

# Sustainable Solutions

To America's Water Resource Needs

Civil Works Strategic Plan 2014-2018



US Army Corps  
of Engineers®





# Plan At a Glance

## VISION

Contribute to the strength of the Nation through innovative and environmentally sustainable solutions to the Nation's water resources challenges.

## MISSION

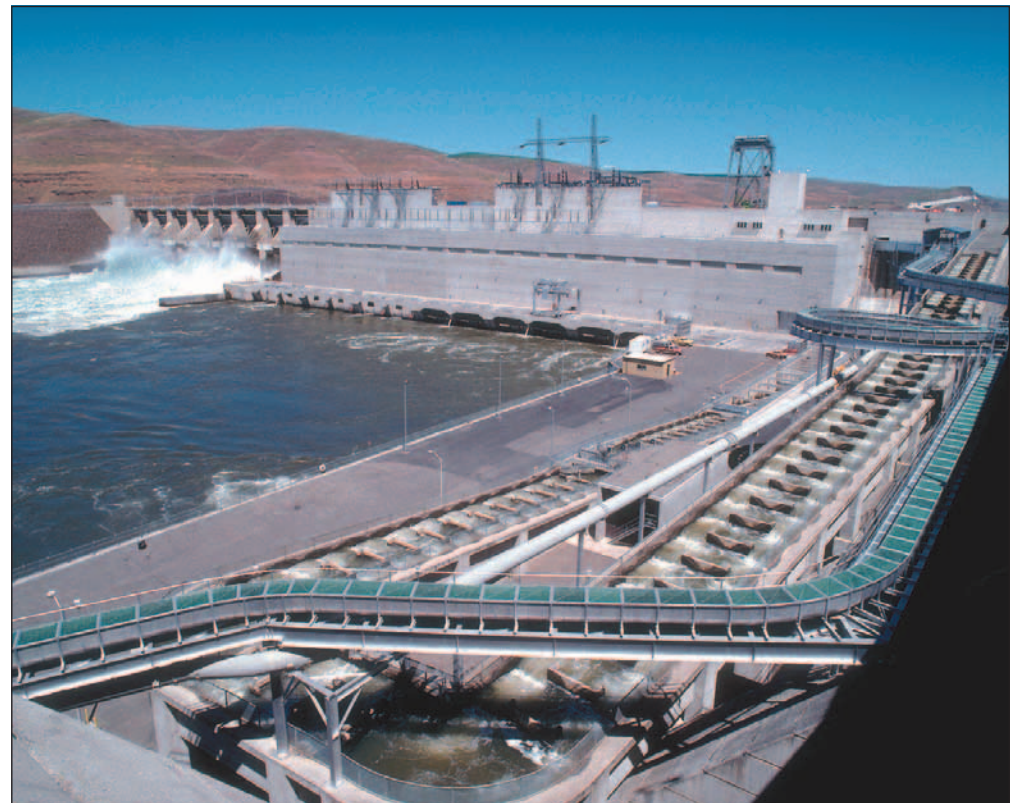
Serve the public by providing the Nation with quality and responsive:

- Development and management of the Nation's water resources;
- Support of commercial navigation;
- Restoration, protection and management of aquatic ecosystems;
- Flood risk management; and
- Engineering and technical services in an environmentally sustainable, economic, and technically sound manner with a focus on public safety and collaborative partnerships.

## GOALS

How We Accomplish Our Mission

1. Transform the Civil Works Program to deliver sustainable water resources solutions through Integrated Water Resources Management.
2. Improve the safety and resilience of communities and water resources infrastructure.
3. Facilitate the transportation of commerce goods on the Nation's coastal channels and inland waterways.
4. Restore, protect, and manage aquatic ecosystems to benefit the Nation.
5. Manage the life-cycle of water resources infrastructure systems in order to consistently deliver sustainable services.







# Achieving the Goals

This strategic plan articulates five goals that will guide USACE into a 21st Century organization. Navigation, flood risk management, and aquatic ecosystem restoration remain the primary Civil Works missions. These missions are embedded in the five strategic goals presented above and discussed throughout the strategic plan.

These goals and strategies will help respond to the myriad of challenges facing the Civil Works Program. Goal 1 captures the transformational initiatives that address the current and future water resources needs of the Nation. Goal 2 includes the concepts of safety and resilience, and the intent to reduce economic and human life losses from floods. Goal 3 addresses the USACE navigation program, which provides safe, reliable, highly cost-effective, and environmentally sustainable waterborne transportation systems for the movement of commercial goods. Goal 4 focuses on restoring aquatic habitat to a more natural condition in those ecosystems whose structures, functions, and dynamic processes have become degraded. Goal 5 emphasizes adaptive operation and management of existing USACE projects throughout their life cycle. Reliability is also an element of this goal, and reflects the implementation of risk-based asset management in the area of operations and maintenance of USACE infrastructure.

## OVERARCHING STRATEGY

**Integrated Water Resources Management (IWRM)** is a holistic focus on water resource challenges and opportunities that reflects coordinated development and management of water and related resources. IWRM considers economic benefits, ecosystem quality and health and public safety. These factors are considered in project formulation.

## CROSS-CUTTING STRATEGIES

**Systems Approach** – Water resources planning and management should use systems analysis methods and tools to understand, assess, and model the interconnected nature of hydrologic systems (e.g., watersheds) and the economic and ecologic systems they support, and to identify and evaluate management alternatives from both time (life-cycle) and function (multi-purpose) perspectives.

**Collaboration and Partnering** – Build and sustain collaboration and partnerships at all levels to leverage authorities, funding, talent, data, and research from multiple agencies and organizations.

**Risk-Informed Decision Making and Communication** – Develop and employ risk and reliability-based approaches that incorporate consequence analysis, especially risk to life; identify, evaluate, and forestall possible failure mechanisms; and quantify and communicate residual risk.

**Innovative Financing** – Explore innovative financing arrangements such as public-private partnerships to develop and sustain the Nation's water resources infrastructure.

**Adaptive Management** – Adaptive management is a decision process that promotes flexible decision making that can be adjusted in the face of risks and uncertainties—such as those presented by climate change—as outcomes from management actions and other events become better understood through monitoring and improved knowledge.

**State-of-the-Art Technology** – Embrace new and emerging technology for its fullest advantage. Invest in research that improves the resiliency of structures, assists in updating design criteria, and improves approaches toward planning and design.



## Foreward

For more than 230 years, the U.S. Army Corps of Engineers (USACE) has been a leader in developing the Nation's water resources and related activities to include harbors and waterways. The Directorate of Civil Works is a major component of the USACE. The Civil Works programs include water resource development activities including flood risk reduction, navigation, recreation, environmental stewardship and emergency response to name a few. As USACE moves through the 21st Century, it will continue to advance the Civil Works Program strategic goals: transforming the Civil Works program; assisting in providing for safe and resilient communities and infrastructure; helping facilitate commercial navigation in an environmentally and economically sustainable fashion; restoring degraded aquatic ecosystems and preventing future environmental losses; and implementing effective, reliable, and adaptive life-cycle performance management of infrastructure.

As society's needs and values have changed, the Army Civil Works mission has evolved from one of primarily development and management of water resources to one that inherently includes protection and restoration of water resources and the ecosystems they support. USACE has implemented water resources programs and projects that strengthened America's economic competitiveness; reduced risks from floods and hurricanes; helped people recover more quickly from disasters; restored, protected and sustained the aquatic environment, including wetlands; provided American homes and communities with water, power, recreational opportunities, and natural resources for citizens to enjoy and appreciate.

A particular strength of USACE is the synergy between its civil and military operations. Beyond the direct contribution that the Army Civil Works Program makes to domestic economic development and environmental security, USACE also applies its Civil Works expertise to support defense missions, such as operations that promote peace and stability around the globe. In



turn, the USACE derives increased depth and broader experiences from operations in international areas by being an integral part of the larger Army and Defense organizations. USACE has demonstrated this synergy most recently in post-disaster responses following Hurricanes Sandy and Irene and post-conflict stability operations in Afghanistan.

USACE must operate and manage existing water infrastructure in a manner that meets the Nation's contemporary water resources needs, and adapts to changing conditions such as climate change and de-

mographic shifts to ensure such resources are available for future generations. Competing water uses must be balanced to provide multiple benefits such as economic security, environmental health, social well-being, and public safety. For example, navigation projects must be designed and operated to safely and efficiently convey vessels and cargo to ports and waterways, and also minimize any adverse impacts to the environment. Flood damage reduction projects must simultaneously reduce flood risks and sustain healthy ecosystems.

Federal, state, local and private partnerships, along with increased stakeholder and non-governmental collaboration, can be used to develop sustainable



solutions to today's complex water resources development and management challenges. A strategy to deal with these complex and changing conditions is Integrated Water Resources Management (IWRM), which is essential for the future success of the Army Civil Works Program given the Nation's multi-layered governance system that crosses watershed boundaries, and the interdependent relationship between the natural and built environment. This strategy will address key external forces such as climate change, demographic and associated land use changes, resource constraints and focus on implementation of innovative and resilient solutions to the Nation's water resources planning and management challenges.

This strategic plan recognizes that USACE must continually develop and apply a diverse range of planning, problem solving, and evaluation strategies while broadening its knowledge, skills, and talents. The USACE must be both a leader and a partner in these efforts. This strategic plan presents USACE's



commitment to responsibly develop the Nation's water resources, while protecting, restoring and sustaining environmental quality. USACE is dedicated to learning from the past and adapting the organization to meet the Nation's water resources needs.

Jo-Ellen Darcy  
*Assistant Secretary of the Army for Civil Works*

Thomas P. Bostick  
Lieutenant General, USA  
*Chief of Engineers*

# USACE Civil Works Vision

Contribute to the strength of the Nation through innovative and environmentally sustainable solutions to the Nation's water resources challenges

## Strategic Goals



### Objective 1.1

Modernize the Civil Works project planning program.

### Objective 1.2

Deliver quality solutions and services.

### Objective 1.3

Develop a ready and resilient workforce through innovative talent management and leader development strategies and programs.

### Objective 2.1

Reduce the Nation's risk and increase resilience to disasters.

### Objective 2.2

Support the Department of Homeland Security/Federal Emergency Management Agency to provide life-cycle public works and engineering support in response to disasters.

### Objective 2.3

Effectively and efficiently execute response, recovery, and mitigation.

### Objective 3.1

Facilitate commercial navigation by providing safe, reliable, highly cost-effective and environmentally sustainable waterborne transportation systems.

### Objective 4.1

Restore aquatic habitat to a more natural condition in ecosystems in which structure, function, and dynamic processes have been degraded.

### Objective 4.2

Reduce adverse impacts to the Nation's wetlands and waterways through an effective, transparent, and efficient Regulatory process.

### Objective 4.3

Clean up radioactive waste sites.

### Objective 4.4

Manage, conserve, and preserve natural resources at USACE projects.

### Objective 4.5

Provide opportunities for quality outdoor public recreation.

### Objective 5.1

Support the Nation and the Army in achieving our energy security and sustainability goals.

### Objective 5.2

Capitalize, recapitalize, operate and maintain water resources infrastructure to provide maximum value to the Nation.

### Objective 5.3

Provide reliable, renewable, hydropower to the Nation.

### Objective 5.4

Provide water supply storage in partnership with state and local interests.



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# Introduction

For over 230 years, the U.S. Army Corps of Engineers (USACE) has been entrusted with the development and stewardship of much of the Nation's public water resources. The USACE plans for and manages water for transportation, recreation, energy, wildlife habitat, aquatic ecosystems, and water supply needs, while reducing the impacts of flood damages and other natural disasters.

