strategies.
2. Continue development and implementation of an operational condition and risk assessment methodology for Corps of Engineers infrastructure.

### **ACCOMPLISHMENTS PRIOR YEARS:**

1. Completed Asset Management Portfolio Analytics (AMPA) support of FY15 budget with HQ BLMs for Hydropower, FRM, and Navigation
2. Completed additional Maintenance Management Improvement Plan (MMIP) pilots and implemented Phase 2 – Non-Critical Assets
3. Conducted system-wide demonstration of UIS tools and processes on selected watershed to: 1) test and evaluate their effectiveness to provide business intelligence through risk-informed decision support leading to improved budget development; 2) to provide feedback for discovering data gaps or other areas for improvement and revision in those tools and processes; 3) the communication of the entirety of UIS tools and processes and their application at the selected site(s); and 4) the opportunity to train and communicate the enterprise application of these tools and processes to a regional and/or national cadre.
4. Begun analysis of alternative financing options:
  - a. Completed first White Paper on options
  - b. Holding third working meeting with private firms on investigations of options
  - c. Completed one watershed pilot partnering with SPD on successful budget process.
    - i. Developed initial decision support software WISDM and iBET
    - ii. Initiated collaborative processes for watershed process
5. Developed initial process to complete condition assessments for Corps assets.
6. Continued data QA/QC in the real property information database and system to meet annual FRPP requirements.
7. Continued development of baseline operational condition assessment and risk processes for FRM, Coastal navigation structures, Hydropower and Recreation.
8. Continued to train MSC teams and implement condition assessment and risk and consequence methodologies across portfolio of infrastructure assets which will feed future budget work packages.
9. Integrated results to date from condition and risk processes for USACE infrastructure and Maintenance Management Improvement Plan into FY16 Budget Guidance.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the study as follows: N/A

## O&M Justification Sheet

**PROJECT NAME:** Budget Management Support for OM Business Programs

Performance Based Budgeting Support Program  
Recreation Management Support Program  
Stewardship Support Program  
Optimization Tools for Navigation (OTN) Program

**AUTHORIZATION:**

Performance Based Budgeting Support Program: The Government Performance and Results Act of 1993 (GPRA) and under general authorities contained in various laws.

Recreation Management Support Program: This program is conducted under the general authority of PL 78-534, the Flood Control Act of 1944 (58 Stat. 887).

Stewardship Support Program: This program is conducted under the authority of ER 1130-2-540, Chapter 7.

Optimization Tools for Navigation (OTN) Program: Efforts are necessary to provide practical quantitative and predictive tools and data for minimizing and optimizing the costs of dredging of Federally-sponsored navigation projects. The objective is to be able to identify more efficient and effective management strategies for existing navigation infrastructure and to improve the analysis of proposals to deepen and widen channels. These efforts will help lead to an improvement of channel design criteria across the Corps, for the U.S. Navy, and other government/academic institutions.

**LOCATION AND DESCRIPTION:** These are national programs.

**ALLOCATION FOR FY 2014:** \$6,972,000

**BUDGETED AMOUNT FOR FY 2015:** \$6,911,000 1/

**DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:**

**ALL: Performance Based Budgeting Support Program. \$3,939,000** will provide enhanced continuing support of Civil Works O&M integrated business line information systems; centrally distributed performance measures, outputs and system inventory information; and evaluation of new measures through the Performance Based Budgeting Support Program. FY 2015 funds will also support enhanced development of cross business output-result oriented performance measures of the incremental return on investment in Corps Civil Works program area including the investigation, acquisition and integration of decision-making software and tools. The funding provides enhanced support for all business lines but with an increased focus for flood risk management, water supply, environmental restoration for the data entry modules and integration: The President's management agenda and GPRA requires that the Corps implement performance based budgeting for Civil Works Operations and Maintenance. The Performance Based Budgeting Support Program addresses this requirement by the collection, management and distribution of data; seeking new methods for linking performance to annual budget requests; and for analyzing the potential economic impacts on service to customers of varying budget levels.

a. Civil Works Business Function Information: Provides critical data and information related to Civil Works project inventories, outputs and performance measures; and for the operational and strategic management of Corps' projects, programs, budget development and studies that directly support the

Headquarters and Institute for Water Resources

Budget Management Support for OM Business Programs

Navigation, Hydropower, Recreation, Environment (Stewardship, Compliance, and Restoration), Water Supply and Flood Risk Management Business Line missions. This information supports the Corps O&M program and is the sole source for the Corps, other Federal agencies, partners, stakeholders, and public. These funds include supporting the collection, database management, integration, standardization, operation, enhancement, quality control, user assistance, training, software, compliance with security requirements and ACE-IT services. The IT activities are also reported under the Civil Works Business Intelligence (CWBI) AIS in ITIPS and the annual OMB 300b submittal accounting for \$1,423,741 of the overall CWBI costs. Funding for this program increases the Corps' ability to produce efficient, effective, and timely performance measures for budgeting, management and the prioritization of capital investment decisions.

b. Civil Works Performance Measurements: Work includes improvement and integration of business line performance measurements to be incorporated into the budget decision-making process; support for the Office of Management & Budget's performance driven initiatives; and support for the future Corps budget preparation process. Efforts focus on the refinement of corporate performance principles; and program and project level performance measures that focus on anticipated performance and output at different levels of funding. Aligns and integrates with the O&M business processes - navigation, hydropower, flood risk management, recreation, water supply and environment. These measurements, at different organizational levels, provide the analytical basis to identify the incremental return on investment in Corps programs at various funding levels and to make adjustments in priorities both at the program and project levels concerning efficiency of facilities or services. Comparison of across business lines measurements among projects at all levels helps focus management attention on the priorities of programs and projects related to capital investments principles.

c. Civil Works Business Analysis: This task analyzes data using statistical and other analytical techniques and tools to uncover relationships among budget, expenditures and performance within and between Corps business line processes. The relationships and statistics drawn from the data will provide evidence to support capital investment priorities and decisions increasing the Corps ability to delivery business line service in the most efficient and effective manner. This task will also develop effective products to explain relationships found in the data and allow decision-makers to visualize cause and effect. This task links the data gathering, collection and distribution, and use of data in the decision-making process.

**N: Optimization Tools for Navigation. \$322,000** will be used for the Optimization Tools for Navigation (OTN) program to continue the deployment and maintenance of the National Navigation Operation & Management Performance Evaluation Assessment System (NNOMPEAS) capabilities and methodology and further its use as a budgeting tool and general project evaluation tool. Funding will also be used (to the extent available) for continued maintenance of the Channel Analysis Design Evaluation Tool (CADET) and development of a vessel lines library to allow use of CADET without proprietary hull line information and to complete technology transfer to USACE so that USACE can independently support general update and maintenance of the algorithms integral to CADET. Funds will also in part be applied in support of continued compilation of dredging cost and quantity data at the channel segment level through implementation of changes to the Resident Management System (RMS) database and to implement changes to NNOMPEAS deemed critical by field analysts to more efficiently facilitate project evaluation and analysis for O&M and new work where applicable.

To maintain the Nation's Federal navigable coastal and inland waterways, nearly 230 million cubic yards of material are dredged in the U.S. annually. In addition, these quantities are likely to increase under proposals for deeper and wider channels to support emerging commercial cargo vessel designs. This initiative will enable the Corps to provide a more credible and informed evaluation of maintenance requirements, based on the economic return. The Corps is developing metrics that would help

demonstrate the incremental return-on-investment (ROI) from an increase or decrease of dredging funds and associated maintenance at any specific location. NNOMPEAS is being developed to demonstrate whether such a metric can be provided across all coastal deep-draft harbors and waterways. This tool uses domestic and foreign trade data to determine and analyze the loaded or immersed drafts and related utilization of vessel cargo-carrying capacity for all recorded cargo vessel calls for individual harbors and channels. The system in turn can provide for the estimation of incremental transportation cost benefits foregone with reduction or absence of maintenance for waterway depth, and of the transportation cost savings with a limited increase in depth. This could offer the potential to optimize maintenance dredging requirements for individual channel reaches and across much of the overall USACE dredging program. A companion tool being developed under the OTN program is CADET, which will allow sophisticated vessel hull modeling not previously available. IWR is conducting this modeling activity jointly with the USACE Engineering Research and Development Center (ERDC) and the U.S. Naval Surface Warfare Center (NAVSEA-Carderoc). CADET will render advanced technologies for methods of analysis and compilation of new physical and numerically-generated data sets descriptive of vessel movement and response within confined waterways and offshore channel areas subject to significant wave climate.

**FRM:** N/A

**RC: Recreation Management Support Program. \$1,650,000** will support the implementation of the Recreation Strategic Plan which will guide many of the support activities performed this FY particularly in the areas of efficiency evaluation, communication and partnerships. The Recreation Budget Evaluation System (Rec-BEST) will be refined to increase the capability to monitor and report Recreation performance measures and evaluate and prioritize budget submissions in response to OMB guidance, also to better link with the Asset Management and risk informed budget process. The Recreation module of the Natural Resource Management Gateway will be further developed to address high priority needs. Demonstrations will be conducted to identify and communicate the benefits of the Corps recreation program and improve effectiveness in addressing the needs of ethnic minority visitors. Emphasis will be placed on improving recreation use monitoring procedures that will be incorporated into recreation performance measures. Customer satisfaction survey methods and benchmarking capabilities will be refined and fully integrated into program performance measures. Technical support will be provided to field staff to implement improved procedures. Support will be provided to standing Natural Resource Management (NRM) committees and task forces including: Partnership Advisory Committee, Ranger CoP, Water Safety, Career Development etc. Support will be provided to Headquarters Recreation program staff regarding strategic planning, development of program evaluations, staffing evaluation and other high priority Headquarters initiatives. Provides resources for evaluation tasks associated with the implementation of the National Recreation Program Road Map.

The recreation program serves almost 370 million recreation visitors and generates about \$40 million in revenue annually. Visitors spend over \$16 billion annually to engage in recreation at Corps projects; over 270,000 full and part time jobs are associated with this spending.

The RMSP supports the recreation program through the conduct of focused management studies to improve operational efficiencies and the provision of technical assistance, to include technology transfer and technology support and maintenance for recreation specific automated information systems. The RMSP supports strategic planning for and performance monitoring of the Corps recreation business program, subject to the Government Performance and Results Act (GPRA).

The RMSP has 3 major components, which together provide comprehensive support to the Corps Recreation Business Program:

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1. Focused Management Studies. RMSP provides focused management studies and reports to acquire and analyze information about recreation trends, accessibility, emerging issues, user conflicts, visitor diversity, use fee impacts and similar elements affecting the Corps recreation program. Analyses are conducted to support the recreation area modernization program, implementing facility and service standards, and in similar product delivery improvement efforts. Information and technology transfer pursuant to these studies is funded by the RMSP. Ongoing trends analysis provides valuable data on which to base decisions about necessary short and long term adjustments to the program to meet public needs.

2. Management/Technical Assistance. RMSP provides technical assistance to the Recreation Community of Practice in the development of management tools, which quantify recreation program outputs and relate them to customer needs and budget allocations for the purpose of measuring performance. This includes gathering and analyzing information about customer satisfaction with the Corps recreation program. RMSP assures the field workforce is equipped with "state-of-the-art" skills and knowledge to deal with a rapidly changing public. RMSP provides technical support and maintenance of performance based budgeting tools, visitation monitoring and analysis systems, fee collection and reporting, economic analysis, facility inventory and condition assessment, and similar automated information programs. RMSP provides short-term assistance to projects in solving specific technical problems.

3. Support to Recreation Program Strategic Planning. Funding to support the activities of the Recreation Leadership Advisory Team (RLAT) is included in this program. The RLAT is composed of representatives from the division, district and project levels of the Corps natural resources management program. It provides input, advice and support to the Corps strategic planning for the recreation business program.

H: N/A

**EN: Stewardship Support Program. \$1,000,000** will conduct focused management action studies and recommend guidance to address high priority program efficiency and effectiveness concerns, including responses to new protocols for asset and risk management, regulation changes and administration priorities through the Stewardship Support Program (SSP). Efforts will continue in support of performance based budgeting including further development of performance measures, development of strategies to improve program outputs and outcomes, and refinement of E-S BEST and related guidance to monitor program performance and risk analysis. Progress in recent years on developing standards, published protocols and web-based data entry programs have resulted in improvements in advancing completion of the inventories and will result in expanded data from national GIS analysis to prioritize work during declining or flat budgets. Increased technical support to the field will provide training and guidance to assist in revision to performance measures during 2014, as needed to meet new Civil Works transformation implementation and recent new High Priority Goals of OMB. The SSP will also continue support of the Environment-Stewardship Community of Practice (CoP) including further development of the NRM Gateway for information and technology exchange. These activities will provide benefits in increased program effectiveness through implementation of assessment recommendations. Improved program performance will be facilitated through increased CoP access to best practices and policy guidance, and effective development and execution of performance based budgets.

The Stewardship Support Program (SSP) was established by regulation in FY 02 to provide broad support to Environment-Stewardship function at operating projects by assisting in the identification of national program needs, the development of new national program activities, strategic program planning, and the recommendation of national stewardship program funding priorities. Support will be provided in

refining the Environment–Stewardship business program strategic plan and goals, and budget processes, to address the targeted outcomes of the overall Corps CW Strategic Plan, using input from the Stewardship Advisory Team, other associated Corps business programs and stakeholders. Goals and objectives have been refined, and actions will be identified to achieve them. Funding this program from a single source reflects the nationwide application and supports standardization in program direction and outputs. The program will continue to meet business line needs involved with the Corps Civil Works Transformation, initiating asset management and risk assessment along with additional changes in the administration focus on the America’s Great Outdoors (AGO) Initiative and long term sustainability. The SSP supports the Environment–Stewardship program by addressing issues or initiatives that have a broad applicability to many USACE Civil Works projects.

The three basic components of the SSP are:

- (1) Focused Management Actions and Studies. These activities are to implement a course of action or practice within field office activities, a region, or nationwide. Examples of management actions might include developing/ assembling an array of management practices for establishing riparian habitat, or creating a forum to share common experiences, build teams, and disseminate information. Examples of management studies might include geospatial tools for use at the projects or conducting studies on management of threatened and endangered species and meeting biological opinion requirements
- (2) Policy Guidance and Management Support. Such activities relate to the development and/ or implementation of guidance. Examples of policy guidance included facilitating cooperative agreements with stewardship non-governmental organizations, or amending the annual Budget Engineer Circular to provide emphasis on new environmental threats or nationally significant resources. Mapping stewardship performance and adjusting to more integrated watershed and asset management will be a focus for FY 14. Funding to support the activities of the Stewardship Advisory Team (SAT) is included in this program. The SAT is composed of representatives from the division, district and project levels of the Corps Environmental Stewardship Program. It provides input, advice and support to the Corps strategic planning for the Environment-Stewardship business program.
- (3) Information Exchange. These activities are designed to build, integrate, and share our knowledge base to support greater understanding of the environment and the impacts of program work.

**WS:** N/A

**OTHER INFORMATION:**

**ACCOMPLISHMENTS IN PRIOR YEARS:**

**Performance Based Budgeting Support Program.** Included were newly fielded requirements relating to natural resource management and water supply collection system in CWBI data entry and access. These changes maintain the Corps’ ability to answer data calls relating to water storage, irrigation, and wild fire activity as related to Corps’ project sites. The One-stop access for much of Civil Works budget performance information was expanded for budget submittals in lieu of separate data calls. An integrated data set for all business lines was created with data for FY1999-2013 providing trend information for analysis. Performance data and outputs were migrated to the standard integrated corporate environment. Using these new standards, enhanced data linkages between CWBI and other Corps’ systems (financial information, asset management information, etc.) was achieved allowing increased visibility and decision support.

**Recreation Management Support Program.** Recent accomplishments included conducting a National Recreation Assessment Program, continue to the Recreation Strategic Planning team, development and implementation of a national survey of Visitation Estimation and Reporting System, refinement of the CWBI Recreation module and development of platforms to market the CE recreation program on social media websites. Other past products include Recreation Budget Evaluation System (RecBEST), visitation estimation methodology and data collection and reporting tools, economic impact methodology and analysis tools, customer satisfaction survey and benchmarking tools implemented at all CE projects, studies on recreation preferences of ethnic groups including cross-cultural communication issues, and support for development of a strategic context as a foundation for transitioning to a performance based environment, to include performance based budgeting. The Natural Resources Management Gateway was developed as a knowledge management tool for the NRM community and is compatible with other Corps KM and Community of Practice initiatives. The Corps Lakes Gateway was developed and provides information to millions of visitors annually on recreation opportunities at Corps projects (in FY12 over 50 million page views). The Corps Lakes Gateway also delivers Corps recreation information to the interagency RecreationOneStop project in support the Administration's E-GOV initiative. Guidance and appropriate tools were developed to improve interpretive services associated with the CE recreation program that advance the public's understanding of the environment and the Corps Environmental Operating Principles. Support to Headquarters was provided to refine the recreation business program strategic plan, utilizing input from the RLAT and stakeholders. Goals and objectives were refined, and actions identified to achieve them. Innovative partnership approaches were developed and field guidance prepared to improve stakeholder participation. Stakeholder outreach was conducted to develop partnerships for strategic initiatives.

**Stewardship Support Program.** The allocation of project operations and maintenance funds to conduct specified nationwide (multiple project) activities to improve the efficiency and cost effectiveness of the Environment-Stewardship business program has been employed, with subcommittee staff knowledge and concurrence, since the late 1990s for activities similar to those identified for FY 2014. Past products of the Stewardship Support Program include the initial set of Environment-Stewardship program performance measures, which are in accord with the Government Performance and Results Act and used to measure and monitor priority program outputs and outcomes; the Stewardship module of the Civil Works Business Intelligence (CWBI) system, which receives and stores selected data concerning the stewardship of project natural resources, and which provides for retrieval of that information by all levels of the Corps; the pilot version and subsequent refinements of the Environment-Stewardship Budget Evaluation System (E-S BEST) used to assist in developing budget scenarios and ranking budget proposals. Components of the Environment–Stewardship portion of the Natural Resources Management (NRM) Gateway, a knowledge management tool for the NRM community, have been completed and others are underway. Support to Headquarters was provided to develop and refine; the Environment-Stewardship business program objectives and budget criteria, the program management plan for the Environment-Stewardship Community of Practice, and the revision of the Environment-Stewardship program regulation. Formulation of program decision tool to evaluate the threats to, and significance of CE managed natural resources was initiated in FY 13 and will continue into FY 14.

**Optimization Tools for Navigation.** Funding for this ongoing activity in FY 14 allowed for general completion of the deep-draft self-propelled hull vessel lines library for CADET and primary technical transfer for basic support of CADET from NAVSEA-Carderoc to USACE ERDC. Development of CADET also included field verification and tests on recent studies and provided technical support to Districts in helping to determine need or applicability with associated support to be extended for the subject FY with availability of funding. Work continued on development of NNOMPEAS to expand the number of harbors

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covered to approximately 125-130 coastal deep-draft projects and initiated development of data error checking or validation routines for critical parameters. Routines were also being developed to support data extraction per request from analysts at the District level. NNOMPEAS was enhanced with updates of ocean-going distances between ports for more ports than previously available and included probabilistic tide cycle evaluation for estimation of vessel delays due to limitations on project depth. Continued use of NNOMPEAS allowed for further development of efforts to measure incremental transportation costs and benefits, and development of relative rankings based on ROI for major coastal harbors under annual ongoing initiatives for Value-to-the-Nation (VTN) and for HQUSACE O&M Program budgeting input. NNOMPEAS was also employed for evaluation of vessel calling patterns and supporting load factor analysis (LFA) critical to coastal deep-draft studies, and as an input to prioritization of survey work performed by NOAA. Correspondingly, efforts for CADET involved continued deployment and training for use on coastal waterway projects, which supported better evaluation of depth needed in offshore environments with simultaneous objectives of minimizing related dredging costs.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the study as follows: N/A

## O&M Justification Sheet

**PROJECT NAME:** Dredge McFARLAND Ready Reserve

### **SUMMARIZED FINANCIAL DATA:**

CONFERENCE AMOUNT FOR FY 2014:	\$11,722,000
BUDGETED AMOUNT FOR FY 2015:	\$11,690,000 <sup>1/</sup>

**AUTHORIZATION:** Section 2047(a) of the Water Resources Development Act (WRDA) of 2007, Federal Hopper Dredges, which amends Section 563, Hopper Dredge McFARLAND, of WRDA 1996, contains a provision requiring the Corps Hopper Dredge McFARLAND to be placed in a Ready Reserve status not earlier than 1 October 2009, and not later than 31 Dec 2009. The authority directs the Secretary to periodically perform routine underway dredging tests of the equipment, limit any scheduled hopper dredging work, perform any repairs necessary to maintain the vessel in a ready reserve fully operational condition, and place the vessel in active status for dredging only under specified conditions.

**JUSTIFICATION:** Prior to FY 2010, the total costs of operating the Hopper Dredge McFARLAND were charged to projects funded from the Operation and Maintenance appropriation, and were eligible for full reimbursement from the Harbor Maintenance Trust Fund. The Hopper Dredge MCFARLAND was placed in a Ready Reserve status in December 2009 as required by Section 2047 of WRDA 2007. About \$12M of annual operating costs that was previously paid by project funds before December 2009 is now required to keep the vessel in a fully operational condition.

**PROPOSED ACTIVITIES FOR FY 2015:** The Hopper Dredge McFARLAND will not be assigned any scheduled hopper dredging work other than 70 days to perform routine dredging tests of the equipment that will be completed in the Delaware River and Bay as specified in the authorization. This work will be charged to the project on which the dredging is performed. These exercises/tests maintain the skills of the crew, and ensure that the McFARLAND remains in a fully operational state, ready to respond to any emergency or urgent dredging requirement. The Ready Reserve funds will fund the Hopper Dredge McFARLAND while at the dock in a ready reserve status, with sufficient crew to respond within 72 hours when directed by higher authority for urgent and emergency purposes. The dredge will be placed in an active status in order to perform work in those instances when private industry fails to submit a responsive or responsible bid for advertised dredging, or where industry has failed to perform under an existing contract or other urgent or emergency requirements as determined by the Secretary.

**ACCOMPLISHMENTS IN PRIOR YEARS:** The Hopper Dredge McFARLAND performed 140 days of "active" dredging work along the East and Gulf Coasts moving in excess of 2 million cubic yards of dredged material in FY 2009. The Dredge McFARLAND was fully funded annually through FY 2009 using O&M funding from the projects for which the vessel worked. In FY 2010, her first year in Ready Reserve, the McFARLAND completed her scheduled training exercises in the Delaware River and on two separate occasions, the dredge was activated by USACE Headquarters for a total of 96 days of dredging on the Mississippi River's Southwest Pass. The vessel completed her 70 days of training in FY2011 in the Delaware River. The vessel was not called out of ready reserve in FY2011 but did complete a 6 month major shipyard overhaul scheduled around her training exercise schedule. In FY 2012 the vessel completed her 70 scheduled training days in the Delaware River and was activated for a 30-day assignment for Wilmington District at Morehead City, NC. The dredge completed her 70 training days in the Delaware River in FY 2013 and was activated for a 24-day assignment for Wilmington District at Morehead City, NC. The dredge is scheduled to complete her 70 training days in the Delaware River in FY 2014 and remains available for any activation requests throughout FY 2014.

