



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
WASHINGTON DC 20314-1000

REPLY TO
ATTENTION OF

CECW-MVD/CECW-CP/CECW-CE/CECW-CO

AUG 24 2006

MEMORANDUM FOR Directors CECW, CEMP, CERD, MSC Commanders, HQUSACE
Staff Principals

SUBJECT: CG Directive #1 – Supplemental Actions to the USACE Campaign Plan,
Applying Lessons Learned resulting from Hurricanes Katrina and Rita

1. Purpose: This memorandum directs priority implementation of the following 12 actions to focus our efforts as we execute our Campaign Plan in continuing service to the Nation.
2. Background: In June of 2005 we adopted the USACE Campaign Plan containing three goals to focus our efforts and help us reach our vision. These goals: Support Stability, Reconstruction, and Homeland Security Operations; Develop Sound Water Resources Solutions; and Enhance Life Cycle Infrastructure Management are designed to prepare us to be more ready and responsive in support of global national security objectives and natural disasters, and to enhance our relevance and reliability as an agency while performing our Civil Works and Military Programs missions. In what followed as one of the busiest and most damaging hurricane seasons on record, our abilities in meeting our domestic obligations under Campaign Goal One were severely tested. The behavior of the Greater New Orleans Hurricane Protection System under the stresses of Hurricanes Katrina and Rita caused us to look back over our planning, design and operation and maintenance principles and decision-making processes, providing us with important insights that we must incorporate into future work. These insights and the 12 actions they dictate illustrate the interdependence of our campaign plan goals. Though they are derived from actions in support of goal one, they are crucial to achieving Campaign Plan goals two and three, and in the "Sustainability Ethic", "Consistent, Efficient, and Effective Business Practices", and "World-Class Workforce" enabling capabilities.
3. The 12 points for applying lessons learned resulting from Hurricanes Katrina and Rita (enclosed) are grouped in three overarching themes:
 - a. Effectively Implement a Comprehensive Systems Approach: Comprehensively designing, constructing, maintaining, and updating our engineered systems to be more robust, with full participation of all stakeholders. Points one - eight, support campaign plan objectives, 1b, 2a, 2b, 2d, and 3c.

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- **Point 1** Employ integrated, comprehensive and systems-based approach
- **Point 2** Employ Risk-Based Concepts in Planning, Design, Construction, Operations and Major Maintenance
- **Point 3** Continuously Reassess and Update Policy for Program Development, Planning Guidance, Design and Construction Standards
- **Point 4** Dynamic Independent Review
- **Point 5** Employ Adaptive Planning and Engineering Systems
- **Point 6** Focus on Sustainability
- **Point 7** Review and Inspect Completed Works
- **Point 8** Assess and Modify Organizational Behavior

b. Communication: Effectively and transparently, communicating risk and reliability with the public and within the Corps and the profession. Points nine and ten support campaign plan objectives 1b, 2b and 3c.

- **Point 9** Effectively Communicate Risk
- **Point 10** Establish Public Involvement Risk Reduction Strategies

c. Reliable Public Service Professionalism: Improve the state of the art on a continuing basis, and our dedication to a competent, capable workforce. Commit to being a learning organization. Points 11 and 12, support campaign plan objectives 2d and 3d.

- **Point 11** Manage and Enhance Technical Expertise and Professionalism
- **Point 12** Invest in Research

4. **Implementation and Resourcing**. These actions will involve changing our methods of operating and will require devoting resources to improve our products and services.

5. **Guidance**. These 12 actions are to be priorities for campaign plan implementation and properly budgeted for, with initial activities included in our fiscal year 2008 budget. Additionally, the action leaders will include implementation of these actions in their performance objectives.

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6. Provide responses to enclosed tasks by 15 September 2006 to the DCW, copy furnished to the DMP. As noted in actions 8 and 11; MSC commanders should immediately begin to assess their organizational behavior and technical expertise to better plan, engineer, construct, operate, maintain and manage our programs and projects. The points of contact for this memo are Tom Waters, CECW-CP and Don Basham, CECW-CE.