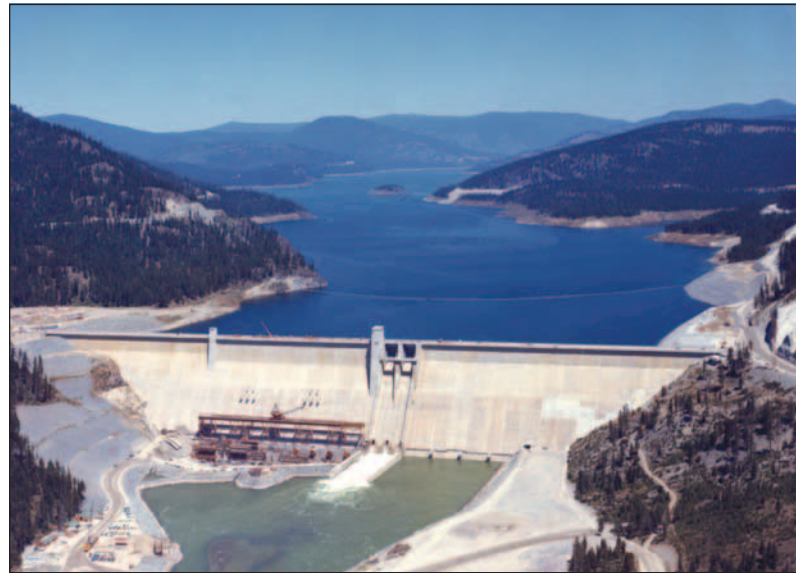
The 21st Century has brought increasing pressure on the Nation's water resources. Competition and conflicts over water resources are likely to increase and intensify as population growth and climate change increases variability in precipitation patterns. Drought, increased frequency of severe storms, and regional reductions in the natural storage provided by snow pack are among the anticipated futures.

As water resource problems increase in scale, scope, and complexity, new and innovative solutions must be developed, to ensure the effectiveness of the organization. With each

new strategic planning cycle, the Civil Works Strategic Plan is revised to reflect evolving internal and external trends, factors and experiences. Significant factors that shaped this Strategic Plan include focusing on transforming the Civil Works Program, continued recognition of public safety, the natural environment, ecosystem restoration, and collaborative partnerships. Transforming the Civil Works Program was explicitly added as Goal 1; public safety and the concept of resilience is Goal 2. Ensuring the movement of the Nation's waterborne transportation is Goal 3, while restoring

and protecting the environment is Goal 4. Goal 5 responds to the concepts of reliability, adaptability, and life-cycle project performance.

This Civil Works Strategic Plan builds on the systems-based watershed approach discussed in previous strategic plans including the 2011 version. Water resources planning and management should be implemented using systems analysis methods and tools to understand, assess and model the interconnected nature of hydrologic systems (e.g., watersheds), the economic and ecologic systems they support, and to identify and evaluate management alternatives from both time (life-cycle), and function (multi-purpose) perspectives. USACE uses the systems-based watershed approach to focus on water resources planning and collaborative problem solving. Such an approach seeks to balance economic, environmental, and social objectives, while increasing active partnering with others. It requires the involvement of all stakeholders.







# Vision and Mission

**The USACE Vision** – *Contribute to the strength of the Nation through innovative and environmentally sustainable solutions to the Nation’s water resources challenges.*

**The USACE Civil Works Mission** – *Serve the public by providing the Nation with quality and responsive management of the Nation’s water resources through:*

- *Support of commercial navigation;*
- *Restoration, protection and management of aquatic ecosystems;*
- *Flood risk management; and*
- *Providing engineering and technical services in an environmentally sustainable, economic, and technically sound manner with a focus on public safety and collaborative partnerships.*

## Strategic Goals

The Corps will achieve the Civil Works mission by pursuing the following five goals:

1. *Transform the Civil Works Program to deliver sustainable water resources solutions through Integrated Water Resources Management.*
2. *Improve the safety and resilience of communities and water resources infrastructure.*
3. *Facilitate the transportation of commercial goods on the Nation’s coastal channels and inland waterways.*

4. *Restore, protect, and manage aquatic ecosystems to benefit the Nation.*
5. *Manage the life-cycle of water resources infrastructure systems in order to consistently deliver sustainable services.*

The Corps will achieve these goals by managing its efforts through nine business lines that together, address a broad spectrum of the Nation’s natural resource needs. These business lines include the three core mission areas of navigation, flood risk management, and aquatic ecosystem restoration, as well as other mission areas that derive from the three main areas (such as hydropower and recreation), or additional missions that USACE has been charged with (such as the Regulatory Program).

The nine business lines include:

- Navigation
- Flood Risk Management
- Environment
- Hydropower
- Regulatory Program
- Recreation
- Emergency Management
- Water Storage for Water Supply
- Support for Others



The Corps supports collaborative, sustainable solutions that often involve multiple business lines; while these business lines provide a framework for executing the Civil Works program and this Strategic Plan, the actual activities undertaken on the ground often impact more than one business line. For example, the operation of a single lock and dam and an accompanying reservoir, in support of the Navigation mission, could conceivably cut across nearly all of the business lines. A description of what the Civil Works Program does is provided in the text box on page 10.

## Organization

The U.S. Army Corps of Engineers (USACE) is an executive branch agency within the Department of Defense and a Major Command within the Army.

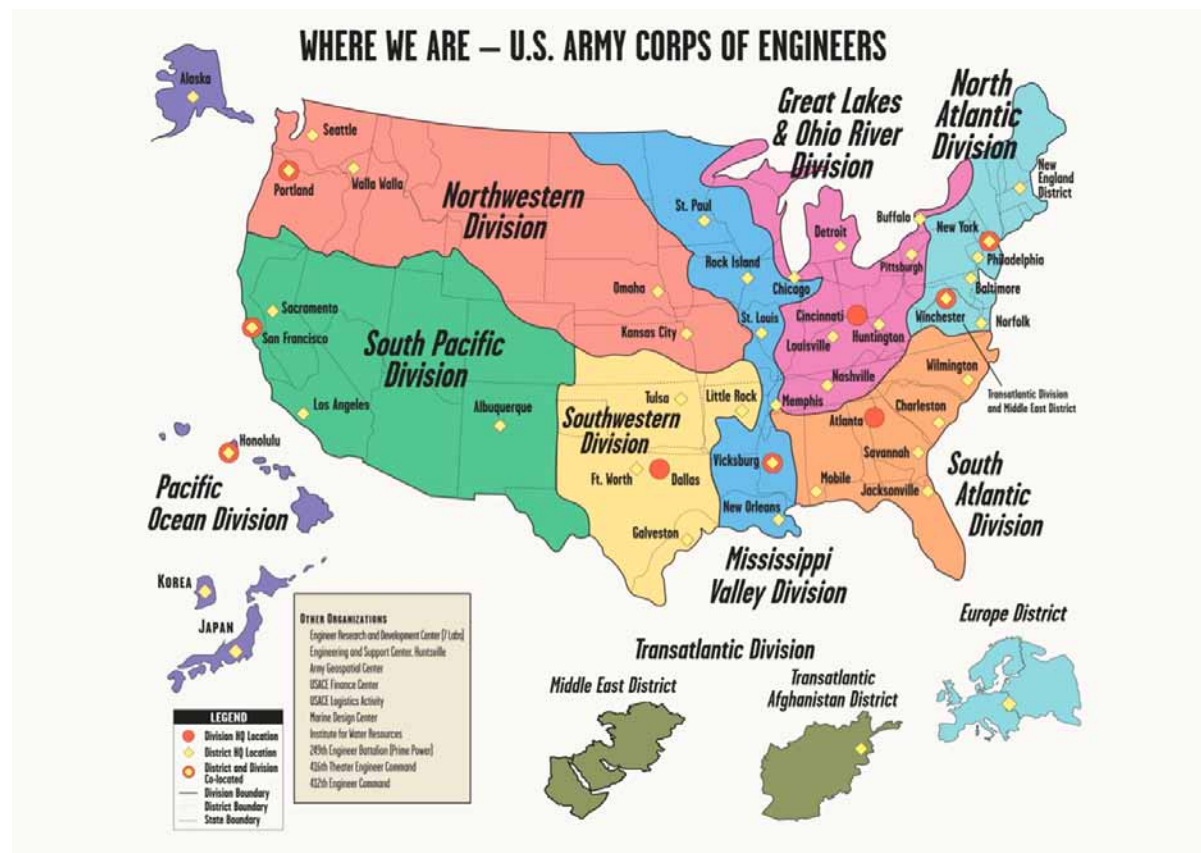
The USACE has four program areas that include civil works, military construction, real estate, and research and development. The organization employs approximately 33,000 people, including approximately 800 Army officers, noncommissioned officers, and enlisted soldiers. Approximately 22,000 civilian employees work within the civil works area.

With the appointment of the first Chief Engineer in 1775, the USACE has a long history and is today one of the world's largest public engineering, design, and

construction management agencies. It leverages its expertise through contracts with civilian companies for all construction work and much of its design work.

The USACE consists of a Headquarters located in Washington, D.C., nine Major Subordinate Commands (MSCs) or Regional Business Centers, 44 Districts (38 of which contribute to the Civil Works mission), and 6 specialized centers that provide support to the entire organization. Most of the MSC and District geographic boundaries are aligned with watershed boundaries.

The USACE Civil Works program is funded primarily through Energy and Water Development appropriations. The leadership is provided by a civilian Assistant Secretary of the Army for Civil Works (ASA(CW)) who is responsible for all Civil Works policy direction and oversight. An Army General Officer serves as the Chief of Engineers to oversee execution of both the civil and military programs. The Chief of Engineers delegates authority for the leadership and management of the Civil Works program to the Deputy Commanding General for Civil and Emergency Operations and to the civilian Director of Civil Works.



**Figure 1.** Map of Civil Works boundaries for USACE Major Subordinate Commands (Divisions) and locations of Major Subordinate Command and District Headquarters.

### What the Civil Works Program Does

- Provides safe and reliable commercial waterways (a core mission area);
- Reduces risk to communities from flooding and coastal storms (a core mission area);
- Restores, protects and manages aquatic ecosystems (a core mission area);
- Generates hydroelectric power for distribution to communities;
- Provides recreational opportunities;
- Prepares for natural disasters and responds when disaster strikes;
- Supplies water storage for municipal and industrial use; and
- Assists in the clean-up of contaminated lands.



# Addressing an Uncertain Future

Over the past several years, a number of external factors have emerged that are impacting the Nation and the USACE Civil Works Program. Of particular importance are: global climate change; demographic changes that increase both competition for water and the numbers of people and property at risk from natural hazards. Recent experiences such as the 2011 Mississippi River and Missouri River floods, Hurricanes Sandy, Isaac, and Irene have influenced how USACE applies its engineering expertise, interacts with the public, and partners at the federal, state, and local levels.

These external factors require the strengthening of USACE's core competencies in relation to fields of systems engineering, geotechnology, ecosystem restoration, climatology, hydrology and hydraulics, and risk management.

The key external factors or drivers most likely to influence the Civil Works Program in the future are discussed below.

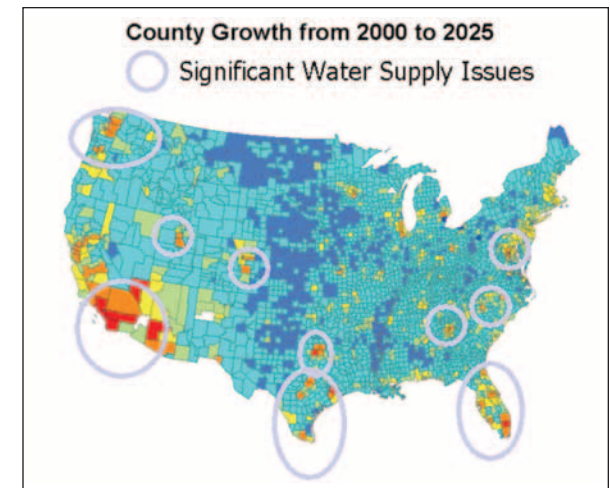
## Demographic Shifts and Growth

Trends in birth, death, and migration are changing the absolute and relative size of young and old, rural and urban, and ethnic populations, domestically and in other countries.