1/ Unobligated Carry-in Funding: The actual unobligated balance from FY 2013 into FY 2014 for this project is \$0. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this project is \$0. This amount will be used to perform work on the project as follows: N/A.

## O&M Justification Sheet

### Dredge Wheeler Ready Reserve

#### SUMMARIZED FINANCIAL DATA:

Estimated Annual Cost of Continuing Program	\$15,000,000
Allocation for FY 2014	\$14,880,000
Allocation Requested for FY 2015	\$15,000,000

**AUTHORIZATION:** Section 237 of the Water Resources Development Act of 1996 (WRDA '96) contained a provision requiring the Corps Hopper Dredge WHEELER to be placed in a ready reserve status effective 1 Oct. 1997.

**JUSTIFICATION:** Section 237 requires that no individual project funds may be used to fund the dredge in its ready reserve status unless the dredge is specifically used in conjunction with a project. Prior to Fiscal Year (FY) 1998, the costs for operation of the WHEELER were charged to projects funded from the Operation and Maintenance appropriation, and were eligible for reimbursement from the Harbor Maintenance Trust Fund. In FY 1998, the WHEELER was placed in a ready reserve status as required by the above referenced section of WRDA '96. Maintenance and repairs costs have risen as the vessel ages.

**PROPOSED ACTIVITIES FOR FY 2015:** The Hopper Dredge WHEELER, will remain in ready reserve status, and will not be assigned any scheduled hopper dredging work other than 70 days of maintenance dredging that will be completed in conjunction with training exercises to maintain the skills of the crew, and ensure that the WHEELER remains in a fully operational state, ready to respond to any emergent dredging requirements. The Hopper Dredge WHEELER will remain at the dock, with sufficient crew to respond within 72 hours when directed by higher authority. The dredge will be placed in an active status in order to perform work in those instances when private industry fails to submit a responsive or responsible bid for advertised dredging, or where industry has failed to perform under an existing contract.

**ACCOMPLISHMENTS IN PRIOR YEARS:** The Hopper Dredge Wheeler has been maintained in a fully operational state and periodically performed routine dredging operations to test equipment and keep the crew trained and prepared. In every year but one, since being placed in Ready Reserve status in FY 1998, the WHEELER was called out to perform urgent dredging to assist industry dredges in restoring navigation channels and waterways. During FY 2011 while in Ready Reserve, the WHEELER completed 133 days of dredging through a combination of training exercises and multiple deployments by USACE Headquarters to perform urgent dredging on the Mississippi River, Southwest Pass. During FY 2012, the Wheeler completed 128 days of dredging through a combination of training exercises and multiple deployments by USACE Headquarters to perform urgent dredging on the Mississippi River, Southwest Pass. The vessel was repowered at a Gulf coast shipyard during the first and second quarters of FY 2013. Prior to completion of work at the shipyard, the Carnival Triumph broke free from its moorings and allided with the WHEELER, which required the WHEELER to stay in the shipyard for additional repairs. As a result of the repowering and subsequent shipyard repairs, the WHEELER only performed 28 days of maintenance dredging in September 2013 in conjunction with training exercises to maintain the skills of the crew, and ensure that the WHEELER remains in a fully operational state, ready to respond to any emergent dredging requirements. The first training exercise of FY 2014 began January 2014 in the Mississippi River, Southwest Pass.

## O&M Justification Sheet

**PROJECT NAME:** Coastal Inlets Research Program

**AUTHORIZATION:** Authorization for the Corps of Engineers' Engineer Research and Development Center (ERDC) to conduct R&D is codified in 10 U.S.C. 2358: "The Secretary of Defense or the Secretary of a military department may engage in basic research, applied research, advanced research, and development projects that are necessary to the responsibilities of such Secretary's department in the field of research and development."

**ALLOCATION FOR FY 2014: \$3,173,000**

**BUDGETED AMOUNT FOR FY 2015: \$2,700,000**

### **DESCRIPTIONS OF WORK AND JUSTIFICATION FOR FY 2015:**

The Corps operates and maintains more than 1000 coastal navigation projects that cover 13,000 miles of coastal navigation channels, with a limited Operations and Maintenance (O&M) budget. Coastal inlet navigation channels must be maintained in a complex environment of waves, tidal and wave-induced currents, sediment transport, and vessel-induced flow and wake. In FY 2010, the Corps spent approximately \$1.2 billion in maintenance dredging of 202 million cubic yards from Federal navigation channels. Adjusted for inflation, dredging costs have increased approximately \$12.8 million/year (from \$1.53 to \$4.62 per cubic yard) from FY 1963 through FY 2010<sup>1</sup>. Dredging costs could further increase in the future, e.g., in the event of an increase in fuel, or in mobilization and demobilization prices. Additionally, many ports are seeking to deepen and widen navigation their channels to accommodate larger vessels; however, deeper and wider channels are more efficient sediment traps, therefore increasing shoaling and O&M costs. Modifications to coastal inlet channels and jetties can have a profound effect on the integrity of the navigation structures, adjacent beaches, estuaries, ecosystems and regions. Demand for regional sediment management practices and mitigation for engineering activities includes innovative creation of nearshore berms with dredged sediment intended as a source to nourish neighboring beaches. Renewable, cost-effective placement sites for dredging must also be designed such that sand moves onshore, fine sediments are dispersed offshore, and re-deposition into the navigation channel is minimized. Such projects require characterization of hydrodynamics, wave forcing, sediment transport, and morphology change, as well as geomorphologic approaches. Thus, navigation project O&M, structure integrity and implications of ongoing and future dredging actions must be considered within a sediment-sharing inlet system. The Corps is working to advance knowledge and tools to better predict future channel shoaling, and to make transparent and uniform decisions on prioritization of funding. This applied research and development is necessary to provide quantitative and practical predictive tools and data to reduce the cost of dredging for Federal navigation projects, maintain inlet jetties, identify potential unintended consequences, mitigate for engineering activities related to navigation channels, and prioritize maintenance options. The Coastal Inlets Research Program provides tools to engineers and decision makers for developing reliable solutions and practices to reduce the cost of the operation and maintenance of Federal coastal navigation projects.

### PROPOSED ACTIVITIES FOR FY 2015:

#### **Structures and Navigation Focus Area**

- Release upgrade of the Channel Portfolio Tool (CPT) to incorporate effects of relative sea level change (RSLC) on navigation channel infilling for 5 of the "Top 59" navigation systems. Estimated adjacent beach erosion, change in tidal prism, and navigation channel shoaling will be calculated with the Coastal Modeling System (CMS) for the five largest navigation systems in the Nation.

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<sup>1</sup> <http://www.navigationdatacenter.us/dredge/ddhisMsum.pdf>, accessed 22 July 2013.

Depending on findings and significance to channel navigation (shoaling, navigability issues such as wave-current interaction), additional navigation systems may be addressed in FY2016.

- Incorporate historical Waterborne Commerce and Historical Dredging Data into CPT to update and expand the CPT database, so that it extends from 2005 to present.
- Develop guidance for use of Automated Identification System (AIS) vessel data to provide information on the functional performance of navigation structures, including jetties and breakwaters. Transfer knowledge to USACE Structure Asset Management initiative.
- Continue support of the USACE Structure Asset Management, Navigation Channel Asset Management, Low-Use Navigation Projects, Navigation Portfolio, and Harbor of Refuge Project Delivery Teams (PDTs) with CSMART and CPT.
- Document applications and use of the Data Discovery Tool (DDT) that facilitates seamless, automated searching historical portable document format (pdf) files and creation of databases.
- Develop and release beta version of GeoDat, a web-based data access and analysis tool to facilitate selection, evaluation, manipulation, generation of report-quality figures, and re-formatting of geospatial data for import to numerical models. GeoDat will access existing online geospatial data sources (bathymetry, shoreline position, 3D channel framework, port and harbor infrastructure, reefs, land elevation, building footprint), and facilitate viewing and processing online and downloading to the Surface-water Modeling System (SMS) for use in model applications. GeoDat and MetOcnDat, a companion program for Meteorological and Oceanographic Data, will work hand-in-hand to seamlessly access available data and facilitate selection and formatting for use in numerical models.
- Develop a web-based tool to generate numerical model grids online for downloading to the Surface-water Modeling System (SMS) and use in numerical models. The Online Grid Generator (GridGen) will utilize existing web services that provide access to and visualization of bathymetric data, and provide user guidance during the grid generation.

### **Sediment Management Focus Area**

- Build and monitor a nearshore berm at the Field Research Facility (FRF) in Duck, NC as part of the 2015 FRF Large-Scale Experiment. Nearshore berms are created through placement of sediment in the nearshore. Berms are desirable to keep sand in the littoral system and facilitate “engineering with nature” to sort fines offshore and transport coarser sand to the nearshore. However, there is little guidance to design and evaluate the spatial and temporal characteristics of nearshore berm migration, and resource agencies are not allowing placement because of concerns of dispersion of fines during and following placement. The large-scale berm will be monitored through the placement process and subsequent evolution to develop logistical and design guidance.
- Investigate methods for faster and more accurate regional sediment transport calculations with the shoreline and inlet shoal evolution model, GenCade, including curvilinear grids and implicit calculation scheme. The curvilinear grid option will facilitate more accurate representation of shoreline angle relative to wave approach, and the implicit calculation scheme will provide faster calculations with larger time steps.
- Document applications with the Nearshore Berm Calculator (NBC), a planning-level tool to aid in logistics, placement (cross-shore and alongshore), and preliminary design of dredged sediments that are placed in the nearshore for the purpose(s) of providing a wave break to protect nearshore beaches, engineering with nature to allow finer sediments to move out of the system while moving beach-quality sand onshore, and/or migrate onto the beach providing additional storm protection.
- Document applications with the Sediment Resource Tool (3DSRT), an ArcGIS module that facilitates calculating volume, location, and extent of sediment resources for use in dredging operations and shore protection.
- Document integration of the Coastal Modeling System (CMS) with other models in the CSTORM Modeling System (CSTORM-MS), an integrated suite of models in the Surface-water Modeling



System (SMS). The CSTORM-MS facilitates 'plug and play' operability with other ERDC models and databases.

- Conduct webinar on the use and application of the Data Integration Framework (DIF) with CIRP models and tools. The DIF links existing models and tools with each other and online data via web services to provide seamless access and applications. Models and tools in the DIF include the Nearshore Berm Calculator, the Sediment Resource Tool, Channel Portfolio Tool, Coastal Structures Management Analysis and Ranking Tool, GenCade, and the Coastal Modeling System.

#### ACCOMPLISHMENTS FOR FY 2014:

##### **Structures and Navigation Focus Area**

- Continued development of the Channel Portfolio Tool (CPT), with a focus on formal, seamless linkages to other Navigation Business Line tools, applications, and databases such as Automated Identification System (AIS) vessel transit data, tide and wave buoy data, and HydroSurvey bathymetric data. Produced documentation of conceptual framework and how-to guidance in online help and technical notes. Continued maintaining the public version of CPT. Provided support to the FY16 Civil Works budget development cycle to include multiple business lines via an optimization approach developed through the Asset Management initiative.
- Through application of CPT and the Coastal Structures Management Analysis and Ranking Tool (CSMART), quantified and documented the role of waterborne transportation within the broader intermodal freight system. Directed annual waterway maintenance actions in terms of overall supply chain performance and availability of alternate modes of transportation. Formulated systems optimization strategies that allocate limited O&M funds according to overall, national performance objectives, rather than project-based metrics.
- Continued support of the USACE Structure Asset Management, Navigation Channel Asset Management, Low-Use Navigation Projects, Navigation Portfolio, and Harbor of Refuge Project Delivery Teams (PDTs) with CSMART and CPT.
- Completed a web-based statistical analysis package and data mining capability for the vast archive of AIS data presently being maintained by the U.S. Coast Guard as well as by the Corps via the Lock Operations and Management Application (LOMA). This application enables Corps personnel to quickly analyze and visualize the manner in which commercial vessels maneuver through navigation projects. The large amount of available data enable quantifiable measures of project functional performance, such as effectiveness of breakwaters at suppressing wave action, presence of adverse currents before and after dredging activity, and possible early-detection of shoaling and other channel obstructions.
- Developed Data Discovery Tool (DDT) that facilitates seamless, automated searching historical portable document format (pdf) files and creation of databases. Applied DDT to develop databases for historical Waterborne Commerce vessel draft and commodity data since 1950s, and dredging quantities from Annual USACE reports.
- Developed and released the third module of MetOcnDat (Meteorological and Oceanographic Data System), the Wind Data module (WinDat). MetOcnDat is a series of web-based tools that facilitate selection, evaluation, manipulation, generation of report-quality figures, and re-formatting of data for seamless integration into numerical models. The beta version of WinDat was released to provide access to existing online wind speed and direction data, and facilitate viewing and processing online and downloading to the Surface-water Modeling System (SMS) for use in model applications.
- Improved calculations of wave-current interaction, wave transformation in the presence of currents, and wave-wave interaction within the Coastal Modeling System, and validated calculations with laboratory and field data. These advances are critical near coastal navigation systems in which tidal currents and waves interact with coastal structures and affect channel navigability and infilling.

- Completed applied studies with the Coastal Modeling System (CMS) at multiple sites in support of USACE Districts.

### **Sediment Management Focus Area**

- Released version 2.0 of the web-based Tidal Analysis Toolbox to provide time-series analysis of tidal data including harmonic analyses, tidal prediction, data interpolation, data filtering, and principal component analysis. Conducted webinar for District employees to transfer technology. Documented example applications in user's guide.
- Released version of enhanced CMS-2D in the Surface Water Modeling System (SMS). The enhanced CMS-2D includes semi-analytical representations of vertical velocity (due to wind, bottom friction, helical flow, and Coriolis) and sediment concentration profiles (due to vertical mixing and settling) resulting in additional dispersion terms which significantly improve nearshore hydrodynamics and sediment transport. Documented operation of the enhanced CMS-2D in a Technical Report.
- Developed integrated plan for 2015 FRF Large-Scale Experiment including coastal, overland, and estuarine research topics such as migration of a nearshore berm, turbidity associated with nearshore dredge placement of sediment, overland wave propagation, water resource management of fresh and saline aquifers, invasive and endemic species dispersion, and forcing/response data for coastal and ecological processes.
- Investigated three nearshore berm placement alternatives and tracer placement locations with the surf zone sediment transport model, C2SHORE. Guidance for berm placement location will be utilized for the Field Research Facility (FRF) Large-Scale Experiment in 2015.
- Released version 2.0 of the Nearshore Berm Calculator (NBC), a planning-level tool to aid in logistics, placement (cross-shore and alongshore), and preliminary design of dredged sediments that are placed in the nearshore for the purpose(s) of providing a wave break to protect nearshore beaches, engineering with nature to allow finer sediments to move out of the system while moving beach-quality sand onshore, and/or migrate onto the beach providing additional storm protection. Because sediment for nearshore berms most commonly is dredged from adjacent navigation channels, location of the berm relative to the inlet is critical to avoid re-handling dredged sediment. Version 2.0 updated empirical guidance with data from field monitoring and modeling with the CMS.
- Released version 2.0 of the 3D Sediment Resource Tool (3DSRT), an ArcGIS module that facilitates calculating volume, location, and extent of sediment resources for use in dredging operations and shore protection. Version 2.0 upgraded operation of the 3DSRT based on feedback from users as well as the expanding sediment database as users populate 3DSRT.
- Conducted webinars and workshops demonstrating the NBC and 3DSRT.
- Released Version 2 of the regional shoreline and inlet shoal evolution model, GenCade, with upgraded channel infilling and shoal evolution processes. Updated documentation published in 2012 with guidance for calibration and statistics, a "quick start guide", and advancements including regional variability in parameters, channel infilling, and shoal evolution processes. Conducted a webinar short-course to teach recent upgrades. Released short video clip tutorials and posted on the web for rapid learning and download by GenCade users.
- Upgraded the Channel Shoaling Toolbox with additional historical dredging data; documented validation of methods in an online technical note.
- Developed a Regional Model Linkage, Archival and Sediment Budget Calculator to import calculations from GenCade and create cells and fluxes based on the calculations. This tool saves and transfers fluxes from one region (calculated from either GenCade or entered by the user) to the next, therefore facilitating a regional planning tool for decision support. The tool archives data, previous model set ups and allows formulation of a calculated regional sediment budget, and is applied to evaluate different engineering alternatives that incorporate forcing from the results of other regions within the domain.

- Updated the web-based Inlets Portal with new web tool releases and updated databases for inlet photographs, nearshore berms, and inlet geomorphology.
- Conducted quarterly short-course webinars to teach updates to CIRP products and technology. Conducted in-person regional training at District offices. Continued transferring knowledge and updates through quarterly eNewsletters. Continued supporting the Coastal Inlets Research Program website: [www.cirp.usace.army.mil](http://www.cirp.usace.army.mil).

**SUMMARIZED FINANCIAL DATA:**

Allocation for FY12	\$2,620,000
Allocation for FY12	\$2,643,000
Allocation for FY14	\$3,168,000
Estimated Carry-In Funds	\$0
President's Budget for FY15	\$2,700,000

## O&M Justification Sheet

**PROJECT NAME:** Coastal Ocean Data System (CODS) (Formerly Coastal Data Information Program (CDIP))

**AUTHORIZATION:** Authorization for the Corps of Engineers Engineer Research and Development Center (ERDC) to collect coastal field data is 33 USC 426a which originated with the River and Harbor Act of 1945, which originated in the River and Harbor Act of 1930. The latest Engineering Regulation governing the program is ER 1110-2-1406 dated 1990.

**ALLOCATION FOR FY 2014: \$4,950,000**

**BUDGETED AMT. FOR FY 2015: \$3,400,000**

### DESCRIPTIONS OF WORK AND JUSTIFICATION FOR FY 2015:

The integration of the work described below is producing a transformational waves capability for the Corps and Nation. Ocean observations are used to validate numerical hindcast models that calculate wave information over 30 to 50 year periods on the Atlantic & Pacific coasts, Gulf of Mexico and Great Lakes. This wave climate information is combined with storm wave information producing validated long-term and storm waves that drive our next generation risk-based coastal models.

Ocean waves deliver energy to the coast and impact the development and operation of Corps projects. Wave information is important for developing products for operational guidance of USACE dredging, navigation, maintenance, and emergency operations. Wave observations are used in the development and validation of new hindcast wave models and for storm analysis and new wave products are transforming how the Corps, other Federal Agencies, States, Academia, Public, and the Nation use and access accurate wave information. High quality wave information is required for the design of storm risk reduction and coastal navigation projects; to implement Regional Sediment Management (RSM) strategies; and as boundary conditions for all coastal modeling. Inaccurate and insufficient coastal wave data can result in uncertainties about project operation and design. Long-term (multiple decades) wave and storm information are also required to determine how climatic changes and extreme events will impact Corps' facilities, projects and mission operations.

Availability of high quality, long-term coastal wave observations varies nationwide with gaps in critical regions, notably the coastal Gulf of Mexico and the mid-Atlantic. For example, there were no high quality directional coastal wave measurements along the central Gulf coast when Hurricane Katrina made landfall, a fact that hampered post-Katrina forensic efforts, and a situation that continues even today. The mid-Atlantic, which has many authorized Corps projects, also has less wave measurement infrastructure in place, though that situation has improved through this program, and during the passage of Hurricane Sandy in 2012, 10 CODS supported wave gauges (many cooperatively funded) provided real time wave information. The importance of available wave information was highlighted as a critical issue by the USACE's Coastal Working Group of the Hydraulics, Hydrology, and Coastal Community of Practice in a survey on data requirements back in 2009 and again in 2012.

Besides using data collected by the Corps, our engineers depend on observations collected by others. Because of the Corps interest and expertise in waves, this program has been involved in the global effort to test and evaluate various wave-measuring systems. Evidence indicates that differences in the quality of wave parameters depend on the platform/sensor combination being used, with the potential that during extreme storm scenarios, there could be as much as a 50% over-estimation in the significant wave height from commonly used platforms. This activity is guided under the international Intergovernmental Oceanographic Commission (of the United Nations Educational, Scientific, and Cultural Organization), and the World Meteorological Organization.

The over-arching objective of the Coastal Ocean Data System (CODS) is to provide high-quality long-

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Coastal Ocean Data System

term coastal wave information along with storm-event data nationwide, to develop and provide tools for using wave and other data for managing coastal sediment, and to support sustainable coastal and navigation projects under a changing climate.

Coastal Ocean Data System activities include: 1) Wave Observations, 2) Wave Information Studies, 3) Comprehensive storm-event data sets, and 4) Participation in the Integrated Ocean Observing System (IOOS).

Wave Observations: Observation efforts are conducted in partnership with the National Oceanic and Atmospheric Administration National Data Buoy Center (NOAA NDBC, [www.ndbc.noaa.gov](http://www.ndbc.noaa.gov)) and through the state of California, the Scripps Institution of Oceanography that maintains a network of shallow-water coastal gauges under their Coastal Data Information Program (CDIP, <http://cdip.ucsd.edu>). These observations are high resolution and of appropriate accuracy for use in Corps wave information hindcast efforts for validation. The data are automatically provided to national data servers of NOAA and are publically available. The popularity of the program is evident from the usage statistics, typically 450,000 hits per month (during 2012) and over 4 gigabytes of daily data downloads. Usage has been increasing 20-30% per year. While CDIP observations have been concentrated in California, recent additions have expanded the coverage nationally including locations relative to major US ports. Much of the recent CDIP expansion has occurred through collaborating with the regional associations of IOOS, where they purchase, deploy, and maintain a buoy, leveraging the Corps investment. In 2009, the Interagency Ocean Observation Committee (IOOC) finalized the first *National Operational Wave Observation Plan* developed by the USACE in collaboration with the NOAA IOOS program office. This was a science-based assessment of the nation's wave observation requirements that identified observation gaps and for the first time, defined a measurement accuracy requirement sufficient to satisfy the directional resolution required by the Corps and others. The plan has already led to national improvements. An update to the Plan began in FY12 and is a milestone requirement of the National Ocean Policy (NOP). The update includes a re-assessment of the number, location, and priority for new locations; tighter integration between wave observations and wave modeling; and strategic recommendations for new products to meet national needs for wave information.