CARL A. STROCK
Lieutenant General, USA
Commanding

Encl

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**Twelve Points for Applying Lessons Learned
resulting from Hurricanes Katrina and Rita**

Point	Action
<p>1. Employ integrated, comprehensive and systems-based approach: Plan, design, construct and operate projects as parts of larger, integrated systems, taking into account all natural and social system features. A systems approach will be used in conjunction with all stakeholders/partners to facilitate collaborative planning, design, and construction. Develop and employ comprehensive, probabilistic methods that consider a broader variety of design load characteristics and hazard (storm, seismic, flood, etc.) generated conditions, and apply to all of our engineered systems, including coastal and inland levees, dams, channels, wetlands, natural barriers, and reservoirs. The system within which a proposed project will perform must be understood as well as the local and regional implications of alternative concepts for achieving project goals. The systems approach must be flexible and adaptive to allow continuous upgrades as new knowledge emerges and new engineering practice is developed.</p>	<p>CECW:</p> <ol style="list-style-type: none"> 1. Identify actions and milestones for developing and applying these methods 2. Provide initial estimates of additional resource requirements (funding or organizational changes) for FY 2008 and for subsequent years.
<p>2. Employ Risk-Based Concepts in Planning, Design, Construction, Operations, and Major Maintenance: Develop and employ risk-based approaches that better inform complex infrastructure decisions. These approaches should:</p> <ol style="list-style-type: none"> 1) Incorporate consequence analysis that considers and evaluates a broad range of environmental, social, economic, and health and safety impacts, especially including risk to population. 2) Implement anticipatory failure determination techniques to identify, evaluate, and forestall unforeseen failure mechanisms. 3) Identify residual risk, plan and design and communicate accordingly. 4) Account for the cumulative impact of incremental decision making over the course of a project's history. 	<p>CECW:</p> <ol style="list-style-type: none"> 1. Identify actions and milestones for developing and applying these methods. <ol style="list-style-type: none"> a. Conduct a pilot test of this methodology in the Louisiana Coastal Protection and Restoration study. b. Apply throughout USACE. 2. Provide initial estimates of additional resource requirements (funding or organizational changes) for FY 2008 and for subsequent years.
<p>3. Continuously Reassess and Update Policy for Program Development, Planning Guidance, Design and Construction Standards: Collaborate with ASA(CW), with a view to developing long – term programmatic changes as may be needed in the CW Budgeting process to reflect Asset Management, Sustainability, Risk and Reliability. Implement an immediate review of current planning guidance and design standards. Update guidance and standards to include modern approaches for incorporating resilience and redundancy into designs and systems approaches. Employ external partners from the planning, design and construction field as well as other federal agencies responsible for water resources and environmental projects. Review and refresh planning guidance and engineering standards at a greater frequency that keeps pace with the generation of new knowledge.</p>	<p>CECW:</p> <ol style="list-style-type: none"> 1. Identify actions and milestones for developing and applying these methods. 2. Provide initial estimates of additional resource requirements (funding or organizational changes) for FY 2008 and for subsequent years.