U.S. population will continue to increase from 310 million in 2011 to an estimated 440 million people in the year 2050<sup>1</sup>. While some of this population growth will be caused by immigration, the total growth will increase demands on all areas of water resources. Recent simulations indicate that population growth and associated increases in personal income could increase water demand in the U.S. by 3%<sup>2</sup>. Additionally, the U.S. population will become more urbanized and concentrated in large megalopolises. Many of these are located in coastal areas that are at risk from severe weather events<sup>3</sup> and arid regions that face limited availability of fresh water. Projected growth rates in U.S. counties from 2000 to 2025 with high growth areas are expected to experience shortages in water availability.

## Increasing Demand for Water

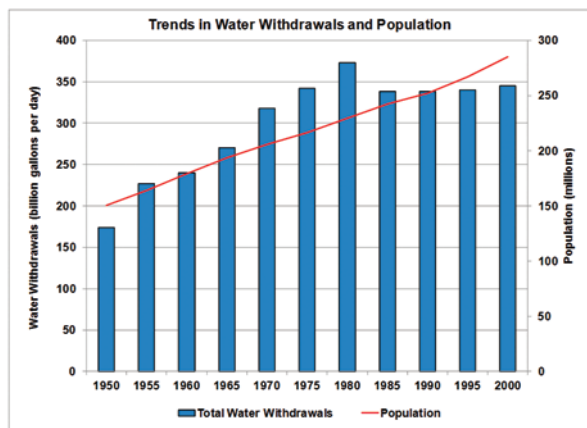
As population increases, so does the demand for water. Energy production is a large user of water, and its demand for water could either increase or decrease, depending on future trends in water use efficiency and the development of new technologies (i.e., increase in air-cooled solar vs. water-cooled solar energy). Climate change can impact water demand in ways that are not yet well understood<sup>4</sup>. For example, water demand for irrigation may increase in response to higher temperatures in the future, although changes in crop use and



**Figure 2.** Projected demographic shifts and corresponding, areas of water shortage.

how plants respond to climate variation may reduce this impact. Decreased precipitation or changes in the timing and form of precipitation (snow vs. rain) and runoff could result in seasonal mismatches between supply and demand. Water demand might change even in areas where increased precipitation is expected, depending on agricultural and municipal adaptation strategies. All changes in demand may require water managers to reevaluate the effectiveness of current demand management strategies. Conflicting demands for water supplies in the U.S. will stress the adaptive capacity of both individuals and institutions.





**Figure 3.** Trends in Population and Water Use.

Source: U.S. Geological Survey Circular 1268, "Estimated Use of Water in the United States in 2000."

The global population is expected to increase from 6.1 billion in 2000 to 8.9 billion in year 2025<sup>5</sup> with the greatest gains in developing countries located in Asia, Africa and Latin America (UN 2004). Although this represents a lower growth rate than the period 1950 – 2000, this population growth will lead to greater demands for the available water and increased environmental challenges, particularly in areas already struggling with regional political instabilities. As of year 2010, over 900 million people do not have access to clean water and more than 2.5 billion lack adequate sanitation (WHO 2010<sup>6</sup>).

## Energy

USACE generates 77 billion kilowatt-hours of hydroelectric power on average each year. USACE also supports energy production and distribution indirectly through its work on coastal channels and inland waterways, and its water supply and water resources

related regulatory activities. The type and scope of this support may change as the Nation's energy production transitions from oil and gas with the development of improved energy storage, biofuels, wind, solar, and clean coal. Of particular interest to USACE are the volumes of water required for new energy production processes, and the changes in movements of coal, petroleum, and natural gas along the inland waterway system.

## Climate Change

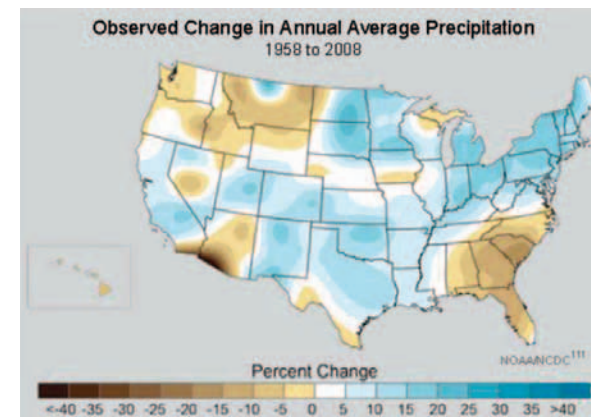
The details of exactly how climate change unfolds are uncertain. However, earlier spring snowmelts and spring pulses in streamflow have already been observed in the Western U. S. Over the coming decades, the effects of such warming have the potential to affect virtually all aspects of water resources management, including navigation, hydropower, flood risk reduction, ecosystems, coastal areas, water availability, and water quality. Climate change can exacerbate water scarcities that will create and intensify conflicts over water distribution and use. Such challenges over water could lead to a loss of agricultural and industrial production and difficulties with inland navigation. Climate change is also expected to amplify issues related to sea level rise such as the impacts of coastal flooding and related storm damage, along with emergency preparation and flood risk management activities.

In response to climate change challenges, and recognizing the need for an integrated approach to water resources management, the USACE and its major water resources management partners the Bureau of Reclamation (Reclamation), the U.S.

Geological Survey (USGS), and the National Oceanic and Atmospheric Administration (NOAA) prepared a report "Climate Change and Water Resources Management: A Federal Perspective" (USGS 2009)<sup>6</sup>. The report summarizes climate change impacts to water resources management and reviews strategies to improve water management by tracking, anticipating, and responding to climate change.

## Floods and Droughts

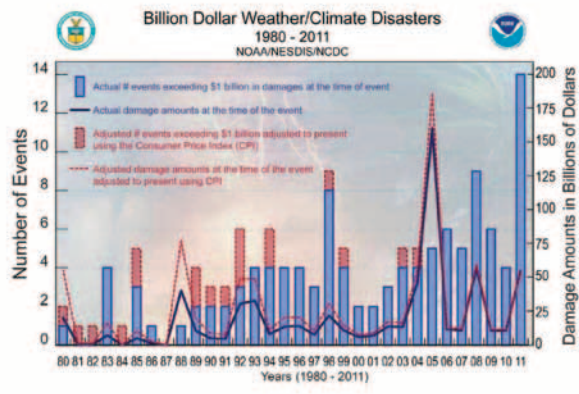
Considerable effort is expended throughout the federal government to forecast the frequency and intensity of large floods. However, the Nation's ability to forecast these events remains limited, and billion dollar weather disasters are increasing. Preparations for floods and related storm damages should continue to reduce risk to the citizens and property affected by disasters such as hurricanes and flooding.



**Figure 4.** While U.S. annual average precipitation has increased about 5 percent over the past 50-years, there have been important regional differences as shown above.

Source: <http://www.desdemonadespair.net/2010/08/graph-of-day-observed-change-in-us.html>.





**Figure 5.** U.S. Billion-dollar Weather and Climate Disaster time series from 1980-2011 indicates the number of annual events exceeding \$1 billion in direct damages, at the time of the event and also adjusted to 2011 dollars using the Consumer Price Index (CPI).

Source: Smith and Katz (2013) "U.S. Billion-dollar Weather and Climate Disasters: Data Sources, Trends, Accuracy and Biases", *Natural Hazards*, 67:2, pp 387-410

Of increasing concern are the growing numbers of individuals moving to coastlines and rivers, rather than away from these hazardous locations. Similarly, population growth continues in areas of the south and west that are already experiencing decreased precipitation. The National Climate Assessment reports that most regions of the U.S. will experience longer dry spells and more intense short-term droughts. The Southeast, Southwest, Southern Great Plains, and Hawaii are expected to experience more intense long-term drought. Preparations for drought should also continue to help ensure adequate water supplies for the public, industry, agriculture, and ecosystems.

## Declining Biodiversity

Estimated recent extinction rates for freshwater species in the U.S. are at least 1000 times greater than extinction rates before European colonization, and more

freshwater species have been lost to extinction, by a factor of three, than terrestrial species. For example, decadal freshwater fish extinction rates in North America have varied since the end of the 19<sup>th</sup> Century but show significant increases since 1950 in North America, with an increase of 25% in the extinction of freshwater species since 1989<sup>5</sup>. Multiple stresses have contributed to declining biodiversity and the loss of species including agricultural and urban development, the introduction of non-native species, and alteration and fragmentation of aquatic and wetland habitats. There is little doubt that the most important recovery need for imperiled freshwater species is habitat restoration. In response to this National need, USACE can, in collaboration with other agencies and non-government organizations, apply its aquatic ecosystem restoration

authorities and capabilities to mitigate the decline of freshwater biodiversity in the U.S.

## Environmental Values

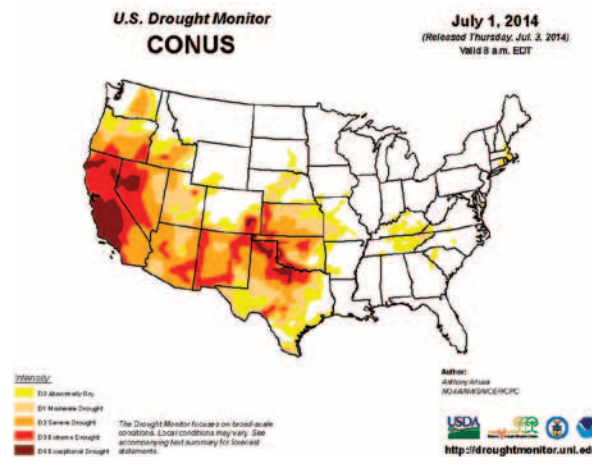
Our understanding of the interconnectivity of the natural and built environment continues to grow even as pressure from increased development continues to impact the natural environment. As understanding of human development impacts on water resources increases, the level of investigation and complexity of developing viable water resources solutions often increases as well. Developing water resources in a sustainable manner will involve cultural shifts and lifestyle changes, as well as technological innovation.

## Globalization

International markets and economic agendas will affect U.S. trade and domestic production with corresponding impacts on waterborne commerce across a range of industrial and agricultural activities. The work of the USACE at U.S. ports and on the inland waterways facilitates waterborne commerce and thereby contributes to economic growth.

## Governance

Great strides have been made to improve interagency and intergovernmental coordination on water resources. However, additional improvement is needed to enhance coordination at all levels of government, in order to improve water resources management, decision making, and evaluation.

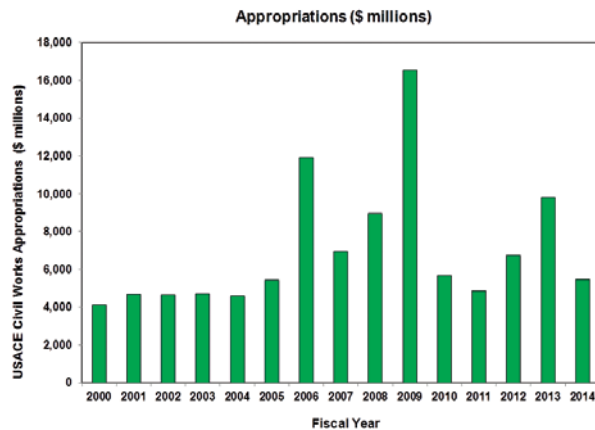


**Figure 6.** Shifting, but persistent drought conditions continue within the U.S.

Source: U.S. Drought Monitor <http://droughtmonitor.unl.edu/>.