Wave Information Studies. The objective of the *Wave Information Studies (WIS)* is to provide high-quality coastal wave information, wave analysis products, and decision tools nationwide. The focus is to integrate measurements with model results so that the Corps has access to all available wave information (real-time observations, model hindcasts, and long-term archives) to perform their mission. Wave hindcasts use high quality wind fields and the latest wave modeling technology. To satisfy the Corps requirement for risk-based designs, at least 20-30 years of continuous wave climatology data are required. Hindcast datasets provide hourly wave information for locations every few miles along the coast. Because of this coverage, the Corps, the coastal engineering community, and the public for coastal studies routinely use these datasets. The long-term hindcast wave data are accessible through a website that receives over 25,000 monthly requests for data downloads (<http://wis.usace.army.mil/>). Available observations are used to confirm and validate the hindcast/model data, for quantifying actual conditions, and for understanding long-term wave climatology. Under this activity, wave data users are able to access either hindcast or observed wave data transparently and select powerful analysis products and tools for wave climate and extreme event planning and for decision making using either observations or model estimates, or both.

Storm Event Data Sets. Corps project designs require estimates of the extreme conditions that define and quantify an acceptable level of risk. Because project life cycles can be 50-100 years, it is desirable to extend the extreme event climatologies to be as long as possible, much longer than the maximum wave observation record, which is only ~35 years. This also suggests going back in time, defining extreme events (meteorological, and/or hydrodynamic), develop the wind forcing, and perform wave hindcasts. The wave climatology (similar to that now used by the Federal Emergency Management Agency) based on storm events could be extended over possibly 60 to 70 years. Storm event data of interest besides waves include storm track, wind fields, atmospheric pressure, surge levels, wave runup and beach/channel response.

The Integrated Ocean Observing System Participation: CODS data, including the CDIP observations are a Corps contribution to the *Integrated Ocean Observing System (IOOS)*. They support the Coastal Hazards topic under the National Ocean Policy. IOOS is an interagency activity with NOAA as the lead agency. Participating agencies pool, share and coordinate their ocean observations for the benefit of all. To facilitate this coordination, the Corps participates in IOOS workshops, regional associations, and meetings. The Corps has also established a liaison with the IOOS program office.

#### PROPOSED ACTIVITIES FOR FY 2015:

- Expand the WIS storm climatology (e.g. 1950 to 1980) for the Pacific basin, extreme storm event analysis, generation of WIS wave estimates along the coast. Update WIS hindcasts through 2014 for all domains.
- Continue to support the activities of IOOS by participating in the interagency Ocean Observation Committee (IOOC). Promote the involvement of Corps District and Division offices in their local IOOS regional associations through meetings and workshops. Continue to serve on the IOOS Quality Assurance of Real-time Oceanographic Data (QUARTOD) Board of Advisors and other IOOS committees.
- Release of the update to the *National Operational Wave Observation Plan* designated by the National Ocean Policy Implementation Plan.
- Sustain the directional wave measurements presently conducted by the NOAA NDBC and Scripps Institution of Oceanography (SIO) for the Corps under the Coastal Data Information Program. Continue the intra-measurement evaluations conducted under the Joint Oceanographic Commission of Oceanography and Marine Meteorology (JCOMM). Coordinate upgrades of NOAA NDBC directional measurement capabilities; collaborate with SIO, NOAA NDBC to leverage the Monterey Bay Buoy Farm (site for intra-measurement evaluations).
- Continue to populate model and measurement databases to CSTORM-DB.
- Continue development of the Corps Navigation and Coastal Databank and data integration framework to ensure Corps data are available to the coastal community.
- Participate in Field Research Facility experiment to assess sediment transport, ocean/coast/bay and ecosystem processes

#### ACCOMPLISHMENTS IN FY 2014:

- Expanded the WIS storm climatology (e.g. 1950 to 1980) for the Atlantic and Gulf of Mexico basins, extreme storm event analysis, and generation of WIS wave estimates along the coast. Updated the WIS hindcast through 2013 for all domains.
- Continued support the activities of IOOS by participating in the Interagency Ocean Observation Committee (IOOC). Promoted the involvement of Corps District and Division offices in their local IOOS regional associations through meetings and workshops. Continued to serve on the IOOS QUARTOD Board of Advisors and other IOOS committees.
- Sustained the directional wave measurements presently conducted by the NOAA NDBC and SIO for the Corps under the Coastal Data Information Program. Continued the intra-measurement evaluations conducted under the JCOMM. Coordinated upgrades of NOAA NDBC directional measurement capabilities; collaborate with SIO, NOAA NDBC to leverage the Monterey Bay Buoy Farm (site for intra-measurement evaluations).

- Final review (USACE and NOAA) of the update to the *National Operational Wave Observation Plan* designated by the National Ocean Policy Implementation Plan.
- Released of beta version (limited data set/basin specific) of model and measurement databases to CSTORM-DB. Continued to expand the product portfolio based on interaction with Corps field offices (via Coastal Working Group and selected staff elements).
- Continued development of the Corps Navigation and Coastal Databank and data integration framework to ensure Corps data are available to the coastal community.
- Continued investigation of measurement gap filling based on model results.

SUMMARIZED FINANCIAL DATA:

Allocation for FY12	\$4,369,000
Allocation for FY13	\$2,791,000
Allocation for FY14	\$4,950,000
Estimated Carry-In Funds	\$0
President's Budget for FY15	\$3,400,000

## O&M Justification Sheet

**PROJECT NAME:** Responses to Climate Change at Corps Projects

**AUTHORIZATION:** Various authorities including Section 216 of the River and Harbor and Flood Control Act of 1970, Section 731 of the Water Resources Development Act of 1986, specific project and purpose authorizations, Executive Order 13653, The President's Climate Action Plan, and Executive Order 13514.

**LOCATION AND DESCRIPTION:** O&M Remaining Item, Nationwide. The Responses to Climate Change Program provides planning and engineering guidance along with the supporting tools required so that U.S. Army Corps of Engineers (USACE) mission and operations are prepared and resilient to the impacts of climate change, such as changes in temperature, precipitation, and sea level, increased variability of floods and droughts, increases in very heavy precipitation event, changes in the form of precipitation (snow vs. rain), and altered storm intensity, frequency, and track. Because climate change and water availability and quality are so closely linked, climate change has the potential to affect almost all the missions of the USACE, particularly the operations and water management control activities associated with the existing capital stock of USACE water projects. Continued effective and efficient water operations in both the short (5-10 years) and longer term (10—100 Years) require nationally consistent and regionally tailored water management adaptation strategies and policies. The Responses to Climate Change Program partners with other Federal science and water management agencies, and other stakeholders, to develop and implement practical, nationally consistent, and cost-effective approaches and policies to reduce potential vulnerabilities to the Nation's water infrastructure resulting from climate change and variability. These policies balance authorized project purposes project operations and water allocations with changing water needs and climate-driven changes, working in close coordination with a wide variety of intergovernmental stakeholders and partners, including the U.S. Geological Survey (USGS), U.S. Bureau of Reclamation (Reclamation), National Oceanic and Atmospheric Administration (NOAA), the Environmental Protection Agency (EPA), the Federal Emergency Management Agency (FEMA), the U.S. Department of Transportation (USDOT), and other Federal, state and local agencies.

**ALLOCATION FOR FY 14: \$ 4,950,000**

**BUDGETED AMOUNT FOR FY 15: \$5,000,000 1/**

### DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 14:

**N:** N/A

**FRM:** N/A

**RC:** N/A

**H:** N/A

**EN:** \$5,000,000 will be used to continue development and implementation of methods for risk-based decision making that incorporate future climate uncertainty into USACE decisions with specific application to ecosystem restoration, flood risk management, and water management. Support integrated water resources management frameworks as outlined in the National Action Plan Priorities for Managing Freshwater Resources in a Changing Climate. Provide practical guidance and policies for planners and engineers to deal with coastal and inland frequency analyses under changing conditions. Continue vulnerability assessments of the existing portfolio of USACE Civil Works systems and projects; assess vulnerability of ecosystems impacted by



USACE projects and systems. Conduct additional pilot studies on river basin systems and coastal regions in coordination with other Federal agencies and state and local stakeholders to assess the impacts of climate change, the vulnerability of communities and natural resources, and adaptation strategies. Support regional climate change adaptation efforts that include collaboration among other Federal agencies, states, tribes, local governments, and other stakeholders.

**WS:** N/A

**OTHER INFORMATION:**

**ACCOMPLISHMENTS IN PRIOR YEARS:**

Accomplishments include the following:

- Supported USACE HQ on climate change policy and interagency climate change initiatives, including the Council on Climate Preparedness and Resilience. Worked closely with the Council on Environmental Quality (CEQ) and other Federal agencies to support the activities of the Council and its Working Groups.
- Continued joint activities with the U.S. Bureau of Reclamation (Reclamation), the U.S. Geological Society (USGS), the National Oceanic and Atmospheric Administration (NOAA) and other Federal agencies on climate change and water management.
- Completed interagency reports that identify capability gaps in long-term and short-term water management decision making: “Addressing Climate Change in Long-Term Water Resources Planning and Management User Needs for Improving Tools and Information” and “Addressing Climate Change in Short-Term Water Resources Operations and Management: User Needs for Improving Tools and Information.”
- Conducted a national scale proof-of-concept vulnerability assessment of the existing portfolio of USACE Civil Works systems and projects and updated this for use in nationwide CONUS screening-level assessment.
- Completed an Engineering Technical Letter that provides “Procedures to Evaluate Sea Level Change Impacts, Response and Adaptation.”
- Conducted 15 climate change adaptation pilots over a wide geographic scale and project life-cycle range to better understand key questions related to policy and guidance
- Compiled information on drought contingency plans at USACE reservoirs to support strategy to prioritize and perform updates.
- Conducted an initial vulnerability assessment of coastal projects to support prioritization for further more detailed vulnerability assessments.
- Based on the results of the reservoir sedimentation adaptation pilot study, compiled information on project-level reservoir sediment information to support development of a strategy to update reservoir sedimentation information and prioritized needs to update the watersheds considered most vulnerable to changes in climate.
- Produced externally peer reviewed report on “Appropriate Application of Paleoflood Information for the Hydrology and Hydraulics Decisions of the U.S. Army Corps of Engineers”
- Established and developed new working relationships with other agencies and stakeholders; identified opportunities for collaborative efforts to build resilience to climate change effects and develop an innovative strategy to improve our existing capacity in priority areas; pursued collaborations with other water resource agencies in these areas of common interest.
- Drafted practical policy and guidance for planners and engineers to deal with hydrologic frequency analyses under changing conditions.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$ 0. This amount will be used to perform work on the study as follows: N/A.

## O&M Justification Sheet

### **PROJECT NAME: Cultural Resources (NAGPRA/Curation)**

**AUTHORIZATION:** The Native American Graves Protection and Repatriation Act (NAGPRA), Public Law 101-601, enacted on 16 November 1990 contains data gathering, reporting, consultation, repatriation, and permitting provisions that have near-term and long-term implications for Civil Works programs and projects

**LOCATION AND DESCRIPTION:** The Native American Graves Protection and Repatriation Act (NAGPRA) addresses the recovery, treatment, and repatriation of Native American and Native Hawaiian cultural items by Federal agencies and museums. As defined by the Act, cultural items are human remains, associated funerary objects, unassociated funerary objects, sacred objects, and objects of cultural patrimony. In FY 1994, the Corps began the process of inventorying human remains and associated funerary objects and completing summaries as mandated by the legislation. In addition, the Corps is responsible for curation of cultural resource materials collected from its water resources development projects. A Mandatory Center of Expertise (MCX), located at the St. Louis District, provides overall management of the Corps NAGPRA programs and serves as an information source and a centralized base for curation compliance and contracting. The MCX will facilitate the assurance of consistent nationwide NAGPRA program implementation and operation. The Corps is responsible for the curation of at least 46,255 cubic feet of artifacts collected from its water resources development projects and at least 3,511 linear feet of associated records. Curation of these materials, the largest volume of all federal agencies responsible for this activity, is required by a number of public laws with implementing guidance in 36 CFR Part 79. Corps collections represent over 80 percent of the total DoD collections. These extensive collections are located in hundreds of curation facilities across the nation. The costs are to accomplish NAGPRA work and to fund MCX curation support to the districts. Associated with efforts to complete NAGPRA and because of the fragile nature of many of the artifact and record collections, the MCX is seeking to accelerate the process of effectively managing the Corps curation effort with the Veterans Curation Program, which provides disabled veterans with training and additional job skills in archaeological collections management, while providing for the rehabilitation of the fragile collections. Funding this item will ensure full USACE compliance with NAGPRA legislation and expedite collection stabilization, proper storage, and curation support to all Districts.

**ALLOCATION FOR FY 2014: \$5,755,000**

**BUDGETED AMOUNT FOR FY 2015: \$6,000,000 1/**

### **DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:**

**EN:** The MCX and Corps Commands will continue the process of inventorying Native American and Native Hawaiian human remains and associated funerary objects and complete updated summaries of unassociated funerary objects, sacred objects, and objects of cultural patrimony as mandated by the legislation. Information will be made available to interested individuals and groups through notices in the Federal Register. Through MCX-provided funding, districts will continue to be engaged in formal consultation with tribes for the legislated purpose of repatriating cultural objects for which there are legitimate claims. The MCX will continue to fulfill its chartered activities in support of other military services and DoD and lead in the implementation of an agency-wide, long-term plan for the curation of USACE archeological collections (heritage assets). The MCX will implement the initial phases of the curation task plan, which involves addressing the rehabilitation needs of USACE's most critical archeological collections and continuing the Veterans Curation Program. The staffing of veterans and the rehabilitation of at-risk archeological materials and associated records will be increased in FY 2015. The MCX will also continue to work closely with USACE commands on the implementation of final guidelines and procedures for field collection of archeological materials and the long-term treatment of those collections. In this regard, the MCX will act as a source of expertise for processing and rehabilitation of USACE collections. Finally, the MCX will provide leadership in the development of an MVD curation plan focused on achieving efficiencies through regional consolidation of Corps archaeological collections.

**PREVIOUS YEAR ACCOMPLISHMENTS:**

In FY 2013 the MCX continued to facilitate the assurance of consistent nationwide NAGPRA program implementation and operation and is 100 percent complete with Section 6 Summary submittals. Districts continued Section 5 compliance activities, consulted with Federally recognized Native American tribes, conducted cultural affiliation studies, published compliance documents, and repatriated NAGPRA materials. The MCX, in providing NAGPRA inventories, has assisted in establishing the extent of Corps holdings. Associated with efforts to complete NAGPRA, the MCX began the process of effectively managing the Corps curation efforts. A phased task plan for curation has been developed and is being implemented on at-risk collections. In addition, the MCX supports and leads the Veteran's Curation Program, whereby disabled veterans receive employment and training in proper identification and curation of artifacts. The project gives them additional qualifications for employment after military service and rehabilitates at-risk archaeological collections. During the fourth year of the program, 20 veterans completed training, bringing the total for the program to 124 veterans. The VCP has rehabilitated 804 cubic feet of archaeological collections and 101.5 linear feet of associated records from six USACE districts.

## O&M Justification Sheet

**PROJECT NAME:** Dredging Data and Lock Performance Monitoring System

**AUTHORIZATION:** The authority for the U.S. Army Corps of Engineers to collect data on vessel operations and cargo transiting navigation locks is contained in 33 C.F.R Part 207.800 Collection of Navigation Statistics (b)(2)(F)(3)(iv). These data are necessary to provide dredging and lock data for efficient management of Congressionally authorized navigation projects, to meet the OMB performance requirements, to supply data for analysis and modeling, as well as to respond to specific public laws, including PL 96-269 (Minimum Dredge Fleet), PL 100-656 (Small Business Set-Aside), for meeting the Government Performance and Results Act (GPRA), the Government Paperwork Elimination Act (GPEA) and Clinger-Cohen/IT Management Reform Act.

**LOCATION AND DESCRIPTION:** This is a national system.

**ALLOCATION FOR FY 2014:** \$1,139,000

**BUDGETED AMOUNT FOR FY 2015:** \$1,119,000 1

### DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:

**N: \$1,119,000** will continue to support the Corps Navigation responsibilities and be responsive to changing data needs by maintaining the Lock and Dredging information systems and data warehouse; providing essential upgrades, security and user support; maintaining and upgrading the automatic data recording of lock timing data, developing additional data warehouse reports within the Enterprise Data Warehouse to support emerging data requirements for the performance based budget. Support the standardized Notice to Navigating Interests and coordinate with the Coast Guard to integrate their notice system. Investigate the use of voice activated data recording for lock operators. Working with the Lock Operators Management Application (LOMA) team to deploy new capabilities for the navigation information portal for Corps and industry; maintain a working relationship with the Inland Marine Transportation System (IMTS) to monitor performance as implementation progresses. Through the Navigation Data Integration Framework effort coordinate and share data with other navigation information databases such as Dredging Quality Management (DQM), Asset Management (AM), and Resident Management System (RMS) to reduce data redundancy and provide more robust information. Continue tracking forecasts for the world vessel fleet, commodities and trade; expand voyage ports-of-call information for containerships; and continue analyses of marine transportation system current and future channel and infrastructure requirements for coastal harbors and inland waterways. Provide dredging and lock analytical, technical, and data support for Corps HQ, division and district offices.

The dredging and lock data collection and processing programs provide baseline navigation information and analysis to support operational and strategic management decisions, is used in the budget formulation process and performance measures for the Corps navigation projects and program. This includes, lock operations on the inland waterways; the operation and maintenance of federally authorized navigation channels; performance measures to determine the quality of service and meet OMB performance measures; supports the projections of capital investments, justification and validation of future national navigation needs. Information includes Corps performed and contracted dredging (location, quantity, cost etc.); all lock activities (barges and tons of commodities, chamber unavailability, processing times, delays etc.), and physical descriptions of all the Corps owned/operated locks. The funds support the database management, operation, quality control, user assistance, training, compliance with security requirements and ACE-IT services. Both systems are the sole source of dredging and lock data/information for the Corps, Federal government and industry. These databases are transactional systems within the Corps centralized Operations and Maintenance corporate information system. They are reported under CWBI in ITIPS and the OMB 300b submittal accounting for \$671,032 of the overall CWBI costs for FY 2015.

Technological change in the shipping industry is a continual process requiring ongoing analytical efforts to estimate the nation's future maintenance dredging needs. Update of current and future vessel characteristics, channel dimensions, commodity origins-destinations, vessel cost parameters, and other shipping data are needed to support the Corps maintenance dredging program. Tasks include tracking world trade and vessel fleet forecasts; analyses of current and projected trade patterns; assessing capability of planned and underway channel improvements to meet current and future demand, and the collection and associated analysis of dredging information and performance data in support of Civil Works navigation program decisions and budget priorities.

**FRM:** N/A

**RC:** N/A

**H:** N/A

**EN:** N/A

**WS:** N/A

**OTHER INFORMATION:**

**ACCOMPLISHMENTS IN PRIOR YEARS:** For this continuing program provided lock and dredging data and information critical for navigation performance measures, budget preparation and prioritization, the assessment of dredge bidding competition, national and regional trends in dredging costs and quantity, the annual small business reports for Small and Disadvantaged Business Utilization (SADBU), and lock availability and performance. Integrated two separate lock data input schemes into a single data input process. Performed operations, maintenance, system upgrades, security and user support for dredging and lock data systems. Initiated and deployed a program to automatically collect real-time lock data of timing events to significantly improve data quality while providing the lock operator improved situational awareness, more flexibility in his ability to manage workload and more time to perform the primary function of safely locking vessels. This capability is now available at all Corps locks. Deployed a public web page of 30 minute updates of lock queues and vessel locations. Provided the Coast Guard and Department of Agriculture regular updates of requested information. Assisted the Government Accountability Office with the 2013 review of the Corps use of hopper dredge equipment both Industry and Corps owned. Maintained the public web page for dredging information as the primary central source of the Corps national dredging program; it is an industry essential site. Modified the Dredging Information System to meet a HQ requirement to track American Recovery and Reinvestment Act funded dredging projects and the capture of the beneficial use of dredged material. Continued to assess the value of different commodities moving in domestic waterborne inland, intracoastal and Great Lakes waterborne commerce. Provided assistance to the National Research Council's Marine Board in conducting an MTS Research & Technology Seminar. World trade and vessel fleet forecasts were updated. Technical and analytical assistance was provided on channel and navigation infrastructure needs to HQ and Corps offices.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A.

## O&M Justification Sheet

**PROJECT NAME:** Dredging Operations and Environmental Research (DOER) Program

**AUTHORIZATION:** The Clean Water Act; the Marine Protection, Research and Sanctuaries Act; and Water Resources Development Acts from 1986 and following contain numerous requirements and provisions addressing contaminated sediments in navigation channels, dredged material management, and beneficial uses of dredged sediments that focus the continued need for innovation and technology development.

**ALLOCATION FOR FY 2014: \$6,886,000**

**BUDGETED AMT. FOR FY 2015: \$6,450,000**

### **DESCRIPTIONS OF WORK AND JUSTIFICATION FOR FY 2015:**

The Dredging Operations and Environmental Research (DOER) program is the only research program in the Federal government that addresses the science, engineering, and technology needs related to dredging and managing between 200 and 300 million cubic yards of sediment that must be removed from navigation channels, ports, and harbors in the United States every year. The risks and opportunities related to 1) contaminated sediments in navigation channels and harbors, 2) optimizing dredged material management, and 3) beneficial uses of dredged sediment to restore habitat, ecosystems, and coastal recreational services mandate a continuing need for developing and applying innovative practice and technology. Contaminant detection limits are now so low that sub-trace levels of toxic substances are identified. High profile contaminants continue to plague numerous Federal and permitted dredging projects. Traditional upland disposal areas have reached or are rapidly approaching capacity with few opportunities for new facilities. Aquatic placement of dredged material, which can provide both economic and environmental benefits, must be performed in a sustainable manner that addresses and manages the risks associated with contaminant exposures, the presence of threatened and endangered species, and other uses of the water body. Innovative management practices are required to ensure that environmental standards can be achieved for dredging operations in a way that minimizes costs while maximizing sustained environmental benefits from using dredged material to accomplish habitat and ecosystem restoration and produce recreational benefits. Existing knowledge gaps in relevant physical, chemical, biological, and engineering processes lead to inefficient operations, higher management costs, and limited management and beneficial use options. Performance standards and guidance for existing and improved practices are critical needs. Risk-based assessment and management practices are needed to ensure both the economic and environmental viability of navigation dredging operations. Beneficial use/reuse of dredged material is a priority and environmental resource protection is a mandate; however, costs are increasing due to the constraints noted above. Continued economic viability and security of the Nation will depend upon our ability to remove, manage and beneficially reuse dredged material in a cost-effective and environmentally responsible manner. Continued engineering and environmental innovation will be essential to managing costs and risks.