ENCLOSURE

**Twelve Points for Applying Lessons Learned
resulting from Hurricanes Katrina and Rita**

Point	Action
<p>4. Employ Dynamic Independent Review: Projects with high consequences, especially loss of life potential, will have continuous, recurring, independent external technical review during the full life of the project. This review will provide both in depth technical review in critical domains such as structural, geotechnical, hydrological, etc, as well as review of project components acting as a system, and the performance of the project as part of a system. Independent reviews will include evaluation of effectiveness of QA/QC processes and their implementation.</p>	<p>CECW/CEMP:</p> <ol style="list-style-type: none"> 1. Identify actions and milestones for developing and applying these methods. 2. Provide initial estimates of additional resource requirements (funding or organizational changes) for FY 2008 and for subsequent years.
<p>5. Employ Adaptive Planning and Engineering Systems: We will generate a culture of planning and design for expected and unexpected changes to provide long-term life-cycle solutions for the public. We will develop the methods to routinely include dynamics/non-linear processes in our planning and design criteria (like climate change), and we will employ a clear and credible methodology to do so. We will also assess existing infrastructure to meet future relevant needs of the nation.</p>	<p>CECW:</p> <ol style="list-style-type: none"> 1. Identify actions and milestones for developing and applying these methods. 2. Provide initial estimates of additional resource requirements (funding or organizational changes) for FY 2008 and for subsequent years.
<p>6. Focus on Sustainability: Engender a new corporate behavior and processes focused on sustainability of projects (asset management) and compatibility with our environmental operating principles. As our teams and organizations operate collegially, we will embed a philosophy of asset sustainability and environmental compatibility.</p>	<p>CECW/CEMP:</p> <ol style="list-style-type: none"> 1. Complete an action plan for long-term asset management for federal and non-federal (Corps designed/constructed) assets.
<p>7. Review and Inspect Completed Works: Shape future ICW policy to rigorously administer compliance with standards. Initiate a review of all completed works and those currently under design and construction against planning assumptions and design standards, and establish a more robust program for periodic inspections of completed works.</p>	<p>CECW:</p> <ol style="list-style-type: none"> 1. Identify actions and milestones for developing and applying these methods. 2. Provide initial estimates of additional resource requirements (funding or organizational changes) for FY 2008 and for subsequent years.
<p>8. Assess and Modify Organizational Behavior: Assess our organizational behavior and processes. Develop and implement changes to provide seamless integration and collaboration across functions, projects, regions and USACE. A guiding principle for the assessment will be teams and organizations operating in an integrated manner.</p>	<p>CECW/CEMP/MS Commanders:</p> <ol style="list-style-type: none"> 1. Identify actions and milestones for developing and applying these methods. 2. Provide initial estimates of additional resource requirements (funding or organizational changes) for FY 2008 and for subsequent years. 3. Provide assessment of organizational behavior and systems at District and RBC level to further this goal to the NMB through Regional Business Directors.

**Twelve Points for Applying Lessons Learned
resulting from Hurricanes Katrina and Rita**

Point	Action
<p>9. Effectively Communicate Risk: Integrate effective communication of risk and reliability concepts and alternative levels of risk and associated consequences to the public and other stakeholders.</p>	<p>CECW:</p> <ol style="list-style-type: none"> 1. Identify actions and milestones for developing and applying these methods. 2. Provide initial estimates of additional resource requirements (funding or organizational changes) for FY 2008 and for subsequent years.
<p>10. Establish Public Involvement Risk Reduction Strategies: Inform and facilitate a national dialog with stakeholders and public professionals on establishing risk reduction policy for engineered systems.</p>	<p>CECW/CEMP:</p> <ol style="list-style-type: none"> 1. Identify actions and milestones for developing and applying these methods. 2. Provide initial estimates of additional resource requirements (funding or organizational changes) for FY 2008 and for subsequent years.
<p>11. Manage and Enhance Technical Expertise and Professionalism: Maintain professional ethics and technical capabilities and methods, and sharing and teaching those methods with our government and private sector partners. Effectively manage and enhance our technical expertise in planning, design, construction, operations, and maintenance by 1) Consistently renewing, disseminating and applying our expertise in all of these areas, as the state of the art evolves, 2) Further promoting and supporting continued learning, growth and professional accreditation, and 3) Becoming more open, honest, and willing to share. Collaborate consistently and effectively with industry, academia, and our stakeholders to insure that these lessons are translated into actions to improve the projects and systems that we construct.</p>	<p>CECW/CEMP/MSC Commanders:</p> <ol style="list-style-type: none"> 1. Identify actions and milestones for assessing, developing and applying these methods. 2. Provide assessments and initial estimates of additional resource requirements (funding or organizational changes) for FY 2008 and for subsequent years.
<p>12. Invest in Research: Invest in research efforts to improve the resilience of structures to seek new knowledge and capabilities for updating design criteria, and to discover new approaches for creating adaptive planning and design capabilities and products. Focus research investments on big picture needs of the future, carefully defined by long-term strategy for USACE. Integrate research results into all of our design, construction, operation and maintenance programs with a view to long-term system sustainability (asset management). Establish effective technology transfer methods that give product delivery teams the opportunity to validate and demonstrate new approaches and technologies.</p>	<p>CECW/CEMP/CERD:</p> <ol style="list-style-type: none"> 1. Identify actions and milestones for developing and applying these methods. 2. Provide initial estimates of additional resource requirements (funding or organizational changes) for FY 2008 and for subsequent years.