## Availability of Resources

Federal, state, and local governments and the private sector decide each year how to apply their budgetary resources, which are limited. The total level of investment in water resources depends in part on the extent to which each level of government, and the private sector, conclude that a proposed investment in water resources is likely to produce a high return compared to other possible uses of those funds. The sums made available for the management, development, restoration, and protection of water resources must be applied based on rigorous analyses. Projects and programs are appropriately prioritized to ensure that the greatest value is being obtained from each investment of both federal taxpayer and non-federal funds.

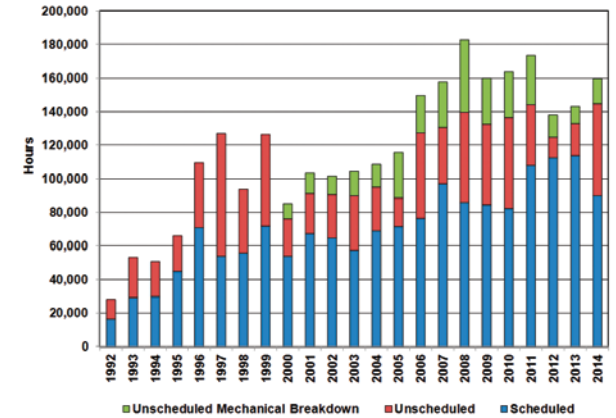


**Figure 7.** USACE Civil Works Appropriations

Federal appropriations for the Civil Works program have been relatively stable over the past decade (in nominal dollars), with the exception of funding provided for Hurricane Katrina and the Recovery Act.

## Aging Infrastructure

The infrastructure that the Corps helps to maintain includes multi-purpose dams, the channels of our coastal ports, navigation locks and dams, levees and other flood and storm damage reduction features, and hydropower plants. The Corps constructed much of this infrastructure in the first half of the twentieth century. However, all structures degrade over time. Additionally, design standards, safety standards, and technology change. The Corps maintains and periodically rehabilitates the key features of its water resources infrastructure with these changes in mind, so as to manage and reduce risks associated with this infrastructure.



**Figure 8.** Increasing “downtime” at USACE locks on the Inland Waterways navigation.

Source: Navigation Data and Decision Support Center, Institute for Water Resources, USACE.

## USACE’s Infrastructure

- 707 dams that minimize risk of flooding and provide water supply storage
- 12,000 miles of commercial inland waterways, 197 lock sites/241 chambers, and 13,000 miles of coastal channels at 926 coastal and Great Lakes ports that move freight
- 14,500 miles of levee systems that reduce risk from floods
- 75 hydroelectric power facilities with 353 generating units that produce power for homes, businesses, and communities
- 54,879 miles of lake shoreline and recreation areas that support 370 million annual visitors



# Overarching and Cross-Cutting Strategies

To enable sound planning in the face of significant uncertainties, the Civil Works Strategic Plan is informed by a scenario-based process, to develop a plan that will be effective in a wide range of future conditions. The scenario-based strategic planning process produced several products including a complete report on the scenarios used to develop the cross-cutting strategies presented in this plan. Details of the scenarios are presented in U.S. Water Resources Scenarios Report, dated January 7, 2007, and released by the Civil Works Directorate in January 2007.

## Overarching Strategy

*Integrated Water Resources Management is a holistic focus on water resources challenges and opportunities that reflects coordinated development and management of water, land, and related resources while maximizing economic services and environmental quality, and ensuring public safety while providing for the sustainability of vital ecosystems. These factors are considered in project formulation.*

As in the 2011 version of the Civil Works Strategic Plan, a set of Cross-Cutting strategies that apply to all Civil Works Program goals, and across a wide range of future conditions are discussed below. These cross-cutting strategies were derived from the scenario-based process discussed above.

## Cross-Cutting Strategies

**1. Systems Approach** – *Water resources planning and management should be implemented using systems analysis methods and tools to understand, assess and model the interconnected nature of hydrologic systems (e.g., watersheds) and the economic and ecologic systems they support, and to identify and evaluate management alternatives from both time (life-cycle) and function (multi-purpose) perspectives.*

The systems approach to water resources shifts the focus of making decisions from individual and sometimes isolated projects to an interdependent system, and from local or immediate solutions to long-term solutions that consider a broader range of impacts and the entire life-cycle of projects. This way of thinking and working recognizes water resources problems and opportunities exist in systems of interdependent parts e.g. inputs, processes, outputs, ultimate outcomes, and feedback loops from each.

A systems approach recognizes that water exists in the context of physical and social/cultural systems such that any single action may trigger one or more responses and reactions in these other systems. USACE describes systems as natural or ecological systems and as sets of interlinked processes and programs. From



these system descriptions, the resources and stakeholders that are integral to these systems can be identified, and solutions with an appreciation for the interconnections can be developed.

A systems approach implies considering the impacts in the river basin, watershed, or coastal zone as a whole as well as the impacts to the national economy. For example, taking a systems approach means thinking of navigation as part of a broader transportation system and considering waterborne transport in the context of rail and road transport and the broader national economy.

Systems approaches and models can help planners and decision-makers deal with the complexities of a system, however it is defined. One such systems approach is



Regional Sediment Management, a way to view the movement of sediment holistically. Such an approach views sediment as a system-wide resource rather than simply as dredged material requiring disposal. This encourages an analysis of options such as the beneficial uses of dredged material for wetland creation or beach nourishment.

**2. Collaboration and Partnering** – *Build and sustain collaboration and partnerships at all levels to leverage funding, talent, data, and research from multiple agencies and organizations.*

Partnerships allow each organization to contribute resources and thus assemble a greater pool of assets to solve problems. The willingness and skills to partner with other agencies and organizations is crucial to accomplishing USACE's missions. Partnerships need to be built and sustained to leverage funding, talent, and data from multiple agencies and organizations, both nationally and internationally.

Partnerships across federal agencies create efficiencies when scarce resources are combined toward common

aims. An enhanced effort is needed to partner with increasingly sophisticated state and interstate organizations. Collaborating with Tribes, local entities, and private not-for-profit entities will continue. Working with profit-making organizations is a possible next step that deserves additional investigation.

One partnership that has been evolving for collaboration is with state water resources planners. States are facing critical water shortages from such external factors as population migration and climate change. Another issue states face is sedimentation in reservoirs, which is reducing storage capacity for water supply. USACE's strength in multiple water functions, project management, conflict resolution, and use of decision-support technologies such as Shared Vision Planning positions USACE to facilitate comprehensive, coordinated, and integrated water resource planning. USACE experts and state water resources planners form a nexus of interests to solve current problems, and can also join forces to look ahead and seek opportunities for greater cooperation in the larger watersheds where USACE managed reservoirs exist. An example of such a collaborative forum that involves all stakeholders is the Missouri River Recovery Implementation Committee (MRRIC). For more information see [www.mrric.org](http://www.mrric.org)

**3. Risk-Informed Decision Making and Communication** – *Together with communities develop and employ risk and reliability-based approaches that incorporate consequence analysis, including risks to life; identify, evaluate, and forestall possible failure mechanisms; and quantify and communicate residual risk.*

USACE integrates risk-informed decision making across its Civil Works program to include planning, design, construction, operations, and maintenance. This process includes risk assessment, risk management, and risk communication. There is an increasing recognition of the limits in disaster prediction and the protection provided by structural means against extreme events. A strategy to fully integrate risk analysis within USACE planning and operations as well as involvement by those impacted by a project is a significant challenge, but an important goal for the future.

**4. Innovative Financing** – *Explore innovative financing arrangements such as public-private partnerships to develop and sustain the Nation's water resources infrastructure.*

Innovative financing encompasses a number of arrangements such as re-organizing or modifying existing funding mechanisms and accounts; and public-private partnerships.

Various forms of public-private partnerships can be effective when there are shared goals (i.e., ecosystem restoration) between USACE and non-governmental organizations. Also, water resources infrastructure construction, operations, and maintenance could be accomplished through a mix of private and public funding. The application of a life-cycle approach (emphasizing adaptive operations and management of existing USACE projects throughout their life-cycle) can be an advantageous arrangement for both the government and private sector. Goal 5 emphasizes adaptive operations and management of existing USACE projects throughout their life-cycle.



**5. Adaptive Management** – *Adaptive management is a decision process that promotes flexible decision making that can be adjusted in the face of risks and uncertainties—such as those presented by climate change—as outcomes from management actions and other events become better understood through monitoring and improved knowledge.*

Effective responses to water resources challenges incorporate adaptable and flexible approaches for management that anticipates future conditions. Adaptive management, a principle commonly used in ecosystem restoration, is a framework supporting flexible decision-making. An important component of adaptive management is learning from monitoring data that measures responses to system interventions. Such insights can be used to develop future actions or change approaches. Adaptive management fosters continual learning, which benefits an organization by enabling it to adjust flexibly to changing conditions.



Adaptation has always been an important skill, and it is even more essential in a rapidly changing world. Adaptive management provides feedback concerning how parts of a system work and affect other parts of the system. Climate change and changes in the amount, form (rain as opposed to snow) and timing of precipitation will require adaptation in the operation of existing infrastructure as well as revised standards in the planning and design of new water resources infrastructure. Disasters, both natural and manmade, will require the ability to expand and contract operations rapidly. Agility and responsiveness is a necessary quality for future success for all federal, state, or local water resource agencies.

**6. State-of-the-Art Technology** – *Embrace new and emerging technology for its fullest advantage. Support research that improves the resiliency of structures, assists in updating design criteria, and improves approaches toward planning and design.*

Investment in research and development must continue to provide the technology that addresses contemporary problems, and which spurs future innovations. Within USACE, the research and development laboratories, as organized under the Engineering Research and Development Center (ERDC), facilitate this innovation. In partnership with the USACE Institute for Water Resources (IWR) and the other Centers of Expertise, ERDC will employ technology transfer to infuse new technologies into practice.

USACE is committed to developing and maintaining a unified and interoperable geospatial program to

support analysis, data presentation, outreach, and mapping across all business lines through the Enterprise Geospatial Engineering System (EGES) Program.

Technology also provides a competitive edge. For instance, advances in communication, information accessibility, remote sensing, Building Information Modeling (BIM) and nanotechnology are particularly relevant. The Coastal and River Information System (CRIS) is one example of modern communication technology used to improve the efficiency and safety of the inland and intracoastal waterways. This system enables electronic capture of waterborne commerce data, management of waterborne traffic, and real-time communication with vessel operators concerning water traffic and hazards.

Additionally, advances in remote sensing, Building Information Modeling and geospatial information systems will facilitate monitoring of critical infrastructure such as dams and levees on both a routine basis and under periods of critical attention such as hurricanes. Investments in technology are investments in future adaptability and agility.

In summary, these Cross-Cutting Strategies are universal and apply and support each Civil Works strategic goal. These strategies draw together common threads from the Scenario-Based Planning Process and stakeholder consultation. They permeate the entire Civil Works program and constitute the “how” in this plan: the essence of strategy. Combined, these strategies form a new business model that will ensure success in an uncertain future.



# Strategic Goals and Objectives

The Cross-Cutting Strategies discussed in the previous section apply to all Civil Works strategic goals discussed below, and form the basic approaches that USACE will use to achieve all of its goals.

The following Objectives and Performance Goals are used to indicate progress in meeting the Civil Works Strategic Goals. In general, performance targets for future years are linked to expected levels of funding. Table 1 includes a detailed description and intent of each outcome measure. The outcome measures were developed to greatly improve the implementation of the mission.