The DOER Program is an integral and highly beneficial component of the Corps' navigation dredging and environmental protection missions. Dredging and dredged material management must be accomplished within a climate of increased dredging workload, fewer placement sites, increased environmental constraints, and decreasing fiscal and manpower resources. Balancing environmental protection, restoration opportunities and critical economic needs, while maintaining and enhancing navigation infrastructure, presents significant technical challenges. The DOER program has validated innovative technologies for managing high profile contaminants and developed risk-based assessment and management practices that will significantly reduce costs for all navigation projects, ports, and harbors. Advancing the assessment and management practices used by the U.S. Navigation Program is critical to sustaining the economic and environmental benefits produced by the USACE dredging program.

Major focus areas of DOER include: (1) sediment and dredging processes, (2) environmental resource management, (3) dredged material management, and (4) risk management.

#### **PROPOSED ACTIVITIES FOR FY 2015:**

**Sediment and Dredging Processes:** The SDP Focus Area will 1) develop engineering guidance to manage nutrient releases during dredging operations, 2) develop tracer technologies to track sediment plumes and verify sediment transport modeling predictions, 3) develop engineering tools for nearshore beneficial use applications for dredged material, 4) update models of sediment dynamics in wetland systems, 5) develop guidance on sediment budget analysis to support navigation channel and dredged material management. Specific FY15 products include:

- Publish engineering guidance to manage nutrient releases during dredging operations
- Document tracer applications for tracking sediment plumes and sediment transport modeling
- Publish engineering tools for nearshore beneficial use applications for dredged material
- Publish model of sediment dynamics in wetland systems to guide beneficial use to support coastal resilience
- Publish guidance on sediment budget analysis to support navigation channel and dredged material management.

**Environmental Resource Management:** The ERM Focus Area will 1) develop framework for ecologically based design for beach nourishment with dredged sediments, 2) update model to evaluate risk management alternatives to seasonal restrictions on dredging (i.e., environmental windows), 3) document new technologies for detecting and managing risks from dredging operation to large aquatic species (e.g., marine mammals and turtles), 4) develop model and supporting data to reduce costs and constraints related to Interior Least Tern birds, 5) update online database documenting Engineering With Nature projects and practices, 6) publish guidance on underwater noise produced by dredging operations in relation to impacts on sensitive aquatic species and 7) document opportunities for reducing costs related to seasonal restrictions on dredging. Specific FY15 products include:

- Publish framework for ecologically based beach design
- Publish findings documenting cost-saving approaches for managing the status of Interior Least Terns
- Document effectiveness of new technologies for detecting large aquatic species near dredging operations
- Publish results of modeling exposures of fish eggs and larvae to suspended sediment during dredging operations
- Publish guidance for managing risks related to underwater noise produced by dredging operations
- Document opportunities for new aquatic beneficial use alternatives for dredged material
- Publish updated database of Engineering With Nature projects

**Dredged Material Management:** The DMM Focus Area will: 1) update web-accessed Dredging Portal expedite to support operational design and management, 2) document capability using enhanced hydrodynamic modeling to represent sediment transport, 3) develop engineering guidance for using dredged material to build land and enhance habitat, 4) document application of enhanced particle tracking model for dredging operations design, 5) develop open-water dredged material placement optimization tool, 6) update guidance for long-distance conveyance of dredged material. Specific FY15 products include:

- Provide web access to updated Dredging Portal
- Publish results of enhanced hydrodynamic modeling to represent sediment transport
- Release engineering guidance for using dredged material to build land and enhance habitat
- Publish enhanced particle tracking model application
- Develop open-water placement optimization tool
- Publish updated guidance for long-distance conveyance of dredged material.

- Participate in Field Research Facility experiment to assess sediment transport, ocean/coast/bay and ecosystem processes

**Risk Management:** The RM Focus Area will 1) develop synthesis of water quality effects related to dredging operations, 2) develop next-generation toxicity tests to increase the cost-efficiency of environmental assessments of dredged material, 3) develop weight of evidence approach for environmental evaluations of dredged material, 4) develop guidance for restoring engineering functions to engineered caps, 5) document innovative treatment methods for beneficial use of contaminated sediments, 6) develop guidance for documenting ecosystem services produced by Engineering With Nature projects. Specific FY15 products include:

- Publish summary of water quality effects related to dredging operations
- Publish guide for applying weight of evidence analysis for dredged material
- Publish cost-effective treatment technologies for beneficial use of contaminated dredged material
- Develop guidance for restoring engineered caps
- Publish improved toxicity testing methods for dredged material
- Publish guidance for applying ecosystem services to dredging projects

#### **ACCOMPLISHMENTS FOR FY 2014:**

**Sediment and Dredging Processes:** The SDP Focus Area 1) demonstrated sediment budget methods for regions that include navigation channels to improve environmental assessments and increase efficiency of operations, 2) refined models for assessing contaminant and nutrient release during dredging operations, 3) developed tools to optimize beneficial use, including shallow water placement and open lake placement, 4) identified and enhanced technologies to reduce channel infilling and the associated need for dredging, 5) evaluated sedimentation processes in coastal wetlands to improve wetland creation projects achieved through beneficial use of dredged sediments, 6) provided engineering guidance to support use of nautical depth in channels with fluid mud bottoms to ensure safe, reliable navigation and efficient dredging project management. Specific FY14 products include:

- Published demonstration results for regional sediment resuspension budgets
- Published improved model for nutrient and contaminant release
- Developed and published new model for engineering near-shore placement of sediment for beneficial use
- Published methods for reducing channel in-filling and dredging volumes
- Improved description of sedimentation processes in wetland environments to support beneficial use engineering
- Demonstrated and published results of fine-scale sedimentation methods
- Published engineering guidance for implementing nautical depth approach for U.S. Navigation Program

**Environmental Resource Management:** The ERM Focus Area 1) initiated development of ecologically based design for beach nourishment with dredged sediments, 2) enhanced modeling and analysis tools to define costs and alternative management practices for seasonal restrictions on dredging (i.e., environmental windows), 3) developed new technologies for detecting and managing risks to large aquatic species (e.g., marine mammals and turtles), 4) completed research and model development to reduce costs and constraints related to Interior Least Tern birds, 5) published online database documenting Engineering With Nature projects and practices, 6) developed and published guidance on underwater noise produced by dredging operations in relation to impacts on sensitive aquatic species and 7) documented environmental and fisheries benefits from open-water placement of dredged sediments. Specific FY14 products include:

- Published model for evaluating effects of dredging activity on population status of endangered Interior Least Terns
- Published findings related to new technologies for managing risks for large aquatic species during dredging operations
- Published results documenting fishery resource use of dredged material placement sites



- Published new simulation model for predicting exposures of fish eggs and larvae to sediment suspended by dredging operations
- Published guidance on environmental risks associated with underwater noise produced by dredging operations
- Documented opportunities for new aquatic beneficial use alternatives for dredged material
- Published online Engineering With Nature database

**Dredged Material Management:** The DMM Focus Area 1) developed data tools to expedite and improve operational design and management, 2) incorporated enhanced hydrodynamic model for improved sediment transport modeling, 3) developed tools to support placement of dredged material in nearshore and wetland conditions for the purpose of building land or enhancing habitat, 4) publish improved particle tracking model for dredging operations design, 5) developed and published new continuous and discrete discharge model for efficient dredged material management, 6) initiated GIS tool development for identifying beneficial use opportunities. Specific FY14 products include:

- Published Dredging Portal system to optimize dredging operations
- Published results demonstrating enhanced long-term fate model
- Published results of new open water dredged material placement models for continuous and discrete flows
- Published study results demonstrating nearshore beneficial use projects for building land or enhancing habitat
- Developed design for GIS planning tool for beneficial use projects

**Risk Management:** The RM Focus Area 1) developed new risk models for environmental evaluations of dredged material, 2) published demonstrations of decision modeling to optimize dredged material management, 3) documented innovative treatment methods that can be applied to dredged material to reduce costs associated with managing contaminated sediments, 4) initiated development of next-generation toxicity tests to increase the cost-efficiency of environmental assessments of dredged material, 5) published guidance on life cycle analysis for dredging projects to reduce long-term costs, 6) developed guidance for monitoring environmental conditions and benefits associated with sediment management. Specific FY14 products include:

- Published new spatial bioaccumulation model for assessing risks from contaminated dredged material
- Published case examples of decision modeling to guide efficient environmental management of dredged material
- Developed cost-effective treatment technologies for contaminated dredged material
- Published method to apply life cycle analysis to the U.S. dredging program
- Published descriptions of new toxicity testing methods for dredged material
- Designed requirements for environmental monitoring metrics

**SUMMARIZED FINANCIAL DATA:**

Allocation for FY12	\$6,114,000
Allocation for FY13	\$6,126,000
Allocation for FY14	\$6,930,000
Estimated Carry-In Funds	\$0
President's Budget for FY15	\$6,450,000

## O&M Justification Sheet

**PROJECT NAME:** Dredging Operations Technical Support (DOTS) Program

**AUTHORIZATION:** Authorization for the Corps of Engineers Engineer Research and Development Center (ERDC) to conduct R&D is codified in 10 U.S.C. 2358 ("The Secretary of Defense or the Secretary of a military department may engage in basic research, applied research, advanced research, and development projects that are necessary to the responsibilities of such Secretary's department in the field of research and development.")

**ALLOCATION FOR FY 2014: \$2,792,000**

**BUDGETED AMT. FOR FY 2015: \$2,820,000**

### DESCRIPTIONS OF WORK AND JUSTIFICATION FOR FY 2015:

Maintenance of the nation's navigation infrastructure requires compliance with numerous complex environmental statutes and Presidential Executive Orders. The Dredging Operations Technical Support (DOTS) Program fosters a "one-door-to-the-Corps" clearinghouse for access to comprehensive information on technology related to navigation O&M functions, including technology demonstrations and training essential to all stakeholders involved in Federal and permitted navigation projects. DOTS is structured as a centralized source for technology transfer that maximizes cost effectiveness and facilitates expeditious and consistent implementation of national policies and laws based on complex technical requirements. The DOTS Program fosters application of state-of-the-art technologies and ongoing research results for high priority problems identified by field offices. Emerging environmental concerns often cause uncertainty and unanticipated difficulties in the administration of the Corps' navigation dredging program. The DOTS program's technology transfer function provides access to an extensive, up-to-date, consistent technology base whereby timely, proactive responses to technical issues can be made as they emerge. This approach promotes networking and solutions to common problems confronting the navigation dredging community. DOTS supports knowledge-based exchange of information throughout the interagency coordination process. Short-term work efforts to address generic Corps-wide technical problems encountered during maintenance of navigable waterways and infrastructure are major features of the DOTS Program. Technology transfer and demonstration of new techniques with potentially high returns on investment for management of Corps navigation maintenance projects are critical DOTS functions. By disseminating technically sound knowledge to field offices constrained by staff reductions and limited resources, the DOTS Program continues to perform a critical technology transfer role in support of all O&M navigation projects. DOTS fosters productive, collaborative relationships with other federal and state agencies with missions relevant to navigation

In the last decade, new problems have emerged for the USACE Navigation Program as a result of elapsed project life cycle considerations, growing project work backlogs under fixed budgets, increasing expenses to dredge, and a changing workforce with diminishing technical expertise with attrition. Moreover, in a scenario where increased funds become available through changes to how the Harbor Maintenance Trust Fund is administered, there are challenges to improve the efficiency of execution. To comprehensively address these issues and concerns and to formulate the most efficient and nationally coordinated program, the USACE Dredging Program requires the development and transfer of tools, methodologies, and practices that transfer ERDC technology to create best practices in District business processes. The Dredging Innovations Group (DIG), within DOTS, fills an important functional gap for the USACE Dredging Program through highly responsive and adaptive management for the delivery of innovative solutions to the most pressing problems and evolving issues affecting the execution of the USACE' navigation mission. The DIG leverages existing ERDC R&D Program products and strategically engages USACE interests through DOTS to anticipate and identify priority problems, needs, and opportunities, address challenging Field and Program requirements, infuse ERDC R&D knowledge and technologies into best practice, lower technical execution barriers under changing conditions, inform decision-making with credible, defensible science, and build and sustain USACE institutional capacity.

#### PROPOSED ACTIVITIES FOR FY 2015:

- Develop and implement a robust communication strategy to target new employees in response to USACE personnel turnover due to retirement and attrition. The goal is to increase their understanding of dredging technology and related operations.
- DOTS will continue to support technology transfer functions by demonstrating Corps expertise and problem solving capabilities at the national and international levels (e.g., London Convention and the World Association for Waterborne Transportation Infrastructure). Corps experts participated in several international groups dealing with common dredging and navigation issues. Their presence on expert working groups and panels fosters exchange of valuable information, and facilitates application of new science and engineering solutions for emerging issues confronting Corps field offices. Participation in high-level technical exchanges ensures credibility in future interagency coordination efforts.
- DOTS will enhance its efforts in educational outreach, providing a broad spectrum of materials related to the Corps' navigation mission. Relying on internet resources, this activity has rapidly become an extremely effective means of conveying comprehensive, accurate information to a broad audience, including students, educators, and the general public as well as professionals.
- DOTS will identify opportunities to leverage with all Navigation R&D Programs (Dredging Operations & Environmental Research, Regional Sediment Management, Coastal Inlet Research Program, etc) to address dredging and navigation needs through technology transfer of applicable products.
- DIG will continue to communicate with leadership to identify contemporaneous and anticipate impending high-priority problems and issues and adaptively manage its program to be responsive to those needs. DIG will continue its direct collaboration with R&D Programs and Communities of Practice and work to improve cross-business line communication to increase discovery of opportunities to achieve further improvements in sustainability for the Dredging Program.
- According to the anticipated priorities for FY15, DIG proposes to 1) further develop and implement technologies which provide real-time and synthesized dredging measurements, testing, and data to foster more efficient and cost effective operations, 2) utilize developed methodologies and formulate tools and credible data to address unjustified environmental constraints, inform decision making, and reduce or remove unwarranted or out of project purpose operational project requirements requested/mandated by resource agencies, 3) utilize methodologies developed and successes gained in the area of open water placement of dredged material in the Great Lakes and through collaboration with the Regional Sediment Management Program to reinvigorate discussions with resource agencies in other areas to reduce the demand on critically-limited disposal facility capacity, reduce costs across the Dredging Program, and keep sediment in the systems for ecological health, and 4) work within DOTS to respond to the continuing and changing needs of the USACE workforce by developing and deploying materials and tools to increase technical knowledge and capabilities in the fields of dredging.
- Participate in Field Research Facility experiment to assess sediment transport, ocean/coast/bay and ecosystem processes

#### ACCOMPLISHMENTS FOR FY 2014:

- Expanded support for technical responses to field offices encountering problematic navigation issues. Whereas DOTS has historically concentrated on dredging and dredged material placement, the program's resources have been increasingly requested by personnel engaged in

many other navigation-relevant activities (e.g., safe inland navigation lock operations, coastal inlet sedimentation issues, navigation structure performance, etc.). Increasing demand for rapid technical advice continued to be constrained by available funding.

- Continued critical support of ongoing efforts to resolve expensive, controversial conflicts between navigation operations and maintenance (O&M) activities and protection of Threatened and Endangered Species through effective interagency coordination and collaboration with credible, independent third parties. One example is sponsoring the American Bird Conservancy to mediate and determine most effective recovery strategies for the endangered Interior Least Tern. Separately, ongoing engagement with multiple agencies seeking improved management practices for protection of endangered sea turtles yielded progress toward more flexible environmental windows and potentially substantial cost savings across multiple North Atlantic Division, South Atlantic Division, Mississippi Valley Division, and Southwest Division Districts. These efforts, which have high probabilities of long-term substantive cost savings to the O&M budget, require expanded short-term investments. Likewise, emerging issues related to protection of species proposed for federal listing (e.g., Atlantic sturgeon) were addressed through proactive exchange of knowledge pertaining to dredging and other navigation O&M processes in order that informed decisions were integrated into mandated protection measures upon listing.
- DOTS continued to support standardized reporting to the US Fish and Wildlife Service of Endangered Species Act compliance costs affecting O&M navigation projects as mandated by Congress. Prior to implementation of the DOTS-sponsored system, costs were estimated using arbitrary methods.
- Expanded support of mandated reporting to other Federal and international agencies with regard to dredged material placement in oceanic waters and costs of compliance for navigation projects with the Endangered Species Act. DOTS developed standardized, faster, accessible, and accurate web-based tools for satisfying these requirements. Ongoing efforts will refine these tools for expedited use by field office users.
- Expanded investment in training of Corps and regulatory agency staff in dredging and other navigation mission processes. Training of newly recruited Corps and regulatory agency personnel showed significant payback in the form of conflict avoidance and project execution delays stemming from unfamiliarity with basic dredging processes and misperceptions. Education of personnel engaged in navigation project planning, implementation, operation, and maintenance is a critical limitation as demographics in the regulatory agencies change through pulses of retirement and recruitment. DOTS sponsored its first Summer Webinar Series in an attempt to appeal to those operating in the new virtual paradigm.
- An undertaking sponsored by DOTS in FY13-FY14 was a major review and revision of the existing Inland and Ocean Testing Manuals. These guidance documents, partnered between the Corps and the Environmental Protection Agency, provide national guidance on the handling and disposition of sediments, with reference to determination of contaminant status in compliance with Federal and state criteria. Testing requirements and accurate interpretation of results are critical factors determining the progress of numerous Corps projects. However, the existing guidance is outdated, not having been revised in over 15 years. DOTS supported a major updating effort that will lead to a combined, state-of-the-science guidance document that will serve as the single source for detailed information on sediment testing and handling procedures.
- Continued expansion of web-based tools and access to existing knowledge pertaining to the broad navigation mission. This activity was given a major emphasis in order to keep pace with rapid advances in information sharing technologies and growing dependence on internet resources.

- DIG identified priority objectives for FY14 in close coordination with the HQUSACE Navigation Business Line Lead and rapidly resourced the needed subject matter experts and R&D knowledge and technologies to develop the needed solutions. DIG brought ERDC, District, industry and academia expertise together and developed capabilities, tools, and methodologies to improve channel availability, optimize dredge fleet utilization, increase cost efficiencies, and develop workforce capabilities.
- DIG addressed the challenging objective to optimize dredge fleet scheduling in a highly environmentally restrictive atmosphere by developing software tools capable of performing sensitivity analyses to obtain cost savings across the Dredging Program. DIG developed a Dredging Price Index and established contaminant-specific screening levels for dredged sediment testing that will be used to inform the development of new practices and improve the sustainability of our Navigation Program. DIG continued its critical work in increasing the acceptability of dredged material management (DMM) via open water placement in the Great Lakes through focused monitoring and sharing successes from the Superior-Duluth Harbor DMM demonstration project which resulted in a relaxation of the long-standing outright opposition to open water placement. This work is expected to result in a long-term increase in channel availability, navigation safety, and economic growth throughout the Great Lakes and across the nation. DIG also continued its work to improve the technical capabilities of the USACE workforce through development of dredging-related materials and curriculum.

**SUMMARIZED FINANCIAL DATA:**

Allocation for FY12	\$2,736,000
Allocation for FY13	\$2,730,000
Allocation for FY14	\$2,891,000
Estimated Carry-In Funds	\$0
President's Budget for FY15	\$2,820,000

## O&M Justification Sheet

**PROJECT NAME:** Earthquake Hazards Reduction Program

**AUTHORIZATION:** This program is being conducted under the authority of PL 101-614, November 1990, National Earthquake Hazards Reduction Program Re-Authorization Act.

**ALLOCATION FOR FY 2014: \$267,000**

**BUDGETED AMT. FOR FY 2015: \$270,000**

### **DESCRIPTIONS OF WORK AND JUSTIFICATION FOR FY 2015:**

**JUSTIFICATION:** The purpose of this program is to respond to the requirements of PL 101-614, National Earthquake Hazards Reduction Program (NEHRP) and Executive Order 12941, Seismic Safety of Existing Federal Buildings. This Executive Order directs all Federal departments and agencies to develop an inventory of their owned and leased buildings and to estimate of the cost of mitigating unacceptable seismic risks in their buildings. The objective of PL 101-614 is to establish and initiate, for buildings and lifelines, a systematic approach designed to reduce the loss of life, reduce injuries and to reduce the economic costs resulting from earthquakes occurring in the United States. Lifelines are defined as public works systems and utility systems.

**PROPOSED ACTIVITIES FOR FY 2015:** Implementation of the SSAC or Seismic Safety Action Classification System. This program provides evaluation and mitigation procedures for seismically deficient buildings while ranking them in order of greatest risk. This program will meet the executive order requirements and the legal concerns, while continuing to develop technical seismic building evaluation and mitigation procedures. USACE has a legal opinion that indicates that once we have identified seismically vulnerable structures we are legally responsible to develop a plan to mitigate these vulnerabilities. As part of this program, seismic evaluation personnel will be identified and appropriately trained. Continue to develop and refine guidance on the seismic evaluation and risk mitigation procedures of lifeline facilities, this includes publishing EM 6057, Seismic Lifeline Evaluation for Hydropower Components. Continue to provide assistance to Districts and Divisions in the development of mitigation concepts and designs and to provide required support to HQUSACE. In addition, funds from this program helps to maintain technical seismic expertise, develop guidance for additional lifeline systems not previously covered in commercially available standards or existing USACE guidance, and to develop guidance for operations personnel. This program will also continue to fund the publication of new criteria such as ER 8161, 'Seismic Design of Civil Works Buildings'. This program will continue to update existing seismic criteria and develop new criteria as required or needed.

**ACCOMPLISHMENTS IN PRIOR YEARS:** Over 12,000 owned buildings and powerhouses have been inventoried. Seismic screenings of over 700 buildings in all seismic regions have been accomplished. Seismic evaluations have been performed on over 200 buildings and powerhouses in various geographic regions, primarily in high and moderate seismic regions. Reports have been developed for FEMA to be forwarded to Congress on buildings and powerhouses. Criteria has been developed and published for the evaluation and mitigation of buildings and lifelines. In addition, building evaluation criteria, powerhouse evaluation criteria and lifeline criteria for intake towers, navigation locks, and powerhouses have all been developed. Seismic evaluation and mitigation seminars have been conducted for District and Division personnel. Technical support has been provided to the districts and divisions in accomplishing evaluations. Over 30 rehabilitation case studies and over 25 rehabilitation cost estimate studies for structural or nonstructural powerhouse deficiencies have also been accomplished. ER 1110-2-1806 has been published.

## O&M Justification Sheet

**PROJECT NAME:** Facility Protection (CISP)

**AUTHORIZATION:** The Energy and Water Development Appropriations Act, 2002 (PL 107-66), Consolidated Appropriations Resolution 2003 (PL 108-7), Energy and Water Development Appropriations Act 2004 (PL 108-137), Consolidated Appropriations Resolution 2005 (PL 108-447), Energy and Water Development Appropriations Act 2006 (PL 109-103), and the President's Budget proposes similar authorization for FY 2007.

