Overview of 9506 Report to Congress

National Water Quality Monitoring Council

WEBEX meeting

6 December 2010

9506 Report

- OMNIBUS PUBLIC LANDS ACT (*Public Law 111-11*)
- Subtitle F:
  Science and Engineering to Comprehensively Understand and Responsibly Enhance (**SECURE**) **Water Act**
- **Section 9506:**
  Climate Change and Water Intragovernmental Panel

- **Schedule: Report will be submitted in March 2011**

Climate Change and Water Intragovernmental Panel

- Review the current scientific understanding of each impact of global climate change on the quantity and quality of freshwater resources of the United States; and
- Develop any strategy that the panel determines to be necessary to improve observational capabilities, expand data acquisition, or take other actions
  - to increase the reliability and accuracy of modeling and prediction systems to benefit water managers at the Federal, State, and local levels; and
  - to increase the understanding of the impacts of climate change on aquatic ecosystems.

Review Elements

- **Observational Data:** streamflow, groundwater levels, soil moisture, evapotranspiration rates, evaporation rates, snowpack levels, precipitation amounts, and glacier mass as it relates to global climate change on water resources;
- **Water monitoring networks**
- **Data management and communication protocols and standards**
- **Data portal to enhance access to water resource data--**
- Facilitate the development of **hydrologic and other models**
- Apply the hydrologic and other to water resource management problems including the need to maintain or improve **ecological resiliency at watershed and aquifer system scales.**

Approach

- Draft materials under preparation by SWAQ (CENRS Subcommittee on Water Availability and Quality)
- Starting point:

  REPORT AND RECOMMENDATIONS OF THE **WATER RESOURCES AND CLIMATE CHANGE ADAPTATION WORKGROUP**
  TO THE **INTERAGENCY**
  CLIMATE CHANGE ADAPTATION TASK FORCE:

  ADAPTING WATER RESOURCES MANAGEMENT TO A CHANGING CLIMATE

Focus

- Decisions that are made by water resource managers that are be impacted by a climate
  - Assuring An Adequate Water Supply
  - Protecting Human Life, Health, and Property
  - Protecting Quality of Fresh Water Resources
  - Protecting Coastal and Ocean Resources
- Key goals for each type of decision
  - Up-to-date information and approaches
  - Capacity to incorporate climate relevant knowledge
  - Robust data-collection programs
  - Processes for ensuring continuity

Review Element 1: Observational data

- **Goal:** to assess the extent to which the conduct of measures of **streamflow, groundwater levels, soil moisture, evapotranspiration rates, evaporation rates, snowpack levels, precipitation amounts, and glacier mass** is necessary to improve the understanding of the Federal Government and the States with respect to each impact of global climate change on water resources
- **Recommendations:**
  - Consistent and dependable funding for maintaining a core network of streamgages and groundwater wells
  - Adequacy of existing monitoring (locations and frequency) from the perspective of differentiating climate signals
  - Coordination of monitoring efforts (communication, quality assurance, data availability, interoperability)
  - Linkages between data collection and modeling (hydrologic, water quality, climate)

Review Element 2: Monitoring Networks

- **Goal:** to identify data gaps in current water monitoring networks that must be addressed to improve the capability of the Federal Government and the States to measure, analyze, and predict changes to the quality and quantity of water resources, including flood risks, that are directly or indirectly affected by global climate change
- **Recommendations:**
  - Linkages among datasets
  - Data standards
  - Comprehensive monitoring plan to track, predict, and adapt to the effects of global climate change on groundwater recharge and availability

Review Element 3: Data Management

- **Goal:** to establish data management and communication protocols and standards to increase the quality and efficiency by which each Federal agency acquires and reports relevant data;
- **Recommendations:**
  - Best practices in information technology
  - Centralized clearinghouse for the different information categories (traditional and direct observation).

Review Element 4: Data Portal

- **Goal:** to consider options for the establishment of a data portal to enhance access to water resource data--
  - relating to each nationally significant watershed and aquifer located in the United States; and
  - that is collected by each Federal agency and any other public or private entity for each nationally significant freshwater watershed and aquifer located in the United States;
- **Recommendations:**
  - Develop a clearinghouse of spatially referenced data layers such as climate, land use / land cover, water quality and quantity, water use and demand, and remote sensing that can easily be accessed and is not bounded by political or geographic boundaries
  - Coordination and standardization for accessing, mapping, and visualizing data

Review Element 5: Models

- **Goal:** to facilitate the development of hydrologic and other models to integrate data that reflects groundwater and surface water interactions; and
- **Recommendations:**
  - Strategic development of modeling functionality
  - Better mechanistic understanding of linkages between human activities and water quality, which can be incorporated into models.
  - Better predictions of future land use.
  - Improved future climate predictions and effects of changes temperature and precipitation on aquatic ecosystems

Review Element 5: Modeling capacity needed

- Downscaling GCMs to regional applications.
- Predictions at smaller scales, particularly including weather – hydrology feedback mechanisms.
- Groundwater models for selected hydrogeologic settings;
- More rigorous coupling of groundwater and surface-water models.
- Statistical techniques for estimating magnitude and frequency of droughts and floods in a changing climate and under evolving land use / land management.
- Rate and spatial distribution of sea-level rise.
- Long-term understanding of surge-generating events and predictions of most vulnerable regions.
- Resolution of inundation models for coastal, inland coastal waters, and coupling of upland flooding with storm surge.

Review Element 6
Model applications

- **Goal:** to apply the hydrologic and other models developed under paragraph (5) to water resource management problems identified by the panel, including the need to maintain or improve ecological resiliency at watershed and aquifer system scales
- **Recommendations:**
  - Pilot climate change vulnerability index for a major category of water facilities
  - Develop tools to support scenario based planning for future water conditions
  - Enhance models needed for improved ecological resiliency, and improve models of non-linear thresholds in ecosystem change

Strategy

- **Assess and address the adequacy of existing observational data collection and monitoring networks**
- **Improve the management and interoperability of the Nation's freshwater Data and Models**
- **Coordinate design and upgrade of data collection and monitoring networks with modeling programs**
- **Improve analytical methods and models of the Nation's freshwater resources and related climate systems**

Next steps

- Obtain input from NWQMC
- Circulate draft report for comments
- Follow-up with stakeholders
  - Federal partners through SWAQ and the Interagency Climate Change Workgroup
  - ACWI, State water resource agencies, , drinking water utilities, water research organizations, and relevant water user, environmental, and other nongovernmental organizations.

Contact info

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