## CW STRATEGIC GOAL 1

### TRANSFORM THE CIVIL WORKS PROGRAM TO DELIVER SUSTAINABLE WATER RESOURCES SOLUTIONS THROUGH INTEGRATED WATER RESOURCES MANAGEMENT (IWRM)

The Civil Works Program faces a myriad of challenges which necessitates swift transformation in our current business model to make it more relevant in the 21<sup>st</sup> Century. There is an imperative to increase the value USACE provides to the Nation by delivering enduring and timely water resources solutions. The end result will be improved performance and responsiveness, increased customer satisfaction, public trust and confidence and improved readiness. Transformation will promote enhanced capabilities and greater involvement, ownership, concurrence and commitment among internal USACE team members, local sponsors and partners. Shared learning and enhanced understanding of mutual challenges can provide creative alternatives and sources of funding, and important, sustained feedback.

## Objective 1.1

### Modernize the Civil Works project planning program.

The planning process is the first step in the Civil Works project development. While the foundation of the process is strong and effective — from problem identification to plan selection — the process has become timely and expensive. This is problematic for our non-federal sponsors, the taxpayers, and the Army. Improving the planning process delivery is the key element of the Civil Works Transformation Planning Modernization. Completion of feasibility studies that result in sound, quality, credible recommendations to solve complex water resources problems, and contribute to value to the nation for authorization contained within a report of the Chief of Engineers is a key outcome for Planning Modernization. There is also value in a planning process when it does not result in a recommendation to proceed to construction. In order to achieve this outcome, it is necessary to improve the capability of our Planners through training and certification. For Planner training, Planners must successfully complete the mandatory Planning Core

Curriculum. Planning Certification builds upon Planner Training and the objective is to advance both the overall national planning competency and the technical capability of individual planners through a framework that focuses on education and training; experience; in depth knowledge of policy and processes; and leadership, mentoring and communication; and the overall national planning competency.

#### Performance Measures

**Measure 1.1.a:** Percent of Planners trained in Planning Core Curriculum Courses.

FY 14 Target – 50%

FY 15 Target – 60%

FY 16 Target – 70%

FY 17 Target – 80%

FY 18 Target – 80%

**Measure 1.1.b:** Percent of Planners achieving certification under the National Planner Certification Program.

FY 14 Target – 5%

FY 15 Target – 10%

FY 16 Target – 15%

FY 17 Target – 20%

FY 18 Target – 20%

### Objective 1.2

#### Deliver quality solutions and services.

The Corps assessed how it delivers products and services, and the steps it needed to take to enhance and maintain a highly trained and competent workforce that is responsive to our Nation’s water resources needs. Based on this assessment, USACE determined



that it needs to improve technical competence, processes and procedures and provide state of the art guidance and regulations that reflect lessons learned and future uncertainties.

#### Performance Measures

**Measure 1.2.a:** Percent of projects on schedule.

FY 14 Target – 80%

FY 15 Target – 85%

FY 16 Target – 85%

FY 17 Target – 90%

FY 18 Target – 90%

**Measure 1.2.b:** Percent of Customers indicating USACE delivered quality products and services (based on Customer Satisfaction Survey).

FY 14 Target – 85% rated “High”

FY 15 Target – 88% rated “High”

FY 16 Target – 90% rated “High”

FY 17 Target – 93% rated “High”

FY 18 Target – 95% rated “High”

### Objective 1.3

#### Develop a ready and resilient workforce through innovative talent management and leader development strategies and programs.

Maintaining a competent team including technical excellence, tools to attract and maintain a high-quality work force, improved communications, and sound financial performance is essential to USACEs success in the 21st Century. A broad range of skill sets will be needed by the USACE workforce now and in the future. These skills must build on USACE’s current core competencies and technical strengths as well as attract highly motivated employees.

#### Performance Measures

**Measure 1.3.a:** Percent completion and deployment of Command Training Plans for all USACE mission critical occupations.

FY 14 Target – 33%

FY 15 Target – 50%

FY 16 Target – 75%

FY 17 Target – 100%

**Measure 1.3.b:** Percent increase of technical competencies for USACE Mission Critical Occupations that meet or exceed Army Competency Management System (CMS) targets.

FY 14 Target – N/A

FY 15 Target – Establish baseline

FY 16 Target – 50% increase from baseline

FY 17 Target – 75% increase from baseline

FY 18 Target – 100% increase from baseline

## CW STRATEGIC GOAL 2

### IMPROVE THE SAFETY AND RESILIENCE OF COMMUNITIES AND WATER RESOURCES INFRASTRUCTURE.

USACE will provide timely, effective, and efficient disaster preparedness, response, recovery, and mitigation within its own specific authorities and programs, such as those supporting flood risk management, and those provided through responses to missions assigned by the Federal Emergency Management Agency of the Department of Homeland Security.

#### Objective 2.1

##### Reduce the Nation's flood risk and increase resilience to disasters.

Reducing flood risk requires coordinated federal, state, tribal, local, and individual involvement. Population growth and demographic shifts continue to place more people and businesses at risk, while changes in land use and climate variations increase the magnitude and frequency of floods. Engagement by USACE is part of a broader effort that is needed to address the Nation's flooding challenges.



#### Performance Measures

**Measure 2.1.a:** Percent progress to develop and implement National Flood Characterization tool in collaboration with FEMA.

FY 14 Target – Initial prototype developed, tested, and used to inform flood risk management business line budget development.

FY 15 Target – Final prototype completed and able to accept available data bases.

FY 16 Target – Prototype tested and refined within the Corps and other interested federal agencies.

FY 17 Target – Tool fully functional and being used as a standard tool within USACE.

FY 18 Target – Fully functional tool in use and revised as new requirements arise.

**Measure 2.1.b:** Percent of Levee Safety Action Classifications complete.

FY 14 Target – 60%

FY 15 Target – 80%

FY 16 Target – 100%

FY 17 Target – 100%

FY 18 Target – 100%

**Measure 2.1.c:** Number of Dam Safety Action Classifications Reduced.

FY 14 Target – 10

FY 15 Target – 8

FY 16 Target – 10

FY 17 Target – 10

FY 18 Target – 10

#### Objective 2.2

##### Support the Department of Homeland Security/Federal Emergency Management Agency to provide life-cycle public works and engineering support in response to disasters.

In support of the Department of Homeland Security/Federal Emergency Management Agency, USACE prepares for and responds to disasters, within its own specific authorities and programs and those provided under both the Stafford Act and the National Emergency Preparedness Program.

#### Performance Measures

**Measure 2.2.a:** Percent of trained and certified Planning Response Teams, Team Leaders, Assistant Team leaders and Subject Matter Experts, and National Emergency Support Function #3 Cadres ready and able to respond.

FY 14 Target – 85%

FY 15 Target – 85%

FY 16 Target – 85%

FY 17 Target – 85%

FY 18 Target – 85%

**Measure 2.2.b:** Percent of current Annual updated All-hazards contingency plans across USACE.

FY 14 Target – 50%

FY 15 Target – 75%

FY 16 Target – 85%

FY 17 Target – 100%

FY 18 Target – 100%



## Objective 2.3

### Effectively and efficiently execute response, recovery and mitigation.

Under Presidential Policy Directive #8 (PPD #8) USACE exercises roles and responsibilities and executes assigned response, recovery, and mitigation missions within its own specific authorities and those under the National Response, Disaster Recovery, and Mitigation Frameworks.

#### Performance Measures

**Measure 2.3.a:** Percent scheduled and executed assigned and funded missions and programs.

FY 14 Target – 100%

FY 15 Target – 100%

FY 16 Target – 100%

FY 17 Target – 100%

FY 18 Target – 100%

**Measure 2.3.b:** Number of active state-led interagency flood risk management teams (Silver Jackets)

FY 14 Target – 42

FY 15 Target – 45

FY 16 Target – 48

FY 17 Target – 50

FY 18 Target – 50

## CW STRATEGIC GOAL 3

### FACILITATE THE TRANSPORTATION OF COMMERCE GOODS ON THE NATION'S COASTAL CHANNELS AND INLAND WATERWAYS.

Goal 3 involves the USACE navigation business line, whose objective is to provide safe, reliable, highly cost-effective, and environmentally sustainable waterborne transportation systems for the movement of commercial goods. Many shippers move their goods by water, where that is the most profitable way for them to transport these materials. Through a combination of capital improvements and the operation and maintenance of existing infrastructure, this business line facilitates that commerce.

#### Objective 3.1

### Facilitate commercial navigation by providing safe, reliable, highly cost-effective, and environmentally sustainable waterborne transportation systems.

The Nation's infrastructure to support the transportation of commercial goods by water involves a network of navigable coastal channels, inland waterways and related features maintained by the USACE, as well as publicly- and privately-owned marine terminals, intermodal connections, shipyards and repair facilities. The USACE maintains approximately 25,000 miles of coastal channels and inland waterways, including 926 coastal, Great Lakes, and inland harbors; and 241 river locks at 197 sites.

#### Performance Measures

**Measure 3.1.a:** The number of instances where mechanically driven failure at locks results in delays of more than 24 hours.

| Targets: | FY 14 | FY 15 | FY 16 | FY 17 | FY 18 |
|----------|-------|-------|-------|-------|-------|
| 1- Day   | 46    | 44    | 42    | 40    | 38    |

**Measure 3.1.b:** The number of instances where mechanically driven failure at locks results in delays of more than one week.

| Targets: | FY 14 | FY 15 | FY 16 | FY 17 | FY 18 |
|----------|-------|-------|-------|-------|-------|
| 1-Week   | 26    | 25    | 24    | 23    | 22    |



## CW STRATEGIC GOAL 4

### RESTORE, PROTECT, AND MANAGE AQUATIC ECOSYSTEMS TO BENEFIT THE NATION.

Goal 4 focuses on protecting and restoring the environment, regulating discharges into the Nation's wetlands and waterways and recreation. Environmental protection involves sound planning to avoid and minimize adverse impacts to the environment. Restoring aquatic habitat to a more natural condition in ecosystems whose structures, functions and dynamic processes have become degraded is the goal of the ecosystem restoration area. The objective of the regulatory area is to implement efficient and transparent regulatory processes to sustain aquatic ecosystems. Goal 4 also discusses recreation reflecting the important role that USACE plays in providing outdoor recreation as an ancillary benefit of its flood damage reduction and navigation projects.

#### Objective 4.1

##### Restore aquatic habitat to a more natural condition in ecosystems in which structure, function, and dynamic processes have been degraded.

USACE's objective in the area of aquatic ecosystem restoration is to help restore aquatic habitat to a more natural condition in ecosystems whose structures,



functions, and dynamic processes have become degraded. The emphasis is on restoring nationally- or regionally-significant habitat where the solution primarily involves modifying the hydrology and geomorphology. The results of these efforts are to contribute to the restoration of more natural conditions and improve the sustainability of various ecosystems.

#### Performance Measures

**Measure 4.1:** Acres of habitat restored, created, improved or protected in ecosystems identified as priorities through interagency coordination, which are: Everglades, Great Lakes, Chesapeake Bay, Puget Sound, Missouri River, and Upper Mississippi River.

FY 14 Target – 21,950

FY 15 Target – 15,326

FY 16 Target – 13,860

FY 17 Target – 853,776

FY 18 Target – 353,870

#### Objective 4.2

##### Reduce adverse impacts to the Nation's wetlands and waterways through an effective, transparent, and efficient Regulatory process.

The objective of the Clean Water Act (CWA) is “to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.” To achieve this goal, the CWA prohibits the discharge of dredged or fill material into wetlands, streams, and other waters of the United States unless a permit is issued by the USACE or approved state under CWA Section 404. When there is a proposed discharge, all appropriate and practicable steps must first be taken to avoid and minimize impacts to aquatic resources. For unavoidable impacts, compensatory mitigation is required to replace the loss of wetland, stream, and/or other aquatic resource functions. USACE (or an approved state authority) is responsible for determining the appropriate form and amount of compensatory mitigation required. Methods of providing compensatory mitigation include restoration, establishment, enhancement, and in certain circumstances, preservation of aquatic resources. USACE will develop and implement actions that will result in streamlined and transparent regulatory processes that balance economic development while sustaining aquatic resources. Initiatives will focus on achieving greater consistency across Districts, improving responsiveness and efficiency, and aiding the decision making process.