**LOCATION AND DESCRIPTION:**

**ALLOCATION FOR FY 2014:** \$5,445,000

**BUDGETED AMOUNT FOR FY 2015:** M: \$3,500,000 O: \$0 T: \$3,500,000 1/

**DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:**

**FRM:** \$3,500,000

The requested funding will support the following FY 2015 activities to be executed through the U.S. Army Corps of Engineers (USACE) Critical Infrastructure Protection & Resilience (CIPR) Program: USACE's 2015 implementation of a Consequence-Based Top Screening (CTS) methodology for systematic screening and consistent prioritization of high-consequence (critical) dams and navigation locks; implementation of regional resilience efforts supporting the development of integrated regional strategies incorporating public and private stakeholders within a region to help identify, analyze, assess, and enhance regional preparedness and disaster resilience using multi-jurisdictional discussion-based activities; development of consequence analysis studies and system-based interdependency assessments at Corps civil works critical projects through USACE's Modeling, Mapping, and Consequence Estimation Production Center of Expertise; development of advanced modeling and simulation studies for critical infrastructure, and; collaborate in the training and implementation of a systematic approach and risk-mitigation strategy for evaluation and comparison of security risks across USACE's critical infrastructure portfolio using the USACE Common Risk Model for Dams (CRM-D) risk assessment methodology, which supports the identification of infrastructure protection requirements for risk mitigation to manmade threats.

The CIPR Program supports security risk assessment and prioritization efforts for USACE Civil Works portfolio of projects in order to enhance its security, protection, and resilience. The CIPR program security risk assessment framework is fully aligned with national policy defined by Presidential Policy Directive (PPD-21) "Critical Infrastructure Security and Resilience", Executive Order 13636, "Improving Critical Infrastructure Cybersecurity", and the Presidential Policy Directive 8 (PPD-8) "National Preparedness Goal". The objectives of the CIPR program include assessing and prioritizing Corps civil works critical infrastructure by implementing a portfolio-wide security risk assessment framework. The CIPR program focus is not necessarily facility-specific, as it addresses portfolio-wide resilience-enhancing efforts. This holistic, integrated framework is facilitated through the implementation of system-wide and asset-specific integrated actions for enhanced protection and resilience at USACE critical infrastructure facilities. The goals of the CIPR program are to develop, implement and sustain an integrated risk-based assessment & management framework for Corps civil works critical infrastructure; to assess and prioritize Corps civil works critical infrastructure by developing and implementing a portfolio-wide risk assessment approach; and, to improve the risk profile of Corps civil works critical infrastructure. These goals will be attained by developing solutions, methodologies, and tools to address key vulnerabilities to manmade incidents, implementing effective programs to minimize consequences, improving the response and recovery capabilities using an all-hazards approach, and prioritizing life-cycle investments.

**OTHER INFORMATION:** In FY 2014, the USACE CIPR program implemented the 2014 Consequence-Based Top Screening (CTS) methodology screening and prioritization efforts at USACE Civil Works

projects whose potential failure, damage, or disruption could lead to the most significant consequences at the national/regional level (critical impacts to the Nation's public health and safety, economic, and/or national security). The CTS methodology represents a consistent sector-wide process to identify and characterize high-consequence facilities, and provides the initial step of the security risk assessment and management framework implemented by USACE. Additional accomplishments in FY 2014 include: collaborated in the development of web-based capabilities (Dams Sector Analysis Tool) consolidating analysis tools and data collection mechanisms supporting the screening, prioritization, and characterization of critical assets; provided oversight and support to the development consequence analysis and system-based interdependency assessment of Civil Works projects supporting critical infrastructure screening efforts through USACE's Modeling, Mapping, and Consequence Estimation Production Center of Expertise; supported MSCs in the implementation of a systematic approach for security risk assessment using the USACE Common Risk Model for Dams (CRM-D) risk assessment methodology at USACE critical projects; developed targeted summaries (Comprehensive Facility Reports) of key information on selected dams and locks of regional or national significance to facilitate quick regional impact assessment reporting for natural hazards and manmade incidents; conducted blast damage assessment pilot studies using ATPlanner-Dams at selected number of critical projects; continued improvement of simplified blast damage assessment tools (ATPlanner-Dams) of water-backed embankment dams from explosive loading using data from full-scale and reduce-scale experiments; conducted small- and large-scale experiments using embankment, concrete dams, spillway gates, and navigation lock models to evaluate blast-induced damage under crest- and water-side attack scenario, and; continued interagency collaboration with the DHS designated Dams Sector-Specific Agency and other Dams Sector stakeholders on the coordination and implementation of critical infrastructure protection and resilience initiatives. The CIPR initiatives supported by the requested funding provide the foundation for the development of new Critical Infrastructure Protection and Resilience requirements in the FY 2015 budget.

<sup>1/</sup> Unobligated Carry-in Funding: The actual unobligated balance from FY 2013 into FY 2014 (3011A report) for this study is \$270,255. This amount remained as a sensible reserve to be used to support any sudden additional requirements associated with a surge in security risk reduction measures at USACE critical projects due to increased threat levels. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$50,000. This amount will be used to fund additional projects in support of the 2015 implementation of consequence-based screening efforts to identify and prioritize USACE Civil Works critical infrastructure projects.



## O&M Justification Sheet

**PROJECT NAME:** Fish & Wildlife Operating Fish Hatchery Mitigation

**AUTHORIZATION:** Public Law 111-85

**LOCATION AND DESCRIPTION:** This is a recurring national program. The U.S. Fish and Wildlife Service (USFWS) was authorized by Congress in 2008 to seek reimbursement from the Corps of Engineers for O&M costs incurred by National Fish Hatchery System for mitigation of certain Corps dam projects which typically predated the National Environmental Policy Act. Subsequent congressional direction as well as concurrence by OMB and ASACW has resulted in a specific line item authorization in the Corps FY10-14 budgets to meet the Corps mitigation requirements.

**ALLOCATION FOR FY 2014:** \$4,653,000

**BUDGETED AMOUNT FOR FY 2015:** \$4,700,000 1/

### DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:

**EN:** \$4,700,000 The 2014 funding will be transferred to the USFWS for National Fish Hatchery (NFH) for their costs to produce and release approximately 12 million mitigation fish at 45 different receiving waters impacted by 37 Corps dams. This amount meets the 100 percent of Corps fish mitigation as determined by 2008 Fish and Wildlife Service estimate.

### PREVIOUS YEAR ACCOMPLISHMENTS:

FY 2013: \$3,800,000 Distributed to the Fish and Wildlife Service to produce 80 percent of the Corps mitigation.

*1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2013 from prior appropriations for use on this effort is \$ 0. This amount will be used to perform work on the study as follows: N/A*

## O&M Justification Sheet

**PROJECT NAME:** Great Lakes Tributary Model, IL, IN, MI, MN, NY, OH, PA, WI

**AUTHORIZATION:** Section 516(e), Water Resources Development Act of 1996, as amended by Section 334, WRDA of 2000 and Section 5013, WRDA of 2007

**ALLOCATION FOR FY 2014<sup>1</sup>:** \$594,000

**BUDGETED AMT. FOR FY 2015:** \$600,000

### DESCRIPTIONS OF WORK AND JUSTIFICATION FOR FY 2015:

There are 137 Federal navigation projects within the Great Lakes, including deep-draft commercial harbors and shallow-draft harbors. Sedimentation within these navigation channels requires periodic dredging and the amounts of sediments to be dredged and the levels of pollutants in these sediments are determined by decisions made throughout the watersheds that drain into these navigation channels. Under this authority, the USACE is developing sediment transport models for tributaries to the Great Lakes that discharge to Federal navigation channels or Areas of Concern (AOCs). These models and related tools are being used by state and local agencies in the evaluation and implementation of soil conservation and nonpoint source pollution prevention measures throughout the Great Lakes watershed. By enhancing the capabilities of state and local agencies to reduce soil erosion and nonpoint pollution, this program is helping reduce the loading of sediments and pollutants to navigation channels and AOCs, and reducing the costs for navigation maintenance and sediment remediation.

This program is being implemented in coordination with multiple Federal agencies, the eight Great Lakes states, and over 200 soil and water conservation districts in the Great Lakes watershed. This program has developed models and related watershed planning tools for over 30 tributaries that discharge to Federal navigation channels. Models are being utilized by state and local governments to support prioritization of soil conservation practices and non-point pollution actions that will reduce loadings sediments and levels of contaminants in Great Lakes harbors. This program directly supports the objectives of the Administration's Great Lakes Restoration Initiative as well as the recommendations of the Interagency Ocean Policy Task Force.

### PROPOSED ACTIVITIES FOR FY 2015:

- \$600,000 will be used to continue or complete development of models at the following tributaries (Calumet River, IL; Munuscong River, MI; Brandy and Sucker Brooks, NY, and; Jordan River, MI) and continue the enhancement and utilization of Internet-based modeling tools by local agencies and stakeholders for sub-watershed evaluations. Districts will provide technical support and training to state and local partners that are using models developed under this program to reduce loadings of sediments and contaminants to Great Lakes tributaries, thereby reducing future dredging requirements at Federal navigation channels and promoting the restoration of beneficial uses at Great Lakes Areas of Concern.
- Additional funding of \$480,000 could be used to initiate or enhance models at priority tributaries, including: Maumee River, OH; Saginaw River, MI, and; Fox River, WI. Funds could also be used to conduct additional training for state and local land management agencies on these and other tools to enhance soil conservation and nonpoint source pollution prevention.

### ACCOMPLISHMENTS IN FY 2014

- FY 2014 funds are being used to continue or complete development of models at the following tributaries (Calumet River, IL; Munuscong River, MI; Brandy and Sucker Brooks, NY, and; Jordan River, MI) and continue enhancement and utilization of Internet-based modeling tools by local agencies and stakeholders for sub-watershed evaluations. A special study on the impacts of

dams on sediment loadings to Great Lakes tributaries is being completed as well as enhanced tools for estimating bank erosion from streams. Districts are providing training sessions for stakeholders on internet-based tools developed under this program and conducting training for stakeholders on how to monitor sediments in their streams.

- Models and related watershed planning tools have already been completed for over 25 tributaries to Federal navigation channels and Areas of Concern in the Great Lakes (Waukegan River, IL; Grand Calumet River, IN; Trail Creek, IN; Burns Waterway, IN; Battle Creek, MI; Saginaw River, MI; St. Joseph River, MI; Clinton River, MI; Grand River, MI; Rouge River, MI; Nemadji River, MN/WI; Knowlton Creek, MN; Buffalo River, NY; Cayuga Creek, NY; Eighteenmile Creek, NY; Genesee River, NY; Niagara River, NY; Cattaraugus Creek, NY; Oak Orchard, NY; Grand River, OH; Upper Auglaize River, OH; Blanchard River, OH; Black River, OH; Cuyahoga River, OH; Mill and Cascade Creeks, PA; Manitowoc River, WI; Menomonee River, WI; Siskiwit River, WI; Whittlesey Creek, WI). In addition, Internet based tools have been developed in cooperation with Michigan State University, Purdue University, and the U.S. Forest Service to support decision making on: agricultural and forestry practices; development of Total Maximum Daily Loads (TMDLs) for nonpoint source pollution control; prioritization of conservation practices; management of urban development, and; design of stream restoration projects.
- This program continues to enhance the capabilities of state and local governments to manage programs that reduce the loading of sediments and levels of contaminants in tributaries to the Great Lakes. Many of the models and tools and all of the experience gained from this program are transferrable to other watersheds outside the Great Lakes.

SUMMARIZED FINANCIAL DATA:

Allocation for FY12	\$ 1,048,000
Allocation for FY13	\$ 988,000
Allocation for FY14	\$ 600,000
Allocations through FY14	\$ 13,466,000
Estimated Carry-In Funds	\$ 0
President's Budget for FY15	\$ 600,000

## O&M Justification Sheet

### Inland Waterway Navigation Charts (IENC)

#### SUMMARIZED FINANCIAL DATA:

Estimated Annual Cost of Continuing Program	\$4,000,000
Allocation for FY 2014	\$3,470,000
Allocation Requested for FY 2015	\$3,000,000
Increase in FY 2015 from FY 2014	\$ 470,000

**AUTHORIZATION:** PL 85-480, approved 2 July 1958, authorizes the Commander, US Army Corps of Engineers (Corps) to publish information pamphlets, maps, brochures, and other material on river and harbor, flood control, and other civil works activities, including related public park and recreation facilities that may be of value to the general public.

**JUSTIFICATION:** This effort provides Corps' Electronic Navigational Chart (ENC) data for all inland waterways and other federal navigation channels maintained by the Corps to be used by commercial Electronic Chart Systems (ECS), which, when combined with the existing Differential Global Positioning System (DGPS), will improve the safety and efficiency of marine navigation in both inland and coastal waterways of the United States. On inland waterways, the Corps will collect more accurate survey and mapping data than is currently on its paper charts, and produce Inland Electronic Navigation Charts (IENCs) in accordance with navigation users and ECS vendors. When combined in the commercial ECS, the technology will greatly improve the safety and efficiency of navigation. This will allow safe navigation through bridge openings during fog and other bad weather conditions as well as during heavy traffic situations, and provide an accurate display for other systems such as radar and Automatic Identification Systems. The Corps will use the Inland ENC data format, which is based on the S-57 international data format, the electronic data transfer standard prepared by the International Hydrographic Organization. The S-57 format is consistent with electronic chart products produced by the National Oceanic and Atmospheric Administration (NOAA), and the chart products produced by the two agencies will be coordinated for compatibility in adjoining areas. The Corps will also coordinate with the U.S. Coast Guard for aids to navigation information and collaboration on rules for chart carriage by waterway users. In coastal and Great Lakes areas, the Corps will produce standardized channel condition chart products that will provide consistent and reliable information to NOAA for chart updates, in accordance with Water Resources Development Act of 2000, Section 558. Similar channel chart products will be provided to navigation users, and these coastal and Great Lakes channel condition chart products will also follow the S-57 format. Such ENC development and publication activities are in accordance with National Transportation Safety Board recommendations to the Corps, and subsequent commitments made by the Chief of Engineers.

**PROPOSED ACTIVITIES FOR FY 2015:** Update features for all existing IENCs. Continue to maintain all 106(+) IENCs (to include the White River) in the Inland ENC standard (over 7,245 miles). Continue chart error reporting development from public; development of IENC overlays for dynamic navigation areas; completion of location of bridges and bridge piers using Lidar technology; completion of bridge clearances in coordination with US Coast Guard; further enhancements of charts by adding attribution to features such as lights and daymarks; complete channel condition reports and channel framework development for NOAA charts, investigate addition of new features and technology including AIS test bed for IENC data; specifically for water current data and electronic Aids to Navigation.

**ACCOMPLISHMENTS IN FY 2014:** Updated features for the Allegheny, Arkansas, Atchafalaya, Black Warrior-Tombigbee, Cumberland, Green, Illinois, Kanawha, Mississippi, Missouri, Mobile, Monongahela, Ohio, Red and Tennessee Rivers – over 7,000 miles. Produced new IENC cells for the White River (245 miles) and entered them into the monthly maintenance. Completed channel framework of coastal and Great Lakes areas; established standard for paper charts; developed MOU with paper chart vendor to print and sell USACE paper chart, showcased chart development and production at several national and international meetings. Develop web mapping service for downloading charts from mobile devices. Continued USCG buoy program for inclusion on charts; program includes USACE providing up-to-date survey data to the USCG to enable better buoy placement. Completed Inland Electronic Navigational Chart manual (EM 1110-2-6055). Developed a MOA with NOAA for the provision of survey data to the towing industry for the Southwest Pass in Louisiana in an IENC overlay format.

## O&M Justification Sheet

**PROJECT NAME:** Inspection of Completed Federal Flood Control Projects

**AUTHORIZATION:** Section 221 of the Flood Control Act of 1970, as amended (84 Stat. 1831, 42 U.S.C. 1962d-5b), requires that a written agreement be executed between the Secretary of the Army and the non-federal sponsor to identify the "items of local cooperation" for US Army Corps of Engineers (USACE) projects, including operation and maintenance requirements. It also authorizes USACE to "undertake performance of those items of cooperation necessary to the functioning of the project for its purposes, if USACE has first notified the non-federal interest of its failure to perform the terms of its agreement and has given such interest a reasonable time after such notification to so perform." To determine whether the non-federal sponsor is performing as it has agreed, USACE undertakes inspections of completed projects. Engineer Regulation 500-1-1, Emergency Employment of Army and Other Resources, Civil Emergency Management Program, Chapter 5, Rehabilitation and Inspection Program in conjunction with related policies for the USACE Levee and Dam Safety Programs establishes the policy for the inspection of federal flood risk management projects which have non-federal sponsors responsible for operation, maintenance, repair, replacement, and rehabilitation as specified in formal agreements based on Section 221 of the Flood Control Act of 1970 or other legislation. More recently, Section 100226 of the Moving Ahead for Progress in the 21st Century Act (MAP-21) enacted on July 6, 2012, calls for USACE and the Federal Emergency Management Agency (FEMA) to establish a task force to develop recommendations that improves alignment between the two agencies, specifically identifying data collected by USACE under the Inspection of Completed Works (ICW) Program.

**LOCATION AND DESCRIPTION:** Due to potential life safety consequences, federally authorized levee systems are the priority for this program. The number of miles of federally authorized/locally operated and maintained levees within the USACE Levee Safety Program is approximately 11,750 miles with a total population at risk of over 10 million people. Channel projects associated with levee systems are also included under the Levee Safety Program. Many of these projects are adjacent to highly urbanized areas, and all of them require continued maintenance after construction in order to ensure the project will function as intended, as well as, preserve the value of the federal investment. This work represents part of the USACE Levee Safety Program Initiative, a strategic plan to complete the initial collection of baseline information on levees within a USACE authority, including screening level risk assessments and periodic inspections. At the completion of the Levee Safety Program Initiative, funding for this remaining item will be adjusted to reflect amount needed to manage the overall ICW Program.

**ALLOCATION FOR FY 2014:** \$29,700,000

**BUDGETED AMOUNT FOR FY 2015:** \$28,000,000 1/

**DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:** The USACE Levee Safety Program has the mission to work with stakeholders to assess, communicate, reduce and then manage the risks to people, the economy, and the environment associated with the presence of levee systems. With this in mind, the basic objectives of the USACE Levee Safety Program are (1) to develop balanced and informed assessments of levees; (2) to evaluate, prioritize and justify levee safety decisions, and (3) to make recommendations to improve life safety associated with levee systems. One of the main activities includes inspections of federally authorized projects operated and maintained by a non-federal sponsor. The purpose of the inspections is to determine if the levee system will perform as expected; identify deficiencies or areas which need monitoring or immediate repair; identify any changes over time; and collect information in order to be able to make informed decisions about future actions. Inspection and inventory information serve as the foundational elements of the Levee Safety Program, because the information collected allows for implementation of other activities including screening levees to rank them in order of risk; conducting initial risk assessments in order to answer key questions regarding priorities, urgency of action, and type of action; and coordinating Levee Safety Program efforts with stakeholders and other agencies to build the foundation for shared responsibility to develop risk reduction measures.

N: \$0

FRM: \$28,000,000. USACE will continue partnering activities including public release of screening level risk assessment results, advising on interim risk reduction measures, and coordinating with other agencies on developing policies. Also, the Corps will continue close coordination and collaboration of policies with FEMA and other federal agencies on the National Levee Database and their complementary federal programs, such as the RiskMAP program. USACE intends to finalize the Levee Safety Program comprehensive guidance document containing details on implementing each activity in the portfolio risk management process. USACE will move forward on recommendations by the task force as required by Section 100226 of MAP-21. USACE will continue to aggressively pursue completion of levee risk screenings and periodic inspections as part of the Levee Safety Program Initiative. It should be noted that in FY15 there is a reduction of \$2 million for this remaining item due to funding needs in other areas. This will delay completion of the Levee Safety Program Initiative.

RC: \$0

H: \$0

EN: \$0

WS: \$0

**OTHER INFORMATION:** This project is an agency-wide project that is directed by HQUSACE. Note that districts will continue to budget individually for routine ICW activities.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0.

## O&M Justification Sheet

**PROJECT NAME:** Monitoring Completed Navigation Projects (MCNP)

**AUTHORIZATION:** Authorization for the Corps of Engineers Engineer Research and Development Center (ERDC) to conduct R&D is codified in 10 U.S.C. 2358 ("The Secretary of Defense or the Secretary of a military department may engage in basic research, applied research, advanced research, and development projects that are necessary to the responsibilities of such Secretary's department in the field of research and development.")

**ALLOCATION FOR FY 2014:** \$7,801,000

**BUDGETED AMT. FOR FY 2015:** \$2,300,000

### **DESCRIPTIONS OF WORK AND JUSTIFICATION FOR FY 2015:**

These monitoring efforts, governed by Engineer Regulation 1110-2-8151 (Monitoring Completed Navigation Projects), are essential for providing data for efficient and effective management of critically important Federal shallow- and deep-draft navigation projects and infrastructure for both national economic and military sealift security reasons. The Corps operates and maintains more than 1,000 navigation projects encompassing more than 25,000 miles of waterways. The Corps requires a national program to identify the best navigation project practices, and to use them to improve all other navigation projects' performance. Optimizing Civil Works navigation infrastructure performance requires that they be monitored upon completion, evaluated against preconstruction and present needs, and lessons learned translated into proactive operations management and design guidance for Corps Districts. Information gained from the MCNP program, including changes in sediment transport, water levels, currents, waves, flushing, river flows, ice, structure deterioration, and other coastal and river hydraulic phenomena with associated marine transportation and environmental impacts, will be used to verify design expectations, determine benefits, and identify operational and maintenance efficiencies. Information collected will significantly improve projects' performance, and optimize opportunities for marine transportation and environmental enhancement. The MCNP program collects valuable navigation data, documents successful designs, disseminates data and lessons learned on projects with problems, and provides upgraded field guidance for solutions that will reduce life-cycle costs on a national scale.

The MCNP program includes development of a real time monitoring capability of the navigation system through River Information Services (RIS), to improve inland navigation reliability and address the Administration High Priority Performance Goal for USACE Navigation that calls for decreasing unscheduled navigation lock closures on the inland waterway. No other programs in the USACE or Federal sector address these critical requirements.

Shallow- and deep-draft navigation projects located in ports, harbors, rivers, reservoirs, lakes, estuaries, and in the coastal zone are included in this program. Projects that provide maximum cost savings are identified, and those that best address high-priority life-cycle operations and maintenance (O&M) project cost savings are selected for monitoring and evaluation. The Corps districts and the Engineer Research and Development Center develop monitoring plans jointly.

Coordination between the Corps and other Federal, state, and local agencies and with industry is essential for proper accomplishment of this program. In addition to satisfying Corps' requirements, the data are made available through publications and electronic technology transfer, and will be of great value to local, State, and other Federal agencies with navigation management policies. Results are communicated immediately to other member agencies of the Marine Transportation System (MTS).

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Monitoring Completed Navigation Projects

## PROPOSED ACTIVITIES FOR FY 2015:

### **Periodic Inspection of Navigation Structures**

- Will conduct periodic inspection damage assessments at previously assessed structures. Prioritizing matrix will be used to determine locations.
- Will develop probability trends and predictive models based on damage casual relationships through data mining and historical data collection through previous periodic inspections.
- Will complete ongoing numerical model simulations and 3-D graphic representation models currently under development.

### **Gulfport Ship Channel, MS: fluid mud and nautical depth**

- Gulfport pilots will conduct simulated runs in the ERDC Coastal Hydraulics Lab's ship simulator under various channel operating conditions (e.g., varying under-keel clearance, different ship hulls and propulsion parameters, varying fluid mud characteristics, etc.), and will rate respective degrees of difficulty (acceptable, marginal, unacceptable).
- Guidance documentation on use of nautical depth criteria, methodologies, and tools will be made available for implementation of nautical depth in Gulfport Ship Channel, as well as establishing a paradigm for implementing nautical depth on a USACE-wide basis to provide a more accurate and economical solution for channels with fluid mud.

### **John T. Myers Locks & Dam Trunnion Rods: breakage of rods inside dam concrete piers (Study will be completed at end of FY15)**

- ERDC Technical Report containing background information, test results, and recommendations for a trunnion rod monitoring system will be published for dissemination to Crops field offices. Guidance documents will include specifications for permanent anchor trunnion rod tension and health assessment.
- A workshop and webinars will be conducted to present the permanent recommended trunnion rod monitoring system to USACE District field operating office personnel.

### **Brazos Island Harbor complex, TX: excessive dredging quantities and frequencies**

- ERDC numerical simulation Coastal Modeling System (CMS) modules CMS-Flow and CMS-Wave together compute harbor and lagoon hydrodynamics and sedimentation. They will be adapted to the Brazos Island Harbor complex, TX, bathymetry and waterway system through the entrance channel, Laguna Madre, and Port Mansfield deep-draft navigation channel, to determine bathymetry changes and sediment accumulation
- Wave data will be acquired for alongshore sedimentation computations.
- Current velocity data within and near the inlet will be acquired from velocity gages that will be strategically placed
- Archived and real-time data will be utilized in developing the initial sediment budget for the Brazos Island Harbor complex to determine causes for excessive dredging quantities.

### **Monitoring FRP Composite Material Demonstrations at Navigation Lock and Dams**

- Baseline monitoring will be conducted for the following Fiber Reinforced Polymer (FRP) composite materials at the following sites: (a) Miter blocks, Washington Lake Canal, WA; (b) Composite wrap at Discharge Ports, Chickamauga Dam, TN; (c) Recess filler panels, Willow Island Locks and Dam, OH, (d) Abrasion-resistant overlays for tainter gates, Heflin Dam, AL, (e) Slides to replace frozen rollers on lift gates, Bankhead Lock and Dam, AL; and (f) Corroded steel H-piles; East Fork bridge, WV.
- Prototype sites will be determined for monitoring (a) FRP composite timbers for guide walls and gates; and (b) FRP composite wicket gates.

### **River Information Services (RIS): enhancing inland waterway and traffic information to users**

- Will continue development of real-time monitoring capability of navigation system through RIS to improve inland navigation reliability and address the "Administration High Priority Performance

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Goal for USACE Navigation”, which calls for decreasing unscheduled navigation lock closures on the waterways.

- Will expand dissemination of inland navigation information via web services, the Automatic Identification System (AIS), and cooperative efforts with other government agencies and the navigation industry.
- Will establish a prototype industry reporting portal for the automatic electronic reporting of required navigation information for USACE and other government agency use. Will evaluate the portal’s efficiency and effectiveness in reducing the burden of information collecting and reporting.

#### ACCOMPLISHMENTS IN FY 2014:

##### **Periodic Inspection of Navigation Structures**

- Ground-based vertical and horizontal movement of stone and concrete breakwater and jetty armor units were conducted of selected high-priority navigation structures with great commercial importance for direct comparison to previous aerial Light Detection and Ranging (LIDAR) and photogrammetric data collection.
- Newly developing technologies using computerized analyses were tested for making highly accurate quantitative profile measurements with high-quality digital photography and video. Initial results indicate it may be more economically feasible to use ground-based LIDAR due to time, shadowing, and current software limitations.
- Field data collection and assessment of damaged armor units was completed at Cleveland Harbor East Breakwater and Manasquan Jetties. Pre- and post-Sandy data were used for direct comparison to effectively show damage related to this single significant storm event.

##### **Marmet Locks and Dam: lock guide walls, approaches, filling system, and control valves (Study completed at end of FY14)**

- All field prototype data collection pertaining to (a) time-lapse videos and forces of down-bound tows impacting upstream guide wall, (b) upper and lower lock approaches to predict rate of erosion and deposition, (c) inspection of lock filling system intake, culverts, discharge outlet, and Stoney Gate valves to determine concrete deterioration and/or valve cavitation damage, and (d) LOCKSIM evaluation of lock performance were completed and analyzed. Pertinent conclusions were incorporated into an ERDC Technical Report for dissemination to Corps District Offices.

##### **Gulfport Ship Channel, MS: fluid mud and nautical depth**

- USACE ERDC ship simulator was updated with hydraulic coefficients to simulate fluid mud bottom impacts on deep-draft vessel maneuverability. Gulfport pilots conducted runs under various operating conditions (e.g., varying under-keel clearance, different ship hulls and propulsion parameters, different fluid mud characteristics, etc.), and validated the ship simulator as acceptable. (Acceptance of nautical depth criteria by the pilots is fundamental because navigation safety is critical in successful implementation.)
- Mobile District (SAM) survey vessel was equipped with state-of-the-art fluid mud hydrographic survey system, and SAM personnel (managers, hydrographic surveyors, and data analysts) received training on its use. Gulfport Ship Channel was surveyed with the fluid mud survey system to reduce depth-measurement ambiguity.

##### **John T. Myers Locks & Dam (L&D) Trunnion Rods: breakage of rods inside dam concrete piers**

- Field verification of trunnion rod monitoring system at John T. Myers L&D continued. Refinements to monitoring system were performed in preparation for permanent installation at John T. Myers L&D.
- Workshop was held at John T. Myers L&D to demonstrate monitoring system to other Corps offices, and to solicit input for permanent system.

- Specifications for permanent anchor trunnion rod tension assessment monitoring system were developed for Corps District offices.
- ERDC and Louisville District personnel initiated development of a concept trunnion rod repair and replacement design.

**Brazos Island Harbor complex, TX: excessive dredging quantities and frequencies (New study initiated FY14)**

- Conducted background investigation of increased frequency and volume of shoaling within the Brazos Island Harbor complex, including Entrance Channel, Laguna Madre, and Port of Mansfield channel. Historical data for ascertaining cause and effects was acquired from Galveston District personnel and historical archives.
- The ERDC numerical simulation Coastal Modeling System (CMS) was determined to be appropriate for ascertaining hydrodynamic effects of Laguna Madre and deep-draft navigation on increased sedimentation at the Entrance Channel, Harbor, and Port of Mansfield channel.

**Monitoring FRP Composite Material Demonstrations at Navigation Lock and Dams (New study initiated FY14)**

- Fiber Reinforced Polymer (FRP) composites offer the potential for repair of critical components of navigation systems at reduced cost and greater durability than traditional materials. The installation of such materials was demonstrated in FY12-13 by the Navigation Systems Research Program. These demonstrations are being monitored for effectiveness and durability with respect to previously used materials.
- Monitoring techniques were developed for composites used as (a) timbers for guide walls and gates, (b) slides to replace frozen rollers on lift gates, (c) corroded steel H-piles, (d) wicket gates (e) miter blocks, (f) curable underwater wraps for discharge ports, (g) recess filler panes, and (h) abrasion-resistant overlays for tainter gates.

**River Information Services (RIS): enhancing inland waterway and traffic information to users**

- Continued development of real-time monitoring capability of navigation system through RIS to improve inland navigation reliability and address the “Administration High Priority Performance Goal for USACE Navigation”, which calls for decreasing unscheduled navigation lock closures on the waterways.
- Expanded partnership with other inland navigation industry partners and government agencies.
- Developed additional RIS for delivery as web services and wireless waterway networks.

**Innovative Techniques for Navigation Lock Operations and Extending Useful Service Life (new study initiated FY14)**

- Conducted in-depth comprehensive investigation of emerging innovative commercial off-the-shelf equipment, techniques, products, and methods to determine applicability for increasing reliability, efficiency, and safety of navigation locks. These included de-icing products, steel and concrete coatings, nano-particles, and micro-robotics.

**Navigation Lock Culvert Valves: excessive forces and vibrations on lock reverse tainter gate valves**

- Three-dimensional (3D) computational fluid dynamics (CFD) models of lock culvert valves were developed.
- Optimum lock culvert valve design was developed and described in an ERDC Technical Report for Corps District application. This design will update the hydraulic design criteria and guidance presently given in EM 1110-2-1610 “Hydraulic Design of Lock Culvert Valves”.

**Fiber Reinforced Polymer (FRP) Composites for Rapid Repair of Navigation Structures: repairs at reduced costs and greater durability**

- ERDC Technical Report was prepared regarding design concepts, laboratory testing, fabrication, and installation of prototype gates and related components for navigation structures using FRP composites.
- Initiated an equally important focus on repair of deteriorating concrete lock walls using advanced FRP composite technologies.

**Hydraulic Steel Structure Rapid Repair Design: fatigue & fracture repairs using FRP strips**

- Finite Element Modeling (FEM) bond-slip algorithms were developed to implement finite element solution to fatigue and fracture using FRP strips.
- Published ERDC Technical Report regarding parametric analysis of repairs to hydraulic steel structures using FRP strips under controlled laboratory settings.

**Structural Monitoring System for Lock Structures to Prevent Failure (New study initiated FY14)**

- Initiated evaluation of historical failures of lock structures.
- Began development of consistent numerical modeling approach to simulate loading and response scenarios representative of lock gate operations.
- Started design of a system that will receive measured gate responses and deliver condition assessments.

**Corrosion Detection and Monitoring System for Steel Lock Components (New study initiated FY14)**

- Began operational evaluation of current technologies deployed in the field.
- Initiated investigation of corrosion prevention and detection methods including coating breakdown and defects on localized corrosion.
- Started development of analytic techniques for corrosion potential analysis.
- Conducted site demonstrations for corrosion protection and monitoring

**Precipitation and Flow Frequency, and Annual Exceedence Probability Techniques (New study initiated FY14)**

- Initiated historical data research regarding effects of precipitation and flow frequency on navigation lock operations and earthen structures.

**Fundamental Investigations of Internal Erosion Processes and Effects on Earthen Structures (New study initiated FY14)**

- Initiated horizontal internal erosion flume tests.
- Began macro-scale modeling of flume tests.
- Started site investigation of prototype failures.
- Initiated empirical study of levee performance data.

**Fundamental Investigations into Soil Erosion Constitutive Equations and the Corresponding Mechanics of Breach Formation (New study initiated FY14)**

- Began benchmark material development investigation.
- Initiated erosion test comparison.
- Started computational fluid dynamics modeling of erosion tests.
- Initiated WinDamB/HR-Breach parametric study.
- Collected breach case histories for model validation.

**Development of Best Practices for Use of Transient Seepage Analysis in Geotechnical Engineering (New study initiated FY14)**

- Instrumented selected levee sections.
- Began comparison of solutions from different software.
- Initiated parametric modeling study and sensitivity analysis.

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- Started development of soils library for transient seepage analysis.
- Initiated nomograph development.

SUMMARIZED FINANCIAL DATA:

Allocation for FY12	\$3,843,000
Allocation for FY13	\$3,867,000
Allocation for FY14	\$7,870,000
Estimated Carry-In Funds	\$0
President's Budget for FY15	\$2,300,000

## O&M Justification Sheet

**PROJECT NAME:** National (Levee) Flood Inventory

**AUTHORIZATION:** The main complementary authorizations for this work includes 1) Section 221 of the Flood Control Act of 1970, as amended (84 Stat. 1831, 42 U.S.C. 1962d-5b) and other legislation authorizes the US Army Corps of Engineers (USACE) to ensure items of cooperation necessary to the functioning of the project for its purposes; 2) Title IX of the Water Resources Development Act (WRDA) 2007, cited as the National Levee Safety Act of 2007 (the Act), authorized the development of National Committee on Levee Safety (NCLS) to make recommendations for a national levee safety program, in addition to, maintaining a national levee database and performing inventories and inspections of levees in the nation; 3) Section 100226(d)(1) of Public Law 112-141, established a task force to align processes between USACE and the Federal Emergency Management Agency (FEMA) related to collection of levee information; 4) 33 U.S.C. 701n (PL 84-99), provides for, among other things, the repair and restoration of flood risk reduction projects, such as levee systems; and 5) project specific authorities that include levee systems.

**LOCATION AND DESCRIPTION:** In 2006, USACE created its Levee Safety Program with the mission to assess the integrity and viability of levees and recommend courses of action to make sure that levee systems do not present unacceptable risks to the public, property and environment. Under the Levee Safety Program, USACE launched a major effort to create a National Levee Database and develop a methodology for performing technical risk assessments of existing levee infrastructure. Additionally, since the start of this effort, on November 8, 2007, the Water Resources Development Act (WRDA) of 2007 was enacted into law. Title IX of WRDA 2007 complemented this effort by providing USACE the authority to collect information on levees outside of a current USACE authority. This work represents part of the USACE Levee Safety Program Initiative, a strategic plan to complete the initial collection of baseline information on levees within a USACE authority, including screening level risk assessments and periodic inspections.

**ALLOCATION FOR FY 2014:** \$9,900,000

**BUDGETED AMOUNT FOR FY 2015:** \$10,000,000 1/

**DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:** Levees help reduce flood risks in many local communities. The total number and location and condition of all the levees in the US are currently unknown and the public often have only a limited understanding of levees and the risks associated with them. USACE has specific authorities to inspect and assess only levees within one of its authorities which total about 14,500 miles nationwide. Collection of this information has served as the foundational element for many key levee safety program activities, such as risk assessments. Title IX of WRDA 2007 requires USACE to inventory all the Nation's levees and make publically available their location, condition, and potential consequences. It is important to understand how levees are expected to perform and to identify and be prepared for potential consequences in the event of non-performance in order to identify actions that need to be taken in order to reduce risk to life safety.

N: \$0

FRM: \$10,000,000. USACE will continue efforts to improve and provide the necessary information in the National Levee Database by working with states, focusing initially with those with existing levee databases. USACE will also continue to solicit feedback from users of the database and implement upgrades and software revisions when accommodations can be made. USACE will continue to implement portions of the NCLS recommendations under current authorities, such as further develop tolerable risk guidelines for levees, build upon the USACE Levee Safety Action Classification process to develop a process to quickly identify and prioritize leveed areas with limited information. USACE will continue to work with FEMA to implement actions identified by the Flood Protection Structure Accreditation Task Force as authorized in Public Law 112-141. In addition, USACE will continue to complete initial periodic inspections and screening level risk assessments as part of the Levee Safety Program Initiative.

RC: \$0

H: \$0

EN: \$0

WS: \$0

**OTHER INFORMATION:**

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work as described above.

## O&M Justification Sheet

**PROJECT NAME:** National (Multiple Project) Natural Resources Management Activities

**AUTHORIZATION:** This program is conducted under the general authority of PL 78-534, the Flood Control Act of 1944 (58 Stat. 887).

**LOCATION AND DESCRIPTION:** The National (Multiple Project) Natural Resources Management Activities project allows the Corps to allocate a portion of Civil Works projects appropriated funds to conduct certain, specified operations and maintenance activities that benefit all or a majority of operating Civil Works projects. This approach which was formalized in FY 2002 appropriations language allows multiple project activities to be funded as single entities, rather than on a project-by-project basis. This approach is more efficient and cost effective, reducing administration costs and providing for efficient management and oversight. Providing a nationwide funding source at HQUSACE for centralized procurement of these items used by all operating projects having a natural resources management program precludes the need for funds to be transferred by each project or district to a single procurement agent, a savings of from 60 to 300 transactions a year. An example of such an activity is the procurement of park ranger uniforms through a contract administered by the National Park Service.

**ALLOCATION FOR FY 2014: \$8,586,000**

**BUDGETED AMOUNT FOR FY 2015: T: \$6,800,000 1/**

### DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:

**1. Nationwide (Multiple-Project) NRM Activities that will be accomplished with these funds include the following activities:**

- a. Natural Resources Management Career Development/Training Support and Material Development. Funds are used to address training and career development issues for the Corps' 2,000 Natural Resources Management (NRM) field staff. Staff needs are served through the development of products, such as exportable training courses to meet established training requirements. Funding this as a nationwide activity is appropriate because all NRM field staff benefit equally from the work accomplished.
- b. Park Ranger/Manager Uniforms. The Corps purchases uniforms for field personnel through an interagency contract administered by the National Park Service. Funding this as an interagency, nationwide effort reduces administrative costs by eliminating fund transfer requirements from each individual project to the NPS. Since this arrangement was established in 1984, significant economies of scale have been achieved. Costs include the authorized employee allowance funds (including an HQ-approved increase in replacement allowance), NPS contract administration costs, buy out of discontinued items, program management/committee support, and the purchase of required emblems.
- c. Printing and Publishing - Printing of forms, brochures, and similar materials such as Annual Day Use Passes used by all Corps projects achieves economies of scale and reduces total administrative and procurement costs. Printed materials are stored at the Corps Publications Depot for distribution to all projects upon request.
- d. Sign Standards Manual and Software Update and MCX Operation. A Mandatory Center of Expertise provides technical support and assistance to all projects in the operation of the Corps Sign Standards Program, through the maintenance of the Sign Standards Program Manual and software and providing technical assistance to field users. These efforts allow the Corps to maintain a consistent image that we present to the visiting public. Funding this as a nationwide activity assures competent and timely assistance to users, which increases the consistency, effectiveness and efficiency of the sign program.

e. Volunteer Clearinghouse Operation. The Volunteer Clearinghouse is operated under contract with Goodwill Industries to support volunteer efforts at all Corps projects. Use of a single nationwide contract on this achieves economies of scale and reduces administrative costs by eliminating the need to transfer funds from each project.

f. Water Safety Products. The Corps Water Safety National Operating Center produces and distributes water safety products and programs to all Corps projects. Products educate and inform visitors of the dangers associated with water-oriented recreation. Significant economies of scale have been realized through the centralized administration of this program that assures current and critical topics are covered, using effective media targeted to high-risk groups. Drownings and associated lawsuits have been reduced significantly since the implementation of this program in the mid 1980's. Current command emphasis is requiring an even further reduction of fatalities during the next two years.

g. Nationwide Recreation Visitation Surveys. Recreation surveys will be conducted to generate traffic counter load factor data required to reliably monitor visitation at CE managed recreation areas through the Visitation Estimation and Reporting System (VERS). Surveys will be conducted in regions nationwide using teams of interviewers from the Student Conservation Association. Funding this as a nationwide activity enhances quality control, achieves economies of scale through the use of a single contract and reduces administrative costs by eliminating the need to transfer funds from all projects to the single contracting element.

h. Other Nationwide NRM Activities. The following additional NRM Activities are recommended for funding to achieve cost efficiencies at the national level. Challenge Partnership Seed Funds; Critical Incident Stress Management (CISM) Program; Natural Resources Management Awards; Operations CoP Gateway; Partnership Advisory Committee; Property Protection Program; RecBEST Coach, Assist and Train Team; Career Assignment Program for Operations Project Managers; Visitor Center Initiative/Corps Story; and Bilingual Support Team.

**N:      \$0**  
**FRM:   \$0**  
**RC:     \$4,500,000**  
**H:      \$0**  
**EN:     \$0**  
**WS:     \$0**

**OTHER INFORMATION:** This project is an agency-wide project that is directed by HQUSACE.

## **2. Environmental Management System (EMS) Implementation:**

**Navigation and Flood Reduction Management Projects:** The issuance of the latest revision of Engineering Regulation (ER) 200-2-3 in October 2010 expanded the coverage of the USACE EMS to include all Civil Works missions and facilities with significant environmental compliance requirements, and also incorporated Federal statutory and executive order-based sustainability and energy requirements. The USACE organization-wide EMS incorporates existing facility-level EMSs within a single, USACE-wide systematic management framework. In addition to traditional water, air, waste and materials compliance requirements, the USACE EMS includes the energy, water and petroleum efficiency requirements of the Energy Independence and Security Act of 2007 and the Energy Policy Act of 2005, as well as the sustainable acquisition, electronics stewardship, waste reduction/recycling, and greenhouse gas



accounting and reporting requirements of Executive Orders 13423 and 13514. Funding this as a nationwide activity allows USACE to reduce costs and improve performance by implementing standardized compliance and sustainability policies, procedures, and tools for auditing, data management, metrics, reporting, and management review at USACE facilities without transferring funds from each project to a central source.

a. Energy Independence and Security Act (EISA 2007) Section 432 energy and water evaluations (audits) at USACE Covered Facilities (\$0.3M Estimated).

b. Energy and sustainability data management, tracking and reporting; energy management technical and contracting support for audits, advanced/enhanced metering, and alternative financing (\$0.8M Estimated).

c. Energy Policy Act (EPA 2005) Section 103 advanced metering for electricity, natural gas and water utilities at USACE Covered Facilities and other facilities that trigger the Federal Energy Management Program advanced metering threshold (\$1.0M Estimated).

d. Environmental Compliance and Sustainability (ECS) Career Assignment Program. Covers TDY costs for two, 5-month developmental assignments at HQ USACE supporting USACE Environmental Compliance, EMS and EO 13514 Sustainability requirements (\$0.2M Training Estimated).

**N: \$600,000**

**FRM: \$1,700,000**

**RC: \$0**

**H: \$0**

**EN: \$0**

**WS: \$0**

**OTHER INFORMATION:** This project is an agency-wide project that is directed by HQUSACE.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work as described above.

## Operation & Maintenance

**PROJECT NAME:** National Coastal Mapping Program

**AUTHORIZATION:** These efforts are essential to providing data for efficient and effective management of critically important National water resources. Regional Sediment Management (RSM) activities are authorized by Section 516 of WRDA 96.