#### Performance Measures

**Measure 4.2:** Percent of general permit decisions reached within 60 days.

FY 14 Target – 75%

FY 15 Target – 75%

FY 16 Target – 75%

FY 17 Target – 75%

FY 18 Target – 75%

### Objective 4.3

#### Clean up radioactive waste sites.

Under the Formerly Utilized Sites Remedial Action Program (FUSRAP), USACE cleans up former Manhattan Project and Atomic Energy Commission sites. FUSRAP sites are contaminated with radioactive wastes as a result of work performed as part of the Nation's early atomic energy program. When a site cleanup is complete, it is returned to the Department of Energy for long-term management.

#### Performance Measures

**Measure 4.3:** Number of individual properties returned to beneficial use. Each site may contain varying numbers of individual properties, with different owners.

FY 14 Target – 9

FY 15 Target – 12

FY 16 Target – 9

FY 17 Target – 6

FY 18 Target – 8

### Objective 4.4

#### Manage, conserve, and preserve natural resources at USACE projects.

This objective focuses on the managing, conserving and preserving of natural and cultural resources on 12 million acres of land and water at 470 multipurpose USACE projects. Among other environmental stewardship activities, program personnel complete master plans to designate land use protections, manage over 68,000 shoreline permits, inspect over 38,000 miles of boundary and monitor land use protection on 34,000 real estate leases, licenses and easements where others are using Corps property. The program staff also works to protect 56,000 cultural sites, 270,000 acres of environmentally sensitive areas, and over 100 species listed under the Endangered Species Act while facing increased development pressures, invasive species infestations, and many other environmental threats.

#### Performance Measures

**Measure 4.4:** Percent of USACE fee-owned and/or administered lands and waters that have achieved desired natural resource conditions.

FY 14 Target – 85%

FY15 Target – 85%

FY16 Target – 86%

FY 17 Target – 86%

FY 18 Target – 87%

### Objective 4.5

#### Provide opportunities for quality outdoor public recreation.

USACE is the largest federal provider of water-based outdoor recreation in the Nation, which is an ancillary benefit of its flood damage reduction and navigation projects. USACE's recreation program provides quality outdoor public recreation experiences in accordance with its three-part mission: 1) serve the needs of present and future generations; 2) contribute to the quality of American life; and 3) manage and conserve natural resources consistent with ecosystem management principles. Its 422 recreation projects—each of which has numerous parks or Project Site Areas (PSAs)—spread across 43 states providing diverse and dynamic recreational opportunities.

The 2,072 Corps-managed PSAs were evaluated at the end of FY13. Results concluded that 87% are in compliance with facility condition standards, 66% are in compliance with efficiency standards and 54% are in compliance health and safety standards.

#### Performance Measures

**Measure 4.5:** Annually increase PSA compliance in each standard by 1% over the FY13 baseline.

FY 14 Target – 1% increase over FY13 baseline

FY 15 Target – 2% increase over FY13 baseline

FY 16 Target – 3% increase over FY13 baseline

FY17 Target – 4% increase over FY13 baseline

FY 18 Target – 5% increase over FY13 baseline



## CW STRATEGIC GOAL 5

### MANAGE THE LIFE-CYCLE OF WATER RESOURCES INFRASTRUCTURE SYSTEMS IN ORDER TO CONSISTENTLY DELIVER SUSTAINABLE SERVICES.

Goal 5 emphasizes adaptive operations and management of existing USACE projects throughout their life cycle. Reliability is integral to this goal and reflects the implementation of risk-based asset management especially, in operating and maintaining USACE navigation and flood risk management infrastructure. USACE gives priority to ensuring that existing projects function safely. USACE will continue to strive for integrating environmental considerations in the operation, maintenance, and rehabilitation of existing projects.

#### Objective 5.1 Support the Nation and the Army in achieving our energy security and sustainability goals.

Continued integration of sustainability into the USACE mission and organizational culture is essential to achieving sustainability goals. USACE will employ a systems-based, continual improvement approach to integrate sustainability into its mission and organizational culture, with an ultimate goal of assignment and acceptance of personal responsibility for achieving a sustainable future by all members of the organization.

#### Performance Measures

**Measure 5.1.a:** Non-tactical Vehicle (NTV) Petroleum: Percent reduction in NTV Petroleum Use. This measures progress on reducing the use of traditional petroleum fuels (gasoline and diesel) in fleet vehicles.

FY 14 Target – 20%

FY 15 Target – 20%

FY 16 Target – 22%

FY 17 Target – 24%

FY 18 Target – 24%

**Measure 5.1.b:** Facility Energy Intensity: Percent reduction in Goal Subject Energy Intensity (Btu/GSF). This measures progress on making “buildings” more energy efficient.

FY 14 Target – 30.0%

FY 15 Target – 30.0%

FY 16 Target – 30.1%

FY 17 Target – 30.2%

FY 18 Target – 30.2%



#### Objective 5.2

#### Capitalize, recapitalize, operate and maintain water resources infrastructure to provide maximum value to the Nation.

USACE is the steward of the fourth largest asset portfolio, by value, of all federal agencies. It operates, maintains, and manages more than \$259 billion worth of the Nation’s water resources infrastructure. From navigation locks and hydropower plants to dams and recreation areas, these assets contribute to the Nation’s economy and safety, and must be accountably and responsibly managed.

#### Performance Measures

**Measure 5.2:** Percentage of preventive maintenance completed on critical components.

FY14

4Q – Complete asset inventory in accordance with implementation of the USACE Maintenance Management Improvement Plan (MMIP) Phases 1 and 2

FY15

1Q – Implementation of MMIP Phase 3 (Work Orders)

2Q – Establish baseline of preventive maintenance funding expended on highest-risk critical components, compared to total O&M funding

3Q – Baseline + 10%

4Q – Baseline + 20%



## Objective 5.3

### Provide reliable, renewable, hydropower to the Nation.

USACE's multipurpose dam and water reservoir authorities provide hydroelectric power as an additional benefit of projects built for navigation and flood control. USACE is the largest owner-operator of hydroelectric power plants in the United States and one of the largest in the world. USACE operates 353 generating units at 75 multipurpose reservoirs, mostly in the Pacific Northwest. The facilities account for approximately 24 percent of the Nation's hydroelectric power and approximately 3 percent of the country's total electrical generation capacity. USACE hydroelectric plants produce on average nearly 77 billion kilowatt-hours each year, which is sufficient to serve about 11 million households or the equivalence of 39 cities the size of Washington, DC. Hydropower is a renewable energy source that produces none of the airborne emissions that contribute to acid rain or greenhouse gases. USACE hydroelectric power facilities avoid 60 million tons of greenhouse gases annually.

#### Performance Measures

**Measure 5.3.a:** Peak unit availability (percentage of time generating units are available during periods of peak demand).

|                      |
|----------------------|
| FY 14 Target – 86.3% |
| FY 15 Target – 86.7% |
| FY 16 Target – 87.0% |
| FY 17 Target – 87.3% |
| FY 18 Target – 87.9% |

**Measure 5.3.b:** Percentage of time units are out of service due to unplanned outage.

|                     |
|---------------------|
| FY 14 Target – 4.0% |
| FY 15 Target – 3.8% |
| FY 16 Target – 3.5% |
| FY 17 Target – 3.3% |
| FY 18 Target – 3.0% |

## Objective 5.4

### Provide water supply storage in partnership with state and local interests.

Conscientious management of the Nation's water supply is needed, particularly when addressing the impacts of water shortages in times of droughts. USACE also assists states and non-federal entities in the development and management of their water supplies to ensure households, businesses and farms nationwide



have enough water to meet their needs. USACE may participate in developing water supplies in connection with water resources improvements for construction, operation, maintenance, and modification of federal reservoir projects when certain conditions of non-federal participation are met, such as bearing the full financial burden of water supply.

#### Performance Measures

**Measure 5.4.a:** Percent of acre-feet of storage under contract versus acre-feet available.

|                      |
|----------------------|
| FY 14 Target – 95.8% |
| FY 15 Target – 95.9% |
| FY 16 Target – 96.1% |
| FY 17 Target – 96.3% |
| FY 18 Target – 96.5% |

**Measure 5.4.b:** Percent of investment costs recovered versus the total investment costs available for recovery.

|                    |
|--------------------|
| FY 14 Target – 58% |
| FY 15 Target – 60% |
| FY 16 Target – 62% |
| FY 17 Target – 64% |
| FY 18 Target – 66% |

A summary of Strategic Goals, Objectives, and Performance Goals are included in Table 1.

**Table 1. Summary of Strategic Goals, Objectives, and Performance Metrics**

## STRATEGIC GOAL 1

**Transform the Civil Works Program to deliver sustainable water resources solutions through Integrated Water Resources Management ((IWRM).**

### Objective 1.1

**Modernize the Civil Works project planning program.**

#### PERFORMANCE MEASURES

• **Measure 1.1.a:** Percent of Planners trained in Planning Core Curriculum Courses.

This measure tracks the effort to have planners complete the planner core curriculum. It is essential for successful completion of feasibility studies that result in sound, quality, and credible recommendations to solve complex water resources problems in a timely manner.

• **Measure 1.1.b:** Percent of Planners achieving certification under the National Planner Certification Program.

This measure tracks the effort to get planners certified as pertains to completing the planner core curriculum and developing the necessary skills and experiences to complete the planning process successfully. This certification will enable successful completion of feasibility studies that result in sound, quality, and credible recommendations to solve complex water resources problems in a timely manner.

### Objective 1.2

**Deliver quality solutions and services.**

#### PERFORMANCE MEASURES

• **Measure 1.2.a:** Percent of projects on schedule.

This measure compares project progress to the schedules established and reported in the USACE

project management system. USACE's tracking of actual schedules is essential to determine whether or not projects are delivered on time and, if not, determining the underlying causes for not meeting the schedules.

• **Measure 1.2.b:** Percent of customers indicating USACE delivered quality products and services (based on Customer Satisfaction Survey)

This measure utilizes the annual USACE Civil Works Program Customer Satisfaction Survey to gauge quality of products and services as reported by customers and stakeholders. Tracking actual customer feedback is essential to determining if USACE met their needs of delivering quality projects on time.

### Objective 1.3

**Develop a ready and resilient workforce through innovative talent management and leader development strategies and programs.**

#### PERFORMANCE MEASURES

• **Measure 1.3.a:** Percent completion and deployment of Command Training Plans for all USACE mission critical occupations.

This measure tracks the effort to have our employees complete essential training in mission critical occupations that are essential for successful completion of engineering designs and construction. Mission critical occupations are the 9 job series identified by USACE as technical

disciplines essential for accomplishing the USACE functions and responsibilities. The series include: General Natural Resources Management and Biological Sciences (401), Engineering Technician (802), Construction Control Technician (809), Civil Engineer (810), Mechanical Engineer (830), Electrical Engineer (850), Contracting Specialist (1102), Realty Specialist (1170), and Lock and Dam Operator (5426).

• **Measure 1.3.b:** Percent increase of technical competencies for USACE Mission Critical Occupations that meet or exceed Army Competency Management System (CMS) targets.

This measure is designed to track the progress in increasing technical competencies for USACE Mission Critical Occupations that meet or exceed Army Competency Management System (CMS) targets. CMS is the tool utilized by the Army to identify competencies and assess proficiencies. Targets are based on Army CMS deployment in FY 15.

Table 1. Summary of Strategic Goals, Objectives, and Performance Metrics (cont'd)

## STRATEGIC GOAL 2

Improve the safety and resilience of communities and water resources infrastructure.

### Objective 2.1

Reduce the Nation's risk and increase resilience to disasters.

#### PERFORMANCE MEASURES

• **Measure 2.1.a:** Percent progress to develop and implement a National Flood Characterization tool in collaboration with FEMA.

The measure tracks the completion of a characterization tool that will improve the knowledge of flood risk by characterizing relative flood risk at the national, state, and watershed levels. The tool will provide information in a GIS format to support federal, state, and regional decision makers, planners, and policy analysts in determining investment priorities, responding to future conditions and flood risk drivers, improving resilience, and reducing risk in the long-term. This measure tracks key milestones over time towards development and implementation of a fully functional and robust tool.

• **Measure 2.1.b:** Percent of Levee Safety Action Classifications complete.

This measure tracks the percentage of Levee Safety Action Classifications (LSAC) complete. All levees in the USACE Levee Safety Program will be assigned a LSAC informed by a risk assessment. The LSAC system is intended to provide consistent and systematic guidelines for actions to address safety issues. The five classes define distinctly

different urgencies of action and related types of actions that are commensurate with the risk associated with the levee system. The LSAC will be used by USACE and stakeholders to improve understanding of risk; communication; and quality of decisions. In addition, LSACs will be used to establish priorities and solutions that effectively address the risks.

• **Measure 2.1.c:** Number of Dam Safety Action Classifications Reduced.

This measure tracks the reduction of Dam Safety Action Classifications (DSAC), a characterization of risk and provides consistent and systematic guidelines for appropriate actions to address the safety issues and deficiencies of USACE dams. The five classifications present different levels and urgencies of actions that are commensurate with a transition in safety status from critically near failure to adequately safe. USACE uses the DSAC to improve the understanding of risk, quality decisions, and establish priorities and solutions that effectively address the risks and communicate these principles with stakeholders. This measure tracks the number of DSACs reduced as a result of Periodic Inspections, Issue Evaluation Studies, and construction activities, which results in less urgency and lower risk in these cases and an increased understanding of the overall portfolio risk.

There are 707 dams in USACE inventory. Of these, twenty-one (21) are classified DSAC 1 and ninety-one (91) are classified DSAC 2 dams. Within constrained funding, improving 10 DSACs is a significant achievement. USACE is using the next few years to baseline the metric against what is achievable with good performance, after which the average annual DSAC reduction can be smartly adjusted.

### Objective 2.2

Support the Department of Homeland Security/ Federal Emergency Management Agency to provide life-cycle public works and engineering support in response to disasters.

#### PERFORMANCE MEASURES

• **Measure 2.2.a:** Number of trained and certified Planning Response Teams, Team Leaders, Assistant Team Leaders, Subject Matter Experts, and National Emergency Support Function #3 Cadres ready and able to respond.

The Corps established designated Planning & Response Teams (PRTs) and a cadre of leaders and subject matter experts to provide rapid emergency response during any All-Hazards contingency. This measure establishes the baseline, calculated as the percentage of trained and certified team members at any time during the entire fiscal year. Anything less than the baseline degrades readiness and may result in the Corps not prepared to respond.

Table 1. Summary of Strategic Goals, Objectives, and Performance Metrics (cont'd)

## STRATEGIC GOAL 2 (con't)

Improve the safety and resilience of communities and water resources infrastructure.

- **Measure 2.2.b:** Percent of current Annual updated All-Hazards contingency plans across USACE.

Every command, center, and field operating agency in USACE must be prepared to respond to the full spectrum of All-Hazards. This measure reflects the percentage of current All-Hazards Contingency plans at all echelons, on the shelf and ready for use when needed.

### Objective 2.3

Effectively and efficiently execute response, recovery, and mitigation.

#### PERFORMANCE MEASURES

- **Measure 2.3.a:** Percent scheduled and executed assigned and funded missions and programs.

This measure reflects the Corps is commitment to the national preparedness system as articulated in Presidential Policy Directive – 8, other Executive Orders, and statutes. The national preparedness system directs executive agencies to develop interagency operational

plans to support each national planning framework. Each interagency operational plan shall include a detailed concept of operations; description of critical tasks and responsibilities; detailed resource, personnel, and sourcing requirements; and specific provisions for the rapid integration of resources and personnel. The Corps metric is measured in part by the Federal Emergency Management Agency assigned missions during disaster response, recovery, and mitigation operations. This measure tracks the percentage of these missions scheduled and executed; anything less than 100% is not acceptable and may result in overall mission failure. Myriad activities and trends must be monitored and adjusted each year, to ensure achievement of full execution, i.e.: monitoring/forecasting of potential weather related threats, conducting pre-disaster operations to strengthen federal, state, local and tribal coordination, and capturing lessons learned after a disaster response to improve future response activities.

These are a few examples that guide the development of doctrine and support programmatic changes in USACE disaster programs.

- **Measure 2.3.b:** Number of active state-led interagency flood risk management teams (Silver Jackets)

Silver Jackets Teams provide federal assistance to state and local governments in developing and executing mitigation measures that meet local government needs. Membership consists of the Corps and other federal agencies that can contribute to meeting those needs (i.e. FEMA, EPA, DOT, etc.) State teams normally are represented by state hazard mitigation offices and other government offices (state and local). This measure tracks the number of active teams by state. The target is to have a team in all 50 states.



Table 1. Summary of Strategic Goals, Objectives, and Performance Metrics (cont'd)

## STRATEGIC GOAL 3

Facilitate the transportation of commerce goods on the Nation's coastal channels and inland waterways.

### Objective 3.1

Facilitate commercial navigation by providing safe, reliable, highly cost-effective and environmentally sustainable waterborne transportation systems.

#### PERFORMANCE MEASURES

- **Measure 3.1.a:** The number of instances where mechanically driven failure at locks results in delays of more than 24 hours.
  - **Measure 3.1.b:** The number of instances where mechanically driven failure at locks results in delays of more than one week.
- These measures track the conditions of Corps locks by focusing on the number of instances where failure occurs

at the main lock chamber on inland waterways with a high level of commercial use (more than 3 billion ton-miles of traffic annually on that segment) or a moderate level of commercial use (between 1 billion ton-miles and 3 billion ton-miles of traffic annually on that segment). USACE is working to ensure that the locks on these waterways are reliable and available to pass traffic when needed. The system is operating at a satisfactory level overall, and the Corps has been investing in the maintenance and rehabilitation of these structures. However, many of the locks are in various states of deterioration, which result in periodic mechanical failures and lock closures to make repairs. Repairs are becoming

more frequent, extensive, and costly. Lock closures can result in either complete stoppage of traffic (where there is only one lock) or in significant delays to traffic (where a smaller, auxiliary lock must be used). These delays result in increased costs to shippers and the general public, including the longer time involved in the trip, and the related increase in fuel consumption and pollution. USACE maintains over 241 locks at 197 sites.

Table 1. Summary of Strategic Goals, Objectives, and Performance Metrics (cont'd)

## STRATEGIC GOAL 4

Restore, protect, and manage the aquatic ecosystems to benefit the Nation.

### Objective 4.1

Restore aquatic habitat to a more natural condition in ecosystems in which structure, function, and dynamic processes have been degraded.

#### PERFORMANCE MEASURES

- **Measure 4.1:** Acres of habitat restored, created, improved or protected.

This performance measure tracks the change in condition of environmental habitat. Ecosystem restoration seeks to restore habitat to a more natural condition, aquatic habitat whose structure, function, and dynamic processes have become degraded.

### Objective 4.2

Reduce adverse impacts to the Nation's wetlands and waterways through an effective, transparent, and efficient Regulatory process.

#### PERFORMANCE MEASURES

- **Measure 4.2:** Percent of general permit decisions reached within 60 days.

This measure tracks the percentage of USACE general permits that are verified within 60 days of receipt of a complete application. General permits are authorizations for activities that have minimal adverse individual and/or cumulative effects on the aquatic environment.

### Objective 4.3

Clean up radioactive waste sites.

#### PERFORMANCE MEASURES

- **Measure 4.3:** Number of individual properties returned to beneficial use.

This performance measure tracks the number of properties released for general use following remediation of former Manhattan Project and Atomic Energy Commission and former military sites under the Environmental Protection Agency Superfund program.

### Objective 4.4

Manage, conserve, and preserve natural resources at USACE projects.

#### PERFORMANCE MEASURES

- **Measure 4.4:** Percent of USACE fee-owned and/or administered lands and waters that have achieved desired natural resource conditions.

The performance measure for this objective tracks land and water acreage, which through protection and management, meets the desired conditions outlined in management or work plans which fall into categories of sustainable, transitioning or degraded. Condition classifications are annually updated for each vegetation type of Corps fee owned property.

Desired conditions include both sustainable and transitioning where natural resources objectives are met and environmental impacts are minimized. The

performance is calculated with a numerator representing lands and waters meeting a sustainable or transitioning condition over the denominator of total lands and waters with a known condition. As lands and waters fall into a degraded condition, the acreage drops out of the numerator and lowers performance. Improving degraded lands and waters results in an increase in the numerator and a higher net performance.

### Objective 4.5

Provide opportunities for quality outdoor public recreation.

#### PERFORMANCE MEASURES

- **Measure 4.5:** Annually increase PSA compliance in each standard by 1% over the FY 13 baseline.

This measure tracks the quality of the recreation program delivered in light of fiscal realities and responsiveness to changing needs. Results will be used to guide decision making in focusing resources to provide amenities, services and opportunities where they provide the greatest qualitative and quantitative benefits. Collectively, 35% of the PSA's meet all three standards (Facility Condition, Efficiency, and Health and Safety). This collective score reflects reduced service levels and opportunities delivered in response to a \$31M reduction in the recreation business line budget from FY10 \$283M to FY15 \$252M. The measure's target is to increase the amount of PSA's that comply with the above standards.

**Table 1. Summary of Strategic Goals, Objectives, and Performance Metrics (cont'd)**

## STRATEGIC GOAL 5

**Manage the life-cycle of water resources infrastructure systems in order to consistently deliver sustainable services.**

### Objective 5.1

**Support the Nation and the Army in achieving our energy security and sustainability goals.**

#### PERFORMANCE MEASURES

- **Measure 5.1.a:** Non-tactical Vehicle (NTV) Petroleum: Percent reduction in NTV Petroleum Use. This measures progress on reducing the use of traditional petroleum fuels (gasoline and diesel) in fleet vehicles.

This performance measure is focused on vehicle usage within USACE and supports reducing greenhouse gas emissions, climate change mitigation, increasing alternative fuel use and reducing operations and maintenance costs.

- **Measure 5.1.b:** Facility Energy Intensity: Percent reduction in Goal Subject Energy Intensity (Btu/GSF). This measures progress on making “buildings” more energy efficient.

This performance measure focuses on energy efficiency progress at buildings utilized by USACE and supports reducing greenhouse gas emissions, climate change mitigation, and reducing operations and maintenance costs.

### Objective 5.2

**Capitalize, recapitalize, operate and maintain water resources infrastructure to provide maximum value to the Nation.**

#### PERFORMANCE MEASURES

- **Measure 5.2:** Percentage of Preventive Maintenance completed on critical components maintenance completed per maintenance management improvement plans.

This measure tracks the percentage of Preventive

Maintenance (PM) tasks completed on USACE mission-critical components. Focusing on mission-critical components ensures that national preventive maintenance efforts are focused on those components with the highest potential risk to delivering national benefits. Critical components are those items that, if they failed, would have an immediate and substantial impact to the various USACE missions of providing national benefits (power generation, safe navigation, flood risk management, etc.) Preventive maintenance is the systematic care, servicing, and inspection of assets, facilities, equipment and components for the purpose of detecting and correcting incipient failures and accomplishing minor maintenance. The frequency of preventive maintenance is generally less than one year.