**LOCATION AND DESCRIPTION:** The National Coastal Mapping Program is the only Federal coastal mapping program that produces regional, operational data along the coast of the U.S. on a re-occurring basis. Regional Sediment Management requires regional measuring and monitoring to provide engineering, environmental, and economic data and information for decision makers and managers. No other program in the Corps (or other Federal agencies) provides consistent, re-occurring, regional data to characterize physical, environmental, and economic conditions along the shoreline, and their changes over time. Quantification of regional conditions and changes leads to improved management practices of entire regions and projects within those regions. Without these data, the Corps cannot fulfill its goal of a systems approach to coastal management, including navigation and coastal flood damage reduction projects. The National Coastal Mapping Program also continues evolution of technologies for regional characterization and change detection of engineering, environmental, and economic conditions along the shoreline. CZMIL advances the state-of-the-art in data exploitation workflows, algorithms, hardware, and software, and provides a sustained focus and collaboration among academia, industry, and the federal government to constantly review, refine, and expand our capability to produce a wider range of engineering, environmental, and economic data over a broader range of operating environments.

**ALLOCATION AMOUNT FOR FY 2014:** \$8,217,000

**BUDGETED AMOUNT FOR FY 2015:** M: \$3,036,000 O: \$3,036,000 T: \$6,072,000 1/

### DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:

**N:** \$6,072,000 will be used to continue survey operations on the U.S. West Coast and begin operations on the U.S. Gulf Coast. These data will help quantify coastal changes that have occurred since the last survey in 2009/2010 for the formulation of sediment budgets, quantifying area change of sensitive habitats like submerged aquatic vegetation and wetlands, identifying patterns of erosion and accretion, and for assessing the condition of coastal infrastructure. Products quantifying shoreline, sediment volume, infrastructure, and habitat changes will be generated from repeat datasets of the Hawaiian island coastal zone (2000 to 2013). Development under the CZMIL effort will focus on automating techniques for identification of critical habitats and geomorphological features of importance for coastal management. Hardware evolution will improve operational efficiency while software advancements will improve the data fusion processing required to accurately delineate benthic habitat and characterize water quality parameters.

**FRM:** N/A

**RC:** N/A

**H:** N/A

**EN:** N/A

**WS:** N/A

**OTHER INFORMATION:** Since 2004, the NCMP has collected re-occurring data in the eastern Gulf of Mexico (4 surveys, 2 of which are post-hurricane), on the southeast Atlantic coast (3 surveys, 1 of which

Division: South Atlantic

District: Mobile

National Coastal Mapping Program MS

is post-hurricane), and on the northeast Atlantic, Great Lakes, and Pacific coasts (2 surveys each). The data collected during these surveys have been developed into products that are widely used by the USACE for regional sediment management, regulatory, flood damage reduction, asset management, emergency operations, and environmental stewardship in the coastal zone, and by other agencies: for the FEMA RiskMap modeling efforts; the USGS Coastal and Marine Geology Program's National Assessment of Shoreline Change and extreme storm studies; and NOAA nautical chart production. The data are made available to the public through NOAA's Digital Coast website and to emergency responders through the USGS Hazard Data Distribution System. State and local agencies use the data for shoreline management, environmental permitting, emergency management, marine spatial planning, and planning for resilient communities. NCMP will continue its third survey of the Gulf Coast in 2016. The CZMIL effort has resulted in new airborne technologies and supporting software that improves operational efficiency, decreases time between data collection and final decision-support product, expands the variety of products derived from the basic datasets in a data fusion approach, improves performance in very shallow and turbid waters, improves navigation hazard detection, and improves overall data accuracy.

1/ Unobligated Carry-in Funding: The actual unobligated balance from FY 2013 into FY 2014 (3011A report) for this study is \$0 (x1000). As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0 (x1000). This amount will be used to perform work on the study as follows: N/A.

## Operation and Maintenance

**PROJECT NAME:** National Dam Safety Program – Portfolio Risk Assessment

**AUTHORIZATION:** Dam safety legislation PL 92-367 and PL 99-662, and the National Dam Safety Program Act (Section 215 of PL 104-303), the Dam Safety and Security Act of 2002 (Public Law 107 - 310) and the Dam Safety Act of 2006 (Public Law 109-460).

**LOCATION AND DESCRIPTION:** Nationwide Program - The Federal Guidelines for Dam Safety provide a framework for safe construction, operation, and maintenance of Corps dams. Dams must be constructed, operated, and maintained in accordance with sound engineering practices to prevent failure and avoid potential loss of life and destruction of property. This National Dam Safety Program (NDSP) account consists of two parts: (1) operation of the NDSP including participation with other agencies; and (2) implementation of a risk analysis program for all Corps dams, including recurring mapping and interim risk reduction work. The Corps has 707 dams that are located at 557 projects. The number of dams includes appurtenant structures (saddle dams, levees, dikes) that have different consequences downstream from the main dam.

(1) The NDSP was established to enhance national dam safety. These funds support the activities under the NDSP, in the interests of the Corps and the citizens of the Nation. The National Dam Safety Program Act strengthens the NDSP, whose purpose is to reduce risks to life and property from dam failure in the United States. The Act also codified the Interagency Committee on Dam Safety (ICODS) to coordinate the Federal actions under the NDSP. The Chief, Engineering and Construction, Directorate of Civil Works (USACE, Dam Safety Officer), or his representative, represents the Department of Defense as a member of ICODS. The Corps also provides a representative on behalf of the Secretary of Defense to the National Dam Safety Review Board. The National Dam Safety Program Act expanded the scope of previous dam safety legislation and the requirements for ICODS participation with various states to improve dam safety in the United States. Through ICODS, the NDSP provides support in development of federal guidelines for dam safety, promotion of public awareness programs, publications, training materials, workshops, and post dam failure forensic team participation. The Act also provides for archival research that is supported by Federal dam owning agencies through ICODS and the National Performance of Dams Program.

(2) While no Corps dams are in imminent danger of failure, many of them have high dam-safety risks during extremely large floods or seismic events, with particular concern for seepage and piping related problems. The need to prioritize budget activities requires that the Corps use risk assessment as a central part of the decision-making process to direct funding to those dam safety issues presenting the greatest risk and to those rehabilitation actions that result in the greatest risk reduction for the cost. For each dam in the portfolio, the risk assessment provides estimates of the probability of failure and consequences by each initiating event. In addition, risk reduction measures are formulated and their cost and effectiveness estimated. The results arrayed by risk level and risk reduction cost effectiveness allow risk informed decision making. The portfolio risk assessment (PRA) process has demonstrated its value starting in Fiscal Year 2005 by identifying a number of dams with high risks. The initial screening of all Corps projects was completed in Fiscal Year 2012. The requested Fiscal Year 2014 funding will be used to perform detailed risk analysis on the highest risk dams in the portfolio and identify appropriate studies and corrective actions necessary to meet the Corps dam safety responsibilities.

**ALLOCATION FOR FY 2014: \$9,900,000**

**BUDGETED AMOUNT FOR FY 2015: M: \$0 O: \$10,000,000 T: \$10,000,000 1/**

## DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:

**N: \$0**

**FRM: \$10,000,000** will be used (1) For the effective coordination of dam safety activities across the various regions of the Corps and provides for Corps participation at national dam safety events. The account also provides for District participation on the National Dam Safety Steering Committee, which advises the Corps Dam Safety Officer and Special Assistant for Dam and Levee Safety. The NDSP supports Corps membership and participation in various national and international dam organizations including the Association of State Dam Safety Officials (ASDSO), the US Society on Dams (USSD) and the Dam Safety Interest Group (DSIG). The USSD along with its international counterpart, the International Committee on Large Dams (ICOLD) supports technical knowledge concerning the benefits, engineering, design, and construction of dams. The DSIG is an international group of dam owners involved in dam engineering. Participation with the DSIG allows the Corps to leverage limited Civil Works policy development funds;

(2) For the direction and management of the Corps-wide Portfolio Risk Assessment (PRA) efforts by the Risk Management Center. Additional effort is needed to make the evaluation process more effective and sustainable along with integrating the inspections and evaluations with the asset management program. Dams are dynamic and degrade at varying rates, so continuing efforts are needed to assure best use of limited future investments. Recurring periodic assessments at 10-year intervals will be continued on the portfolio and will improve the understanding of project risks that were initially identified with the screening level PRA's. The districts are responsible for collecting appropriate project data, assisting in the analysis of data gaps, using expert judgment to estimate for missing parameters, coordinating meetings, correspondence, and site visits, if required, updating essential plan, studies, or reports, and participating in training on risk analysis and probability methods. The national cadres, under the direction of the Risk Management Center, will lead risk analysis; evaluate the effectiveness of interim risk reduction measures, and identify project specific follow-on actions. The results of the detailed PRA's will be used at the national level to further formulate study plans for inclusion in the regular budget cycles, identify appropriate corrective actions, and determine the urgency of such actions. Common risk methodologies for dam and levees will be further developed. Work will continue on updating the Dam Safety Investment Plan (DSIP), with the ultimate goal of determining short and long term construction strategies for modification and repair of all high risk dams in the portfolio. This DSIP is used to demonstrate how these strategic investments reduce the overall risk of our national portfolio in the most efficient and cost effective manner. The DSIP also provides short and long term budget forecasting requirements for requesting both WEDGE funds and Construction General (CG) funding as part of the normal budgeting cycle. The database of information from the PRA will be linked to the existing Dam Safety Program Management Tools (DSPMT) and the Operations & Maintenance Budget Information Link (OMBIL) to maximize the use of the information developed. Additional emphasis will be placed on the completion of inundation mapping at all DSAC 1, 2, and 3 dams to further improve emergency preparedness which decreases potential life safety consequences; and

(3) Other advancements are being made in technical areas related to dams such as investigations of dam internal erosion, filtering materials, seepage and piping incidents, dam grouting, spillway systems reliability, dam instrumentation, and hydrologic methodology development. The NDSP account allows for updating of USACE technical manuals (Engineering Manuals, Engineering Circulars, etc.) such as cutoff wall construction, dam foundation grouting, and drilling through embankments.

**RC: \$0**

**H: \$0**

**EN: \$0**

**WS: \$0**

**OTHER INFORMATION:**

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2105 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A.

## Operations and Maintenance

**PROJECT NAME:** National Emergency Preparedness Program (NEPP)

**AUTHORIZATION:** Executive Orders 10480 and 12656, National Security Presidential Directive-51/Homeland Security Presidential Directive-20 (NSPD-51/HSPD-20), the National Continuity Policy Implementation Plan (NCPIP) and the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 USC 5121 et seq.

**LOCATION AND DESCRIPTION:** N/A

**ALLOCATION FOR FY 2014:** \$6,683,000

**BUDGETED AMOUNT FOR FY 2015:** \$4,500,000 1/

### DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:

**EM:** \$4,500,000 The requested funding, together with a total of \$2,000,000 in carry-in funds, supports our National Emergency Preparedness Program (NEPP) activities. These activities include: training, participation in and conducting national level exercises, interagency and intergovernmental coordination, catastrophic disaster planning and updating and exercising continuity of operations plans. USACE continues to play a key role in national security planning, as demonstrated by our support to Department of Homeland Security strategic planning efforts, Secretary of Defense's Complex Catastrophe Initiative, development of the National Capitol Region Response Plan, updates to both the National Response Framework (NRF) and National Disaster Recovery Framework (NDRF), development of catastrophic hurricane and earthquake plans, and other man-made contingencies with national-level implications. We also continue to update, test and validate plans through regional and national level workshops and other exercises including the National Exercise Program (NEP) Capstone Exercise, Eagle Horizon and Silver Phoenix series of exercises in conjunction with DHS/FEMA and the DOD/interagency.

The FY 2015 budget of \$4,500,000 is a decrease of \$2,250,000 from the latest estimate \$6,750,000 presented to Congress (FY 2014).

In accordance with NSPD-51/HSPD-20 and the NCPIP, our NEPP program ensures the Corps is ready to provide rapid response to disaster, whether caused by natural phenomena or man-made disaster or acts of terrorism and supports continuity of operations and government; assure the availability of a work force capable of shifting from routine missions to crisis operations; and have the organizational command and control structure(s) necessary to provide a coordinated comprehensive response in the critical early stages of a catastrophic disaster. Preparedness activities include development of national level preparedness plans, train employees, conduct national level training exercises, to include support to Federal Emergency Management Agency (FEMA) exercises, coordinate within DOD, other Federal agencies, and state and local governments. NEPP also provides USACE with the ability to engage and coordinate readiness with other agencies at the National level on programs of Federal primacy or interests.

The Corps provides engineering and construction support to state and local governments in response to catastrophic natural/technological disasters. Our divisions also have a key role in the planning, coordination and operational control of multi-district response(s) and the integrated preparedness effort required for accomplishing this response. Preparation also includes the Headquarters sponsored Corps-wide programs necessary to provide the capabilities and operational command and control required by

Corps field commands in order to accomplish their NEPP responsibilities, both routinely and in specific emergency response situations.

NEPP is complementary to the Flood Control and Coastal Emergencies (FCCE) appropriation. Although both programs are related to emergency situations, there is a distinct separation of responsibilities. NEPP responsibilities are described in above paragraphs. FCCE, on the other hand, provides preparedness and response related to emergency flood fighting, post-flood repair and restoration of flood and shore protection works damaged or destroyed by floods, hurricanes or wave action and Corps preparedness associated with National Response Plan/Framework mission requirements.

**OTHER INFORMATION:**

In FY 2014, USACE will test and validate our Headquarters' and Division All-Hazards Operations Plan and Annex Q (NDRF) in relation to the National Exercise Program Capstone Exercise 2014 (NEPCE-14) and Alaska Shield 2014. This year's exercise is based on a catastrophic earthquake and subsequent tsunami scenario. The USACE Combined Response Mission Exercise (CRME) is linked to Alaska Shield and will be held in conjunction with the State of Alaska, FEMA Region X, DOD and other Federal interagency partners. This exercise will be used to prepare and train our national water, emergency power, commodities distribution, infrastructure assessment, enterprise emergency information technology (IT) response, planning and response teams. We will also test and validate our HQ COOP/Devolution Plan during Eagle Horizon 14, which is a component exercise of NEPCE-14.

In FY 2013, we developed the National Exercise Program Capstone Exercise (NEPCE-14) in FY 14 and objectives and corresponding scenarios. The Combined Response Mission Exercise was conducted in conjunction with the Northeast Express Exercise and the state of New York, Philadelphia and the State of Delaware along with corresponding FEMA Regions. This exercise was used to national water, emergency power, commodities distribution, infrastructure assessment, enterprise emergency IT response and other planning and response teams.

1/ Unobligated Carry-in Funding: The actual unobligated balance from FY 2013 into FY 2014 (3011A report) for this program is \$2,120,826. This amount remains as a reserve to provide immediate response, activate EOC's, in the event of a manmade or terrorist disaster. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$2,000,000. This amount will be used to cover required funding for national level planning, training, exercises, support programs, and contract services.



## O&M Justification Sheet

**PROJECT NAME:** National Portfolio Assessment for Reallocations

**AUTHORIZATION:** Specific project authorizations, Section 216 of the River and Harbor and Flood Control Act of 1970.

**LOCATION AND DESCRIPTION:** This is a national program.

**ALLOCATION FOR FY 2014:** \$565,000

**BUDGETED AMOUNT FOR FY 2015:** \$1,071,000 1/

### DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2014:

**N:** N/A

**FRM:** N/A

**RC:** N/A

**H:** N/A

**EN:**

**WS: Assessment of Data and development of a consistent national approach for water withdrawals (permanent reallocations and surplus water).** \$786,000 will be used to implement the next steps recommended in the National Portfolio Assessment of Data for Reallocations: Status and Challenges for USACE Reservoirs, conduct initial assessments of reallocation requests and to initiate efforts relating to achieving consistent and sustainable water withdrawal policy in the water supply business line.

The report, which leveraged data gathered and analyzed as part of the National Portfolio for Reallocations and from other collaborative efforts, described the steps necessary to reach the ultimate goal of the data assessment;

- Developing a project by project projection of water supply availability and sustainability over the next 10, 20 and 50 year periods.
- The ability to roll the developed data up into basin and regional projections which can support watershed based efforts.
- Developing a program to keep the data current.

In conjunction with the implementation of the next steps, select MSC's will conduct initial assessments of pending reallocation requests. These assessments represent a streamlined approach to obtaining the information necessary to determine federal interest.

In addition, USACE has been directed by the Assistant Secretary of the Army for Civil Works to conduct rulemaking and establish national policy for surplus water withdrawals. Knowledge of these withdrawals and how they can affect existing water supply storage and future reallocations is a critical piece of the Portfolio of USACE projects with water supply. This information is needed to analyze requests for reallocations and understand current and future water availability. We must be able to identify who is withdrawing surplus water, under what authorities, in what quantities, and at what price. This information is not readily available and funding will be used to begin the effort to obtain and analyze this information as well as to clarify terms for small surplus water withdrawals and permissible water uses.

The National Portfolio Assessment for Reallocations began as a two year appraisal, initiated in FY 2008, to develop a portfolio of existing Corps of Engineers multipurpose projects to be used as a screening tool

to identify the best candidates for opportunities for operational changes and/or reallocation opportunities. During the development of the survey for the National Portfolio Assessment, the USACE was considering two other national surveys, one on the water management aspects of Corps reservoir projects and another on sedimentation management concerns. USACE leaders recognized that combining these efforts would result in cost and time savings. This combined effort provided not only data for the Portfolio but also created a database to examine the status of USACE water management from local, regional, and national perspectives, an engineering and scientific foundation for a national adaptive management program, a baseline data set for investigating the evolution of operational water management policies, an assessment of sediment infilling, its impacts to operating purposes and management practices, and a database for sediment data collection efforts.

These efforts have proven relevant to the assessment of reallocation opportunities at multi-purpose reservoirs where any change in operation affects multiple purposes. As a result, after the initial Portfolio Report was completed, this effort was transformed into an Assessment of Data study for FY 2011 and FY 2012 and included the water supply, water management, and sediment management components as well information gained through collaboration with other USACE work efforts. Major products developed include a portfolio of USACE projects that identified the best candidates for opportunities for operational changes and/or reallocation opportunities to ensure existing USACE reservoirs contribute to enhance economic and ecosystem values as water demands evolve and a better understanding of climate change issues are gained, (2) a paper on alternative funding arrangements for water supply reallocation studies, and (3) a final draft report on the National Portfolio Assessment of Data for Reallocations: Status and Challenges for USACE Reservoirs.

The National Portfolio Assessment for Reallocations has developed and changed as the needs of the USACE Water Supply mission have grown and changed. The work proposed for FY 15 furthers the original objectives envisioned in 2008 and addresses current challenges to achieving consistent and sustainable water withdrawal policy.

**Sustainable Rivers. \$285,000** will be used to advance ongoing and develop new efforts to improve practices for evaluating current, increasing and competing water demands at USACE reservoirs consistent with the revised Environmental Operating Principles and the USACE Campaign Plan. This includes:

- Development of environmental flow needs to ensure sustainable biodiversity below Corps reservoirs
- Model application and development at existing and new sites
- Implementation of operational changes to meet environmental flow needs at existing and new sites
- Monitoring and initiation of a process to revise water control plans to ensure operations reflect the current, increasing and competing demands for water and on biodiversity

Lessons learned at existing sites will be used to inform new and existing efforts to modify project operations, ensure consideration of environmental implications of existing and current operations and refine the practices for evaluating evolving water demands.

The Sustainable Rivers Project (SRP) was initiated in 2002. SRP is an ongoing national partnership between the Corps of Engineers and The Nature Conservancy. The purposes of this effort are to assess ecosystem needs downstream of USACE projects, to evaluate water management opportunities for potential operational changes and/or reallocations to enhance ecosystem values while maintaining or improving primary project purposes (e.g. flood risk reduction, water supply, and hydropower), and to implement environmental flows where feasible.

The SRP involves work on 36 USACE reservoirs in 8 river basins. It is the most large-scale and comprehensive project for implementing environmental flows below USACE reservoirs. Funds from the National Portfolio Assessment for Reallocations (2010-2013) have been instrumental in the advancement of SRP, which has now defined environmental flows for 20 reservoirs and implemented environmental flows at 10, thereby affecting ecological condition for approximately 600 river miles. The Portfolio is currently the only national funding source for the SRP. Full implementation of environmental flows below USACE reservoirs would benefit an estimated 50,000 river miles.

Funding from the Portfolio will be used to support a combination of national level and site specific work. National level work focuses on measuring and communicating the successes of the whole SRP consistent with the USACE Campaign Plan and the revised Environmental Operating Principles. Site work will define ecological needs and environmental implications, model potential operational changes and environmental implications, implement and monitor ecological outcomes resulting from changes to the operation of particular reservoir systems and assess economic impacts (enhancements) as a result of the changes in operation. Both national and site work will strive to:

- Build capacity within the water management community to advance implementation of environmental flows with little or no direct involvement of SRP resources
- Engage partners to focus on sustainability and avoid conflict, including ESA consultations

SRP efforts complement the national portfolio assessment by demonstrating that a strategic and science-based adaptive management approach that can be used at Corps projects to maintain or enhance the benefits they provide to the nation while reducing negative environmental consequences. This Sustainable Rivers Project was combined with the National Portfolio Assessment in FY 2010 under the recommended plan.

#### **OTHER INFORMATION:**

#### **ACCOMPLISHMENTS IN FY 2014:**

The fiscal year 2014 funding of \$565,000 was a two-increment effort.

**Assessment of Data.** Funding in the amount of \$280,000 was used to: (a) initiate an effort to complete the compilation of USACE's projects in the Portfolio to include all our projects with irrigation storage. While repayment of irrigation costs are administered by the Bureau of Reclamation, the general physical and operating data of these projects and the knowledge of how these projects operate for irrigation is critical to complete the Portfolio of USACE projects with water supply; and (b) complete the development of a draft report on the National Portfolio Assessment of Data for Reallocations: Status and Challenges for USACE Reservoirs.

**Sustainable Rivers.** Funding in the amount of \$285,000 was used to continue the efforts of described above to improve practices for evaluation water demands. These efforts included development and application of models for use at select USACE Sustainable Rivers Project sites, defining environmental flow needs, implementation operational changes to meet environmental flow needs and development of a framework to inform nationwide application of the knowledge gained through the implementation of the Sustainable Rivers Program.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is 0. This amount will be used to perform work on the project as follows: N/A.

## O&M Justification Sheet

**PROJECT NAME:** Program Development Technical Support

**AUTHORIZATION:** The automated information system P2 has replaced the Automated Budget System (ABS) for budget development processes. The transition to P2 from ABS has aligned all Civil Works budget requests within one automated information system (AIS). Previously, the ABS supported gathering, analyzing and submitting project funding requests to respond to all authorized missions within the Corps of Engineers Operation and Maintenance program.