### Objective 5.3

**Provide reliable, renewable, hydropower to the Nation.**

#### PERFORMANCE MEASURES

- **Measure 5.3.a:** Peak unit availability (percentage of time generating units are available during periods of peak demand).

This measure tracks the peak unit availability. Peak Unit Availability measures performance reliability, it is the percentage of time during critical peak demand periods that hydroelectric generating units are available to the PMA interconnected system. USACE hydroelectric generation is marketed to preference customers by four power marketing administrations (PMA). These PMAs are obligated to recover the operating and capital investment cost of USACE hydropower facilities through the sale of

USACE hydropower electric power.

- **Measure 5.3.b:** Percentage of time units are out of service due to unplanned outage.

This measure tracks the percentage of time hydropower generating units are in an unscheduled or unplanned outage status. The lower the forced outage rate, the more reliable and less expensive the electrical power provided to the consumer.

### Objective 5.4

**Provide water supply storage in partnership with state and local interests.**

#### PERFORMANCE MEASURES

- **Measure 5.4.a:** Percent of acre-feet of storage under contract versus acre-feet available.

This measure tracks the percentage of the acre-feet of water supply storage space under contract with state and local interests for present and future use, compared to the acre-feet of space available for water supply. An acre-foot is the volume of water that will cover an area of one acre to a depth of one foot.

- **Measure 5.4.b:** Percent of investment costs recovered versus the total investment costs available for recovery.

This measure tracks progress in recovering investment costs. The Corps seeks proportional reimbursement of capital costs for that portion of the reservoir allocated for water supply. The cost available for recovery is the total estimated capital cost of water supply allocations. In this context, the capital costs are typically the costs to construct the reservoir.



## Program Evaluation

To realize the USACE Vision, “Contribute to the strength of the Nation through innovative and environmentally sustainable solutions to the Nation’s water resources challenges,” and to further support and implement this Strategic Plan, there must be a focus on identifying outcomes and measuring performance. At the strategic level, criteria for success should relate to the five strategic goals, and reflect progress toward achieving them. Plans, programs, and projects should:

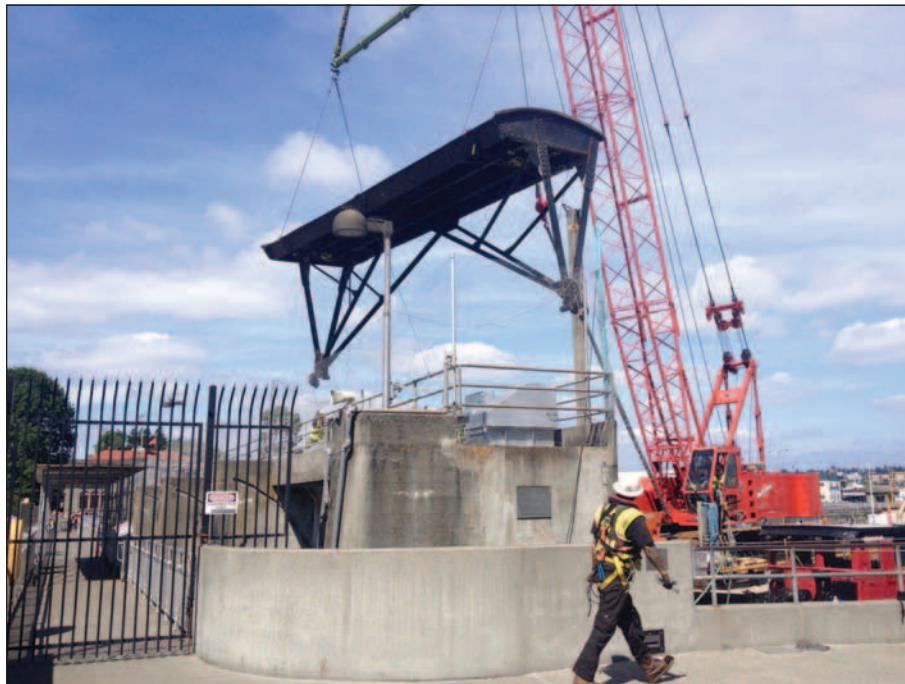
- Deliver measurable improvements in public safety and protection of property
- Generate broad-based economic and environmental benefits to the Nation
- Solve water resource problems in a sustainable manner

There are several processes and systems in place to evaluate the performance of the Civil Works Program. This evaluation takes place in a context to facilitate evaluation of all major programs.

**Customer Satisfaction Surveys** – Customer satisfaction surveys are used to improve service and delivery of USACE products and services.

The performance of USACE’s Civil Works Program is continually evaluated with the help of the performance measures, the results of which are published in the Management’s Discussion and Analysis section of the Army’s annual financial statement.

One of the primary missions of Headquarters USACE is the development of key relationships with other federal agencies. Regularly these relationships are used to benchmark progress with similar programs and explore opportunities for common measures as well as improving program performance. USACE personnel participate on various Construction Industry Institute teams to share and explore best management practices with the private sector and other agencies. Additionally, USACE dialogues continuously with its partners and stakeholders to review and benchmark progress on program performance.







## Conclusion

To achieve the Civil Works mission, USACE and the Nation will be required to place greater emphasis on environmental sustainability and watershed issues, while shifting planning and management activities toward a system-based approach. Success will depend on multi-level collaboration and application of scientific and engineering principles that reflect the interconnected nature of the natural and constructed environments. The result will be increasingly complex projects, conducted with more sophisticated partners, in both a national and international context.

Implementing integrated water resources management requires fundamental changes in the organization and national culture, policies, and procedures. A nurturing of interactive processes among a variety of stakeholders and partners is needed to interweave roles, develop cohesion, and identify common needs and approaches while addressing multiple water resource needs. This

Strategic Plan recognizes the emerging capabilities of the USACE as integrator, facilitator, problem solver, and also developer and provider of data, tools and programs for local, state, and federal agencies. The Strategic Plan is cross-cutting strategies become the means for USACE to implement its strategic direction. The outcome of this approach will be sustainable water resources solutions that meet the needs of the Nation through wise use of taxpayer dollars.

USACE has an invaluable and diverse portfolio of capabilities that can be leveraged to sustain a robust and sustainable Army Civil Works Program. The beginning of the 21st Century presents an unparalleled opportunity to shape water resources policy within the United States. The application of the vision and strategies of this Strategic Plan provide a viable and reasonable course of action that paves a path toward a sustainable water future for America.



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# Summary of Objectives

**Vision—Contribute to the strength of the Nation through innovative and environmentally sustainable solutions to the Nation’s water resources challenges**

## **1 Transform the Civil Works Program to deliver sustainable water resources solutions through integrated Water Resources Management.**

### **Objective 1.1 Modernize the Civil Works project planning program.**

Measure 1.1.a: Percent of Planners trained in Planning Core Curriculum Courses.

Measure 1.1.b: Percent of Planners achieving certification under the National Planner Certification Program.

### **Objective 1.2 Deliver quality solutions and services.**

Measure 1.2.a: Percent of projects on schedule.

Measure 1.2.b: Percent of Customers indicating USACE delivered quality products and services (based on Customer Satisfaction Survey).

### **Objective 1.3 Develop a ready and resilient workforce through innovative talent management and leader development strategies and programs.**

Measure 1.3.a: Percent completion and deployment of Command Training Plans for all USACE mission critical occupations.

Measure 1.3.b: Percent increase of technical competencies for USACE Mission Critical Occupations that meet or exceed Army Competency Management System (CMS) targets.

## **2 Improve the safety and resilience of communities and water resources infrastructure.**

### **Objective 2.1 Reduce the Nation’s risk and increase resilience to disasters.**

Measure 2.1.a: Percent progress to develop and implement National Flood Characterization tool in collaboration with FEMA.

Measure 2.1.b: Percent of Levee Safety Action Classifications complete.

Measure 2.1.c: Number of Dam Safety Action Classifications Reduced.

### **Objective 2.2 Support the Department of Homeland Security/Federal Emergency Management Agency to provide life-cycle public works and engineering support in response to disasters.**

Measure 2.2.a: Percent of trained and certified Planning Response Teams, Team Leaders, Assistant Team leaders and Subject Matter Experts, and National Emergency Support Function #3 Cadres ready and able to respond.

Measure 2.2.b: Percent of current Annual updated All-hazards contingency plans across USACE.

### **Objective 2.3 Effectively and efficiently execute response, recovery, and mitigation.**

Measure 2.3.a: Percent scheduled and executed assigned and funded missions and programs.

Measure 2.3.b: Number of active state-led interagency flood risk management teams (Silver Jackets)

## **3 Facilitate the transportation of commercial goods on the Nation’s coastal channels and inland waterways.**

### **Objective 3.1 Facilitate commercial navigation by providing safe, reliable, highly cost-effective and environmentally sustainable waterborne transportation systems.**

Measure 3.1.a: The number of instances where mechanically driven failure at locks results in delays of more than 24 hours.

Measure 3.1.b: The number of instances where mechanically driven failure at locks results in delays of more than one week.

## **4 Restore, protect, and manage aquatic ecosystems to benefit the Nation.**

### **Objective 4.1 Restore aquatic habitat to a more natural condition in ecosystems in which structure, function, and dynamic processes have been degraded.**

Measure 4.1: Acres of habitat restored, created, improved or protected in ecosystems identified as priorities through interagency coordination, which are: Everglades, Great Lakes, Chesapeake Bay, Puget Sound, Missouri River, and Upper Mississippi River.

### **Objective 4.2 Reduce adverse impacts to the Nation’s wetlands and waterways through an effective, transparent, and efficient Regulatory process.**

Measure 4.2: Percent of general permit decisions reached within 60 days.

### **Objective 4.3 Clean up radioactive waste sites.**

Measure 4.3: Number of individual properties returned to beneficial use. Each site may contain varying numbers of individual properties, with different owners.

### **Objective 4.4 Manage, conserve, and preserve natural resources at USACE projects.**

Measure 4.4: Percent of USACE fee-owned and/or administered lands and waters that have achieved desired natural resource conditions.

### **Objective 4.5 Provide opportunities for quality outdoor public recreation.**

Measure 4.5: Annually increase PSA compliance in each standard by 1% over the FY13 baseline.

## **5 Manage the life-cycle of water resources infrastructure systems in order to consistently deliver sustainable services.**

### **Objective 5.1 Support the Nation and the Army in achieving our energy security and sustainability goals.**

Measure 5.1.a: Non-tactical Vehicle (NTV) Petroleum: Percent reduction in NTV Petroleum Use. This measures progress on reducing the use of traditional petroleum fuels (gasoline and diesel) in fleet vehicles.

Measure 5.1.b: Facility Energy Intensity: Percent reduction in Goal Subject Energy Intensity (Btu/GSF). This measures progress on making “buildings” more energy efficient.

### **Objective 5.2 Capitalize, recapitalize, operate and maintain water resources infrastructure to provide maximum value to the Nation.**

Measure 5.2: Percentage of preventive maintenance completed on critical components.

### **Objective 5.3 Provide reliable, renewable, hydropower to the Nation.**

Measure 5.3.a: Peak unit availability (percentage of time generating units are available during periods of peak demand).

Measure 5.3.b: Percentage of time units are out of service due to unplanned outage.

### **Objective 5.4 Provide water supply storage in partnership with state and local interests.**

Measure 5.4.a: Percent of acre-feet of storage under contract versus acre-feet available.

Measure 5.4.b: Percent of investment costs recovered versus the total investment costs available for recovery.