**LOCATION AND DESCRIPTION:** This program is National in scope.

**ALLOCATION FOR FY 2014:** \$297,000

**BUDGETED AMOUNT FOR FY 2015:** \$281,000 1/

### DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:

**ALL:** The requested funds will continue be used to assist civil works program development for budget submissions, identify needed changes and recommend new analytical program development tools and procedures to support civil works program development. While P2 continues to provide the base system for program development capability previously provided by ABS, review and development of procedures and tools using P2 data continues to evolve for the organization's need to be flexible and responsive to ongoing programs and associated budgeting requirements. Presently work under this activity in current and future years continues to ensure that all relevant business processes and monitoring needs are incorporated into applied or new databases, data requirements continue to be reviewed and refined for relevance, and analytical capabilities are being expanded for management to support the Corps' budgeting process with for evolving objectives and with efforts to minimize supporting labor and administrative burden. The deployment of P2 and updated versions has shifted program efforts towards development of methods and procedures for setting program priorities and providing technical support for all civil works activities and program analysis across the range of the civil works program. In FY15 this project will continue to assist civil works program development for budget submissions, identify needed changes and recommend new analytical program development tools and procedures to support civil works program development and management. Examples include partial or leveraged funding for the use of analytical applications to support risk-based cost trade-offs of variances in scope and cost for coastal navigation channels, and verification of deep draft waterborne traffic statistics used to estimate project value or return. All business lines benefit from this activity.

**N:** N/A

**FRM:** N/A

**RC:** N/A

**H:** N/A

**EN:** N/A

**WS:** N/A

**OTHER INFORMATION:**

**ACCOMPLISHMENTS IN PRIOR YEARS:** Funding for this ongoing activity maintained and updated the software systems, provided new tools and information to generate reports, provided support to managers, and enhanced analytical tools to support the budget development process.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A.

## O&M Justification Sheet

**PROJECT NAME:** Protection of Navigation (Two Items)  
Waterborne Commerce Statistics  
Harbor Maintenance Tax Data Collection (formerly called Harbor Maintenance Fee Data Collection)

**AUTHORIZATION:** Waterborne Commerce Statistics - The Corps of Engineers (Corps) serves as the Federal Central Collection Agency, and is the sole U.S. Government source for U.S. domestic waterborne commerce and vessel statistics in conformance with the River and Harbor Act of 1922 as amended. The Office of Management and Budget (OMB) pursuant to Title 44 U.S.C. 3509 and 3510 transferred primary responsibility for U.S. foreign waterborne transportation statistics mission from the Bureau of the Census to the Corps in 1998.  
Harbor Maintenance Tax Data Collection - PL 103-182.

**LOCATION AND DESCRIPTION:** This is a national program.

**ALLOCATION FOR FY 2014: \$5,540,000**

**BUDGETED AMOUNT FOR FY 2015: \$5,464,000 1**

### DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:

**N:**

**Waterborne Commerce Statistics (WCS):** \$4,669,000 will be used to develop data that provide essential information for navigation project investment analyses and annual funding prioritization for operation and maintenance of existing projects; as project output information for computation of performance measures; for input into the U.S. National Accounts; and for regulatory, emergency management decisions, and homeland defense. Activities supporting this national statistics mission include: (1) collecting and reporting (includes enforcement role) of water transportation statistical data; (2) automated systems development and operation (transactional systems within Operation and Maintenance corporate information system), processing, compiling, and publishing statistical data and information on waterborne commerce and vessels moving on the internal U.S. waterways, the Great Lakes, and through all U.S. ocean channels and ports; and (3) documenting and publishing the Nation's commercial port infrastructure served by Federal channels; (4) documenting and publishing the U.S. vessels available for operation in waterborne commerce, their principal trades and zones of operation; and (5) acquiring and using software tools for program analysis, diagnostics and quality control. This item is reported under CWBI in ITIPS and the 300b submittal accounting for \$1,804,000 of the overall total CWBI cost for FY15.

Proposed activities for fiscal year 2015 include: Perform operations, maintenance and necessary enhancements of nation's waterborne commerce, vessel and shipper data and statistics programs. Increase project detail data requirement for budget submissions and economic justification. Collaborate with partner agencies to improve navigation data from a Federal perspective. Within funding limits, (1) Implementation, with continued modification of Corps automated systems, to accept new real-time domestic electronic data to improve accuracy of domestic and foreign transportation statistics; (2) Acquiring and using software tools for program analysis, diagnostics and quality control; and (3) Expansion of water transportation data connection with landside movements and improve navigation architecture to support national multimodal freight policy.

**Harbor Maintenance Tax (HMT) Data Collection:** \$795,000 will be used by the Corps to perform analyses of the Harbor Maintenance Trust Fund (HMTF). Up to \$5,000,000 is authorized to be used annually for the administration of the Harbor Maintenance Trust Fund. Most of these funds are used by

U.S. Customs and Border Protection (CBP). The Corps performs analyses of the HMTF revenues and transfers to validate the adequacy of the HMTF in light of the uncertainty over the legal and international challenges to the HMT, to document the operation of the trust fund, and to prepare and distribute the Annual Report to Congress on the Status of the Harbor Maintenance Trust Fund. Analysis of waterborne commerce shipments and vessel movement data is also needed to respond to legal questions to the HMT; to analyze alternative funding options; and to assess the economic and competitiveness impacts of other potential funding sources. The Corps is also required to collect data on foreign and domestic shippers subject to the fee. Therefore, the Corps requires a portion of the administrative funding to continue its ongoing HMTF support efforts. The General Accountability Office (GAO) issued its final report (GAO-08-321), which recommend that the CBP and the Corps improve their coordination and procedures in order to increase HMT collections by auditing domestic shippers failing to pay or under paying the HMT mandated by law. This item is reported under CWBI in ITIPS and the 300b submittal accounting for \$380,000 of the overall total CWBI cost for FY 2015 .

Proposed activities for fiscal year 2015 include: Prepare and distribute the Annual Report to Congress on the Status of the Harbor Maintenance Trust Fund. Collaborate with CBP to improve CBP-Corps data communication systems to target delinquent domestic shippers for audit to increase HMT collections. Continue ongoing HMT data collection and analysis programs. Within funding limits, develop and implement improved data collection processes and systems, and data analysis models and program computer enhancements to provide more complete/accurate domestic shipper information.

**FRM:** N/A

**RC:** N/A

**H:** N/A

**EN:** N/A

**WS:** N/A

**OTHER INFORMATION:**

**ACCOMPLISHMENTS (WCS / HMT) IN FY 2014:** For these continuing programs maintained FY 2014 data quality and completeness. Provided enhanced navigation project output data for budget formulation. Continued work with other Federal agencies and industry to implement a new modern, comprehensive automated domestic waterborne data collection system. Established partnerships and data exchanges with other Federal agencies (CBP, IRS, USCG and EPA), and industry to improve the accuracy, availability and timeliness of the data the Corps collects for managing capital investments in Corps projects. Integrated the Corps location codes into the Automated Identification System (AIS) encoding guide, enabling mariners to report the code electronically through AIS. Established a process to receive updates on location codes from USCG, improving the quality of the Corps' inventory of dock data. Continue ongoing HMT data collection and analysis programs. Streamlined efforts in providing domestic shipper data to CBP and follow-up research requested by CBP for HMT audits. Improved efficiency of the Census trade data processing used in providing a more complete and accurate U.S. foreign transportation dataset. Prepared HMTF annual report.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A.

## Operation and Maintenance

**PROJECT NAME:** Recreation One Stop (R1S)

**AUTHORIZATION:** These programs are conducted under the general authority of PL 78-534, the Flood Control Act of 1944 (58 Stat. 887).

**LOCATION AND DESCRIPTION:** The Recreation One Stop initiative is to enhance customer satisfaction with recreational experiences on public lands. It improves access to recreation-related information generated by the Federal government, streamlines the systems used to manage that information, and increases the sharing of recreation-related information among government and non-government organizations. At the direction of Office of Management and Budget (OMB), Recreation.gov and Volunteer.gov was combined and is now under the umbrella of Recreation One Stop, a priority E-gov initiative on the President's Management Agenda. Providing a nationwide funding source at HQUSACE for centralized procurement of these items used by all operating projects having a natural resources management program precludes the need for funds to be transferred by each project or district to a single procurement agent, a savings of from 60 to 300 transactions a year.

**ALLOCATION FOR FY 2014: \$213,000**

**BUDGETED AMOUNT FOR FY 2015: T: \$65,000 1/**

### **DESCRIPTIONS OF WORK AND JUSTIFICATIONS FOR FY 2015:**

Recreation.gov - \$50,000 - is an interagency website providing public information about recreation opportunities on federal lands. This website provides a customer friendly recreation portal with information for planning visits to Federal recreation sites and making campground reservations. Required budgeted amount provides payment IAW Interagency Agreement NO.10-1A-11132461-167 between the National Recreation Reservation Service as managed by US Forest Service and Department of Defense. This annual funding supports the Corps responsibility of providing funds for the management and operations costs of the Recreation One-Stop initiative. Recreation.gov provides a customer friendly recreation portal with information for viewing and planning visits on over 4,000 Corps recreation sites and activities, reserve and make payment on line. Recreation.gov provides a customer friendly recreation portal with information for viewing and planning visits on over 4,000 Corps recreation sites and activities, reserve and make payment on line.

Volunteer.gov - \$15,000 is an interagency website coordinating volunteer activities among federal agencies. Provides a user-friendly, web based resource to citizens, offering a single point of access to information about volunteer opportunities nationwide. Volunteer.gov is a partner in the White House's USA FreedomCorps Network, and the site is also linked to the Recreation.gov website in which the Corps participates. Required budgeted amount provides payment to Department of Interior (DOI) as the managing partner IAW February 2000 Federal Interagency Team on Volunteerism Memorandum of Understanding. This annual funding supports the Corps responsibility of providing funds for the management and operations costs of the Recreation One-Stop initiative. Volunteer.gov provides a comprehensive clearinghouse of Corps volunteer opportunities. The public can enter geographic information about where they want to get involved and areas of interest to access volunteer opportunities offered by the Corps. Over 53,000 volunteers at Corps projects worked 1.94 million hours, providing \$43 million value of service in fiscal year 2012.

**N: \$0**

**FRM: \$0**

**RC: \$65,000**

**H: \$0**



**EN: \$0**

**WS: \$0**

**OTHER INFORMATION:** This project is an agency-wide project that is directed by HQUSACE.

1/ Estimated Unobligated Carry-in Funding: As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2015 from prior appropriations for use on this effort is \$0. This amount will be used to perform work as described above.

## O&M Justification Sheet

**PROJECT NAME:** Regional Sediment Management Program (RSM)

**AUTHORIZATION:** Section 516 of WRDA 96 authorizes the development of long-term strategies for the management and control of sediments through studies and operational activities.

**ALLOCATION FOR FY 2014: \$3,960,000**

**BUDGETED AMT. FOR FY 2015: \$1,800,000**

### **DESCRIPTIONS OF WORK AND JUSTIFICATION FOR FY 2015:**

The RSM Program objectives are to establish regional management strategies that link the sediment management actions at authorized Corps of Engineers (Corps) projects with one another, and to coordinate management activities with other Federal agencies, State, and local governments within the boundaries of physical systems including inland watersheds, rivers, estuaries, and the coast. The goal is to demonstrate short- and long-term cost savings and increased economic and environmental benefits through adaptive management of sediments from a regional perspective. The approach provides opportunities to achieve greater effectiveness and efficiency and to realize significant cost savings relative to traditional project management practices. Cost savings may be realized from reduced re-handling of material, optimized use or placement of material extended dredging cycles and combined equipment mobilization and demobilization for linked projects (e.g., dredging and shore protection). Costs may also be reduced by sharing information, improved data management, and reduced duplication of field data collection, or by reducing duplication in model and tool development and application.

PROPOSED ACTIVITIES FOR FY 2015: Continue implementation of RSM through support to Districts and Divisions to include, but not be limited to:

- The RSM National Program will continue to coordinate efforts to promote systems-based technologies and approaches to improve sediment management practices and optimize use of sediments in support of the USACE Civil Works mission. Major RSM National Program activities will include: expanding to include Engineering With Nature (EWN) concepts; coordination across the USACE Districts and Divisions to share knowledge and lessons learned; sponsoring the annual RSM Workshop and In-Progress-Review to promote program goals, share knowledge and experiences, and technology transfer among RSM practitioners; participating in regional and national initiatives to promote the RSM concepts and approach; and presenting RSM Program benefits and goals to national audiences.
- Continue to expand regional approaches developed for the operation and maintenance of navigation projects to a Corps-wide capability. The improved regional approach to the navigation program assists nationally to identify common issues that are better solved on a regional basis, improve channel availability and subsequently life cycle costs and project benefits through more efficient practices, and improve regional efficiencies by engaging cross-mission objectives of the Corps (i.e., navigation, flood risk management, and environmental restoration regarding sediments).
- Outreach and apply lessons learned through the Jacksonville District North East and South West Regions and San Juan Harbor to apply regional approaches to link multiple projects (navigation, shore protection, environmental enhancement) across a region resulting in improved use of sediments, optimized operational efficiencies, increased benefits, cost savings, and collaboration with federal and non-federal partners.
- Coordinate and implement sediment management actions identified through the collaborative RSM and EWN initiatives identified through the Post Hurricane Sandy RSM studies to better

Engineer Research and Development Center

Regional Sediment Management Program

understand the sediment and environmental processes; improve dredging and placement efficiencies; identify beneficial use opportunities; and link multiple projects. Actions will be coordinated with partners and stakeholders to ensure needs are met.

- Coordinate and implement sediment management actions identified through the FY14 efforts across the Districts. Identified actions will optimize the use of sediments to improve operational efficiencies while keeping sediments in the system, reducing shoreline erosion, reducing sedimentation, and/or improve environmental habitat while reducing overall costs by linking projects, reducing timelines, and leveraging data, information, and resources. Actions will be coordinated with partners and stakeholders to ensure needs are met.
- Continue integration of Corps dredging, environmental, sediment, and monitoring related databases to provide data access and tools to assist in the management of sediment and dredging information, project information, etc to provide the capability to identify needs and opportunities to implement sediment management strategies.
- Continue development of District's regional sediment budgets, building the sediment budget repository, and enhancing the Sediment Budget Analysis System.

#### ACCOMPLISHMENTS FOR FY 2014:

- Continued to expand regional approaches developed for the operation and maintenance of navigation projects to a Corps-wide capability. The improved regional approach to the navigation program assists nationally to identify common issues that are better solved on a regional basis, improve channel availability and subsequently life cycle costs and project benefits through more efficient practices, and improve regional efficiencies by engaging cross-mission objectives of the Corps (i.e., navigation, flood risk management, and environmental restoration regarding sediments).
- Outreached and applied lessons learned through the Jacksonville District. Nassau and Duval Counties and the Tampa Bay efforts to apply regional approaches to link multiple projects (navigation, shore protection, environmental enhancement) across a region resulted in a better understanding of sediment transport across inlets, improved use of sediments, optimized operational efficiencies, increased benefits, cost savings, and collaboration with federal and non-federal partners.
- Focused on inland/riverine challenges and opportunities to integrate Regional Sediment Management and Engineering With Nature approaches to improve the management and use of sediments across multiple projects and business lines. Initiated implementation of RSM-EWN initiatives.
- Coordinated and implemented opportunities to implement sediment management and EWN actions identified through the Post Hurricane Sandy O&M at Barnegat, Manasquan, and Avalon Inlets. The goal was to improve dredging and placement efficiencies; identify beneficial use and green infrastructure opportunities; and link multiple projects. Actions were coordinated with partners and stakeholders to ensure needs were met.
- Coordinated and implemented sediment management actions identified through the FY13 efforts across the Districts. Identified actions optimized the use of sediments to improve operational efficiencies while keeping sediments in the system, reducing shoreline erosion, reducing sedimentation, and/or improve environmental habitat while reducing overall costs by linking projects, reducing timelines, and leveraging data, information, and resources. Actions were coordinated with partners and stakeholders to ensure needs were met.

- Continued integration of Corps dredging, sediment, and monitoring related databases to provide data access and tools to assist in the management of sediment and dredging information, project information, etc. to providing the capability to identify needs and opportunities to implement sediment management strategies.
- Continued development of nearshore berm guidance to address challenges with nearshore placement, modified existing numerical modeling capabilities to provide tools to assist in the evaluation, design, placement, and monitoring of nearshore berms for improved sediment management. Continued incorporation of fine-grained sediments. Held workshops with District personnel and stakeholders.

Continued development of District's regional sediment budgets, building the sediment budget repository, and enhanced the Sediment Budget Analysis System and web based portal.

**SUMMARIZED FINANCIAL DATA:**

Allocation for FY12	\$3,169,000
Allocation for FY13	\$1,747,000
Allocation for FY14	\$3,960,000
Estimated Carry-In Funds	\$0
President's Budget for FY15	\$1,800,000

## O&M Justification Sheet

**PROJECT NAME:** Reliability Models Program For Major Rehabilitation and Asset Management

### **SUMMARIZED FINANCIAL DATA:**

Estimated Annual Cost for Continuing Program	\$300,000
Allocation for FY 2014	297,000
Allocation Requested for FY 2015	300,000
Change in FY 2014 from FY 2015	3,000

**JUSTIFICATION:** The purpose of this program is to respond to the needs of the Districts and Divisions that are preparing Major Rehabilitation Reports for the upcoming fiscal year. The objective of the program is to provide reliability models for project features or components of projects that are being considered for Major Rehabilitation, or to provide procedures that consider the impact of various chemical, environmental or physical processes in a reliability analysis.

**PROPOSED ACTIVITIES FOR FY 2015:** The requested funds will be used to continue to prepare reliability models and to collect data for reliability analyses anticipated to be required by the Districts. Reliability models and/or data are anticipated to be needed for the following: 1) Testing of a reliability model for seepage through embankment dams and levees, 2) Testing of a reliability model for floodwall stability, 3) Continued evaluation of data collected on the performance of dam gates and pretensioned anchor rods. This information will be used to determine performance modes and to verify load cycles used in a reliability analyses, 4) Continued evaluation of the impacts of electrical/mechanical systems on the reliability model for locks and dams. 5) Continued development of the reliability models for I-Wall's on levees. 6) Develop a reliability model for Concrete Dams considering seismic/dynamic loading. 7) Continued development and refinement of the reliability models for barge impact loads. This will also be extended to Inland Waterways 8) Continued determination of the human reliability factor 9) Development of a simplified Fault Tree Analysis for system reliability calculation for Navigation structures, and 10) Provide reliability analysis procedures for additional selected hydropower equipment. It is also anticipated that two rehabilitation workshops would be conducted. The makeup of these workshops will be determined based on the needs of the respective Districts and Divisions. Continue to provide support and consultation for development of reliability models for Asset Management for Navigation and Flood/Coastal business project lines. Continue to incorporate reliability into existing computer programs.

**ACCOMPLISHMENTS IN PRIOR YEARS:** Many reliability models and other analytical tools have been provided in support of the Major Rehabilitation Program. Reports on numerous navigation and hydropower projects have been accomplished. In addition, 20 rehabilitation workshops have been conducted in the last 16 years to assist the Districts as they prepare their Major Rehabilitation Reports. These workshops offer guidance in conducting reliability and risk analyses, and provide the opportunity for interdisciplinary teams from the Districts and Divisions to discuss their particular project with HQUSACE and other Districts/Divisions personnel. EM 6062, Risk and Reliability for Major Rehabilitation Studies was published. Barge Impact numerical modeling techniques have been extended to Inland Waterways. Reliability capability has been added to the Pile Group Computer Program and the Sheetpile Wall Design Computer Program. A Concrete Deterioration model for Lock Walls and the subsequent economic consequences was finalized. This model will be applied lock walls to aid in the Major Rehab Program justification. Many rehabilitation workshops have been conducted. Expert Elicitation has been conducted for the mechanical and electrical systems for navigation locks. Also, have provided consultation and review in the development of reliability models for major maintenance (as part of asset management). Bayesian Techniques are being developed.

## O&M Justification Sheet

**PROJECT NAME:** Water Operations Technical Support (WOTS)

**AUTHORIZATION:** These efforts are necessary to provide support for the restoration and management of Federal water resources

**ALLOCATION FOR FY 2014: \$495,000**

**BUDGETED AMT. FOR FY 2015: \$500,000**

### **DESCRIPTIONS OF WORK AND JUSTIFICATION FOR FY 2015:**

Maintaining the high quality environmental and water quality conditions at 562 Corps reservoirs (5,500,000 surface acres), 237 navigation locks, 926 harbors, 75 hydropower projects, and 25,000 miles of inland and coastal waterways requires compliance with numerous statutes and state standards. Providing the technology and knowledge base necessary to broadly address environmental requirements in accordance with laws and regulations can best be accomplished through a comprehensive centralized program that will maximize cost effectiveness, and ensure broad dissemination and implementation of technology and information.

**PROPOSED ACTIVITIES FOR FY 2015:** The WOTS Program is expanding as environmental conditions at Corps project sites continue to deteriorate. The program will continue to provide effective environmental and water quality management technologies to address a wide range of issues at Corps reservoir and waterway projects, and in river systems nationwide. A key component of the program is to offer sustainable innovative engineering solutions to complex environmental problems. The program supports the incorporation of Green Infrastructure and Low Impact Development (GI-LID) technologies to support USACE environmental objectives. The program will provide technology to address: problems caused by aquatic invasive species; water quality impacts of landuse, sediment and nutrient loadings, erosion, and reservoir sedimentation; tailwater fisheries concerns at pump-back hydropower projects; and project operations related to environmental and water quality issues. WOTS will provide technical support to the Corps' mission related project responsibilities, with special emphasis on the transfer of technology. The program will ensure that the technologies developed by the Corps and other Federal agencies are current and readily available to all Corps field offices. The effective use of technologies will be secured through direct technical assistance, specialty workshops, information bulletins, technical notes, executive notes, technical reports, miscellaneous papers, instruction manuals, videos, meetings, seminars, briefings, congressional testimony, and the Internet.

### **ACCOMPLISHMENTS FOR FY 2014:**

- The program continued to provide effective sustainable environmental and water quality management technologies addressing a wide range of issues at Corps reservoir and waterway projects, and in river systems nationwide.
- The program provided innovative technology addressing: problems caused by aquatic invasive species; water quality impacts of landuse, sediment and nutrient loadings, erosion, and reservoir sedimentation; tailwater fisheries concerns at pump-back hydropower projects; and project operations related to environmental and water quality issues.
- WOTS provided technical support to the Corps' mission related project responsibilities, with special emphasis on the transfer of technology. The program ensured that the technologies developed by the Corps and other Federal agencies are current and readily available to all Corps field offices.

- The effective use of technologies were secured through direct technical assistance, specialty workshops, information bulletins, technical notes, executive notes, technical reports, miscellaneous papers, instruction manuals, videos, meetings, seminars, briefings, congressional testimony, and the Internet.

**SUMMARIZED FINANCIAL DATA:**

Allocation for FY12	\$490,000
Allocation for FY13	\$474,000
Allocation for FY14	\$495,000
Estimated Carry-In Funds	\$0
President's Budget for FY15	\$500,000